SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name: Eastman(TM) 2-Ethylhexanol

Product No.: EAN 903608. 00175-00, P0017500, P0017501, P0017503, P0017504, P0017505, P001750A, P001750B, E00175E1, E00175E2, E00175E3, E0017504, P0017506, P0017508

Synonyms, Trade Names: 2EH, 00175-00

Additional identification

Chemical name:	2-ethylhexanol
CAS-No.:	104-76-7

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Solvent
Uses advised against: None known.

1.3 Details of the supplier of the safety data sheet

Manufacturer / Supplier

Eastman Chemical Company
200 South Wilcox Drive
Kingsport, TN 37660-5280 US
+14232292000

Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

National Supplier

Eastman Chemical B.V.
Fascinatio Boulevard 602-614
2909 Capelle aan den IJssel
The Netherlands
Telephone: (31) 10 2402 111
Fax: (31) 10 2402 100

1.4 Emergency telephone number:

For emergency health, safety, and environmental information: telephone 800-EASTMAN or 423 229-4511 in the United States; or +44 (0)1235 239 670 in Europe.

For emergency transportation information, call +44(0)1235 239 670; or 800 964214 in England; 01800559700 in Eire; or 423-229-4511 in the United States. Identify the call as a transportation emergency.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

The product has been classified according to the legislation in force.

EU. Directive 67/548/EEC

Xn: Harmful
R20: Harmful by inhalation.
R36/37/38: Irritating to eyes, respiratory system and skin.

Regulation No. 1272/2008.

Health hazards

Acute toxicity (Inhalation - vapor)	Category 4	H332: Harmful if inhaled.
Skin corrosion/irritation	Category 2	H315: Causes skin irritation.
Serious eye damage/eye irritation	Category 2	H319: Causes serious eye irritation.
Specific target organ toxicity - single exposure (Inhalation - vapor)	Category 3	H335: May cause respiratory irritation.

Hazard summary

Physical hazards: Not classified as hazardous.

Health hazards

Inhalation: Harmful if inhaled. May cause respiratory irritation.

Eye contact: Causes serious eye irritation.

Skin contact: Causes skin irritation.

Ingestion: None known.

Other Health Effects: No data available.

Environmental hazards: Not classified as hazardous.

2.2 Label elements

Signal words: WARNING!

Hazard Statement(s): H332: Harmful if inhaled.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.

Precautionary statement

Prevention: P261: Avoid breathing dust/fume/gas/mist/vapors/spray. P271: Use only outdoors or in a well-ventilated area. P264: Wash hands thoroughly after handling. P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response: P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P302+P352: IF ON SKIN: Wash with plenty of soap and water. P332+P313: If skin irritation occurs: Get medical advice/attention. P362: Take off contaminated clothing and wash before reuse. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337+P313: If eye irritation persists: Get medical advice/attention.

Storage: P403+P233: Store in a well-ventilated place. Keep container tightly closed. P405: Store locked up.

Disposal: P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards: None known.

SECTION 3: Composition/information on ingredients

3.1 / 3.2 Substances / Mixtures

General information:

Chemical name	Concentration	Additional identification	Notes
2-ethylhexanol	100%	CAS-No.: 104-76-7 EC No.: 203-234-3	

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
# This substance has workplace exposure limit(s).
PBT: persistent, bioaccumulative and toxic substance.
vPvB: very persistent and very bioaccumulative substance.

Classification

Chemical name	Classification		Notes
2-ethylhexanol	DSD:	Xn, R20, R36/37/38	
	CLP:	Acute Tox. 4, H332; Skin Corr.2, H315; Eye Dam.2, H319; STOT SE3, H335	

DSD: Directive 67/548/EEC.
CLP: Regulation No. 1272/2008.:

The full text for all R-phrases is displayed in section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If breathing stops, provide artificial respiration. Get medical attention immediately.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention. In case of irritation from airborne exposure, move to fresh air. Get medical attention if symptoms persist.

Skin contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: Seek medical advice.

4.2 Most important symptoms and effects, both acute and delayed: No data available.

4.3 Indication of any immediate medical attention and special treatment needed

Hazards: None known.

Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards: Combustible liquid and vapor. USE WATER WITH CAUTION. Material will float and may ignite on surface of water.

5.1 Extinguishing media

Suitable extinguishing media: Water spray. Dry chemical. Carbon Dioxide. Foam.

Unsuitable extinguishing media: None known.

5.2 Special hazards arising from the substance or mixture: None known.

5.3 Advice for firefighters

Special Fire Fighting Procedures: Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures: Wear appropriate personal protective equipment.

6.2 Environmental precautions: Avoid release to the environment.

6.3 Methods and material for containment and cleaning up: Eliminate sources of ignition. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Large Spillages: Flush spill area with water spray. Prevent runoff from entering drains, sewers, or streams. Dike for later disposal.

Notification Procedures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:

7.1 Precautions for safe handling: Avoid breathing vapor. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities: Keep container closed.

7.3 Specific end use(s): Solvent

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

If exposure limits have not been established, maintain airborne levels to an acceptable level.

8.2 Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information: Eye bath. Washing facilities. Safety shower.

Eye/face protection:	Wear safety glasses with side shields (or goggles). Wear a full-face respirator, if needed.
Skin protection	
Hand protection:	Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.
Other:	No data available.
Respiratory Protection:	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.
Hygiene measures:	Observe good industrial hygiene practices.
Environmental Controls:	No data available.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	
Physical State:	Liquid
Form:	Liquid
Color:	Colorless
Odor:	musty
Odor Threshold:	0,07 ppm
pH:	No data available.
Freezing Point:	-76 - -70 °C
Boiling Point:	184 °C
Flash Point:	73,3 °C (Tag closed cup)
Evaporation Rate:	No data available.
Flammability (solid, gas):	No data available.
Flammability Limit - Upper (%)–:	No data available.
Flammability Limit - Lower (%)–:	No data available.
Vapor pressure:	No data available.
Vapor density (air=1):	No data available.
Specific Gravity:	0,833 (20 °C)
Solubility(ies)	
Solubility in Water:	0,1 g/l
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	Pow: 1.260 log Pow: 3,1
Autoignition Temperature:	No data available.

Decomposition Temperature:	(DSC) No exotherm to 500°C
Dynamic Viscosity:	No data available.
Kinematic viscosity:	No data available.
Explosive properties:	No data available.
Oxidizing properties:	No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity:	None known.
10.2 Chemical stability:	Stable
10.3 Possibility of hazardous reactions:	None at ambient temperatures.
10.4 Conditions to avoid:	Heat, sparks, flames.
10.5 Incompatible materials:	Strong oxidizing agents.
10.6 Hazardous decomposition products:	Carbon Dioxide. Carbon Monoxide.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation:	Harmful if inhaled. May cause respiratory irritation.
Ingestion:	None known.
Skin contact:	Causes skin irritation.
Eye contact:	Causes serious eye irritation.

11.1 Information on toxicological effects

Acute Toxicity

Oral

Product: No data available.

Specified substance(s)

2-ethylhexanol — Oral LD-50: (Rat): 3.290 mg/kg

Dermal

Product: No data available.

Specified substance(s)

2-ethylhexanol — Dermal LD-50: (Rat): > 3.000 mg/kg

Inhalation

Product: No data available.

Specified substance(s)
2-ethylhexanol — LC50 (Rat, 6 h): 1,2 mg/l

Repeated dose toxicity
Product: No data available.

Specified substance(s)
2-ethylhexanol — No data available.

Skin corrosion/irritation:
Product: No data available.

Specified substance(s)
2-ethylhexanol — (Rabbit, 24 h): moderate

Serious eye damage/eye irritation:
Product: No data available.

Specified substance(s)
2-ethylhexanol — (Rabbit): moderate

Respiratory or skin sensitization:
Product: No data available.

Specified substance(s)
2-ethylhexanol — Skin Sensitization: (Human) - Not a skin sensitizer.

Germ cell mutagenicity

In vitro
Product: No data available.

Specified substance(s)
2-ethylhexanol — No data available.

In vivo
Product: No data available.

Specified substance(s)
2-ethylhexanol — No data available.

Carcinogenicity
Product: No data available.

Specified substance(s)
2-ethylhexanol — No data available.

Reproductive toxicity
Product: No data available.

Specified substance(s)
2-ethylhexanol — No data available.

Specific target organ toxicity - single exposure
Product: No data available.

Specified substance(s)
2-ethylhexanol — No data available.

Specific target organ toxicity - repeated exposure
Product: No data available.

Specified substance(s)
2-ethylhexanol — No data available.

Aspiration hazard
Product: No data available.

Specified substance(s)
2-ethylhexanol — No data available.

Other adverse effects: No data available.

SECTION 12: Ecological information

12.1 Toxicity

Acute toxicity

Fish
Product: No data available.

Specified substance(s)
2-ethylhexanol — LC-50 (Fathead Minnow, 96 h): 28,2 mg/l

Aquatic invertebrates
Product: No data available.

Specified substance(s)
2-ethylhexanol — EC-50 (daphnid, 48 h): 39 mg/l

Chronic Toxicity

Fish
Product: No data available.

Specified substance(s)
2-ethylhexanol — No data available.

Aquatic invertebrates
Product: No data available.

Specified substance(s)
2-ethylhexanol — No data available.

Toxicity to Aquatic Plants
Product: No data available.

Specified substance(s)
2-ethylhexanol — No data available.

12.2 Persistence and degradability

Biodegradation

Product:	No data available.
Specified substance(s)	
2-ethylhexanol	100 % (14 d)

Biological Oxygen Demand:

Product	No data available.
Specified substance(s)	
2-ethylhexanol	767 mg/g 2.180 mg/g

Chemical Oxygen Demand:

Product	No data available.
Specified substance(s)	
2-ethylhexanol	No data available.

BOD/COD ratio

Product	No data available.
Specified substance(s)	
2-ethylhexanol	No data available.

12.3 Bioaccumulative potential	
Product:	No data available.
Specified substance(s)	
2-ethylhexanol	No data available.
12.4 Mobility in soil:	No data available.

Known or predicted distribution to environmental compartments

2-ethylhexanol	No data available.
12.5 Results of PBT and vPvB assessment:	No data available.
2-ethylhexanol	No data available.
12.6 Other adverse effects:	No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

General information:	No data available.
Disposal Methods:	Dispose of waste and residues in accordance with local authority requirements. Incinerate. Since emptied containers retain product residue, follow label warnings even after container is emptied.

European Waste Codes

Comply with requirements of waste disposal legislation and any local authority requirements.

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

ADR/RID

Class not regulated

Possible Shipping Description(s):

not regulated

IMDG - International Maritime Dangerous Goods Code

Class not regulated

Possible Shipping Description(s):

not regulated

IATA

Class not regulated

Possible Shipping Description(s):

not regulated

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

TSCA (US Toxic Substances Control Act): This product is listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act): This product is listed on the DSL. Any impurities present in this product are exempt from listing.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): This product is listed on AICS or otherwise complies with NICNAS.

MITI (Japanese Handbook of Existing and New Chemical Substances): This product is listed in the Handbook or has been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): This product is listed on the Korean inventory or otherwise complies with the Korean Toxic Substances Control Act.KE-13766

Philippines Inventory (PICCS) : This product is listed on the Philippine Inventory or otherwise complies with PICCS.

Inventory of Existing Chemical Substances in China: All components of this product are listed on the Inventory of Existing Chemical Substances in China (IECSC).

15.2 Chemical safety assessment: None.

SECTION 16: Other information

Revision Information: Not relevant.

Key literature references and sources for data: No data available.

Wording of the R-phrases and H-statements in section 2 and 3:

Xn = Harmful
R20 = Harmful by inhalation.
R36/37/38 = Irritating to eyes, respiratory system and skin.

Acute Tox. = Acute toxicity
Skin Corr. = Skin corrosion/irritation
Eye Dam. = Serious eye damage/eye irritation
STOT SE = Specific target organ toxicity - single exposure
4 = Category 4
2 = Category 2
2 = Category 2
3 = Category 3
H332= Harmful if inhaled.
H315= Causes skin irritation.
H319= Causes serious eye irritation.
H335= May cause respiratory irritation.

Training information: No data available.

Issue Date: 22.05.2012
SDS No:

Disclaimer: This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

2M000680

EC safety data sheet

Trade name: ALPATE XI 1227
Product no.: XI1227 Version: 2.0.0 / GB Status: 08.08.2008

1.) Identification of the substance/preparation and of the company/undertaking

Identification of the substance or preparation

Trade name

ALPATE XI 1227

Use of the substance/preparation

Metallic paint (for automotive industry and industrial use); Ink and plastics manufacture

Company/undertaking identification

Address

Toyal Europe
Route de Lescun
F-64490 ACCOUS

Telephone no. +33 (0)5 59 98 35 35

Fax no. +33 (0)5 59 98 35 36

Information provided by / telephone

+33 (0)5 59 98 35 35

Emergency telephone

For medical advice:
+33 (0)1 40 05 48 48 (Anti Poison Center Paris)
In case of transport incidents and other emergencies:
+44 (0)208 762 8322 (NCEC, National Chemical Emergency Centre)

Advice on Safety Data Sheet

reach@toyal-europe.com
sdb_info@umco.de

2.) Hazards identification

Classification

N; R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R67	Vapours may cause drowsiness and dizziness.
R66	Repeated exposure may cause skin dryness or cracking.

Hazard symbols

N	Dangerous for the environment

R phrases

51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
66	Repeated exposure may cause skin dryness or cracking.
67	Vapours may cause drowsiness and dizziness.

3.) Composition / information on ingredients

Chemical characterization

Aluminium powder pasted in solvents

Hazardous ingredients

ALUMINIUM POWDER (STABILIZED)

EC no.	231-072-3	Index no.	013-002-00-1	CAS no.	7429-90-5
Concentration	> 50	< 70	%-b.w.		
Classification	F; R15 R10				
Hazard symbols	F	R phrases	10-15		

NAPHTHA (PETROLEUM), HYDRODESULFURIZED HEAVY

EC no.	265-185-4	Index no.	649-330-00-2	CAS no.	64742-82-1
Concentration	> 10	< 30	%-b.w.		
Classification	R10 Xn; R65 N; R51/53 R67 R66				
Hazard symbols	Xn, N	R phrases	10-51/53-65-66-67		

SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC.

EC no.	265-199-0	Index no.	649-356-00-4	CAS no.	64742-95-6
Concentration	> 10	< 30	%-b.w.		
Classification	R10 Xn; R65 Xi; R37 N; R51/53 R67 R66				
Hazard symbols	Xn, N	R phrases	10-37-51/53-65-66-67		

Hazardous components in complex substances:

MESITYLENE

EC no.	203-604-4	Index no.	601-025-00-5	CAS no.	108-67-8
Concentration	> 1	< 5	%-b.w.		
Classification	R10-Xi; R37-N; R51/53				
Hazard symbols	Xi, N	R phrases	10-37-51/53		

1,2,4-TRIMETHYLBENZENE

EC no.	202-436-9	Index no.	601-043-00-3	CAS no.	95-63-6
Concentration	> 1	< 5	%-b.w.		
Classification	R10-Xn; R20-Xi; R36/37/38-N; R51/53				
Hazard symbols	Xn, N	R phrases	10-20-36/37/38-51/53		

4.) First aid measures

General information
In case of persisting adverse effects, consult a physician. Remove contaminated clothing and shoes immediately, and launder thoroughly before reusing.

After inhalation
Remove affected person from the immediate area. Ensure supply of fresh air.

After skin contact
Wash off immediately with soap and water.

After eye contact
Separate eyelids, wash the eyes thoroughly with water (15 min.). Eye treatment by an oculist.

After ingestion
Rinse mouth thoroughly with water. Do not induce vomiting. Summon a doctor immediately. Never give anything by mouth to an unconscious person.

5.) Fire-fighting measures

Suitable extinguishing media
Dry sand; Metal fire powders

Extinguishing media that must not be used for safety reasons
Water; Carbon dioxide; Dry powder; Foam; Halones

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases
In case of contact with acidic or alkaline (basic) media as well as water, aluminium powder will react under hydrogen formation.

Special protective equipment for fire-fighters
Use self-contained breathing apparatus. Wear protective clothing.

Other information
Do not break burning matter - danger of explosion!

6.) Accidental release measures

Personal precautions
Refer to protective measures listed in sections 7 and 8. Keep away sources of ignition.

Environmental precautions
Do not discharge into the drains/surface waters/groundwater.

Methods for cleaning up/taking up
Pick up mechanically. Protect from water. When picked up, treat material as prescribed under heading "Disposal considerations".

Additional informations (chapter 6)
Do not collect residues using a non explosion-proof vacuum cleaner – Explosion hazard!

7.) Handling and storage

Handling

Advice on safe handling
Provide good ventilation of working area (local exhaust ventilation, if necessary). Avoid the formation and deposition of dust. Product inherent handling risks must be minimised taking the appropriate measures for protection and preventive actions. The working process should be designed to rule out the release of hazardous substances or skin contact as far it is possible by the by the state of the art

Advice on protection against fire and explosion
Vapours can form an explosive mixture with air. Take precautionary measures against static charges. Keep away from sources of heat and ignition. Use explosion-proof equipment/fittings and non-sparking tools.

Storage

Requirements for storage rooms and vessels
Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep only in the original container.

Advice on storage assembly
Do not store together with:
Oxidizing agents
Acids
Alkalies
Nitrates
Alcohols
Halogenated hydrocarbons
Halogens
Keep away from water.

Further information on storage conditions
Keep container tightly closed in a cool, well-ventilated place. Keep dry. Humidity penetration (water) into closed containers may lead to pressure increase and bursting of the container.

8.) Exposure controls / personal protection

Exposure limit values

ALUMINIUM POWDER (STABILIZED)

CAS no.	7429-90-5			
EC no.	231-072-3			
Occupational Exposure Standards (OESs) / EH40				
Aluminium metal				
total inhalable dust				
TWA	10	mg/m³		
Occupational Exposure Standards (OESs) / EH40				
Aluminium metal				
respirable dust				
TWA	4	mg/m³		

MESITYLENE

CAS no.	108-67-8			
EC no.	203-604-4			
2000/39/EWG				
Mesitylene (Trimethylbenzenes)				
TWA	100	mg/m³	20	ml/m³

1,2,4-TRIMETHYLBENZENE

CAS no.	95-63-6			
EC no.	202-436-9			
2000/39/EWG				
1,2,4-Trimethylbenzene				
TWA	100	mg/m³	20	ml/m³

NAPHTHA (PETROLEUM), HYDRODESULFURIZED HEAVY

CAS no.	64742-82-1			
EC no.	265-185-4			
OEL EH 40				
STEL	600	mg/m³	100	ppm

Personal protective equipment

Respiratory protection
If workplace exposure limits are exceeded, a respiration protection approved for this particular job must be worn. In case of dust, aerosol and mist formation, take appropriate measures for breathing protection in the event workplace threshold values are not specified.

Hand protection
Sufficient protection is given wearing suitable protective gloves checked according to i.e. EN 374, in the event of risk of skin contact with the product . Before use, the protective glove should be tested in any case for its specific work-station suitability (i.e. mechanical resistance, product compatibility and antistatic properties). Adhere to the manufacturer's instructions and information relating to the use, storage, care and replacement of protective gloves. Protective gloves shall be replaced immediately when physically damaged or worn. Design operations thus to avoid permanent use of protective gloves.

Eye protection
Safety glasses with side protection shield (EN 166)

Skin protection
Clothing as usual in the chemical industry.

General protective and hygiene measures
Do not eat, drink or smoke during work time. Keep away from foodstuffs and beverages. Avoid contact with eyes and skin. Do not inhale vapours. Have eye wash fountain available. Have emergency shower available.

9.) Physical and chemical properties

General information

Form	pasty		
Colour	silver-grey		
Odour	solvent-like		

Important health, safety and environmental information

Changes in physical state

Type	Melting point		
Value	appr.	660	°C
Reference substance	aluminium		
Type	Boiling temperature		
Value		2467	°C
Reference substance	aluminium		

Flash point

Value	>	38	°C
Reference substance	Mineral Spirits		

Explosion limits

Upper explosion limit	7,00		% vol
Reference substance	Mineral Spirits		
Lower explosion limit	0,70		% vol
Reference substance	Mineral Spirits		

Vapour pressure

Value	0,2	-	0,3	kPa
Reference temperature	20		°C	
Reference substance	Mineral Spirits			

Density

Value	1,40	1,80	g/cm³
Source	calculated value		
Reference substance	Product		
Reference temperature	20	°C	

Solubility in water

Remarks	insoluble

Flammability :

Flammability :	The product is NOT highly flammable according to UN Manual of Tests and Criteria, method 33.2.1.4 (flammability, solids).

10.) Stability and reactivity

Conditions to avoid

Moisture; Heat; Exothermal reactions are possible in the event of contact with incompatible substances.

Materials to avoid

Oxidizing agents; Acids; Alkalies; Nitrates; Alcohols; Halogenated hydrocarbons; Halogens; Water

Hazardous decomposition products

In case of contact with acidic or alkaline (basic) media as well as water, aluminium powder will react under hydrogen formation.

11.) Toxicological information

Acute toxicity

Acute oral toxicity

LD50	>	2000	mg/kg
Species	rat		
Reference substance	Mineral Spirits		

Acute dermal toxicity

LD50	>	2000	mg/kg
Species	rat		
Reference substance	Mineral Spirits		

Effects after repeated or prolonged exposition (subacute, subchronic, chronic)

Mutagenicity

Remarks	No experimental information on genotoxicity available.

Reproduction toxicity

Remarks	No experimental information on reproduction toxic effects available.

Carcinogenicity

Remarks	No experimental information on carcinogenic effects available.

Experience in practice
Repeated and prolonged skin contact may cause removal of natural fat from the skin and irritation of the skin.
Inhalation of solvent vapours in higher concentration may lead to nausea, headache, drowsiness and dizziness.

Other information (chapter 11.)
Product specific toxicological data are not known.

12.) Ecological information

Other adverse effects
Ecological data are not available.
Do not discharge product unmonitored into the environment.

13.) Disposal considerations

Product
Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company.

Packaging
Residuals must be removed from packaging and when emptied completely disposed of in accordance with the regulations for waste removal. Incompletely emptied packaging must be disposed of in the form of disposal specified by the regional disposer.

14.) Transport information

Land transport ADR/RID

Class	9	Classification code	M7
Packaging group	III		
Hazard id. no.	90		
Label	9		
UN number	3077		
Technical name	Environmentally hazardous substance, solid, n.o.s.		
Danger releasing substance	Solvent Naphtha		

Marine transport IMDG

Class	9
Packaging group	III
UN number	3077
Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Danger releasing substance	Solvent Naphtha
EmS	F-A,S-F
MARPOL	MP
Label	9

Air transport ICAO/IATA

Class	9
Packaging group	III
UN number	3077
Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Danger releasing substance	Solvent Naphtha
Label	9

15.) Regulatory information

Labelling in accordance with EC directives
The product is classified and labelled in accordance with EC Directive 1999/45/EC.

Hazard symbols

N	Dangerous for the environment

R phrases

51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
66	Repeated exposure may cause skin dryness or cracking.
67	Vapours may cause drowsiness and dizziness.

S phrases

7/8	Keep container tightly closed and dry.
43.10	In case of fire, use dry sand or metal fire powder. --- Never use water.
61	Avoid release to the environment. Refer to special instructions / Safety data sheets.

Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances
Remarks Annex I, part 2, category 9 b

16.) Other information

Sources of key data used to compile the data sheet:

EC Directive 67/548/EC resp. 99/45/EC as amended in each case.
Regulation (EC) No 1907/2006 (REACH) as amended in each case.
EC Directives 2000/39/EC, 2006/15/EC as amended in each case.
National Threshold Limit Values of the corresponding countries as amended in each case.
Transport regulations according to ADR, RID, IMDG, IATA as amended in each case.
The data sources used to determine physical, toxic and ecotoxic data, are indicated directly in the corresponding chapter.

Relevant R-phrases (chapter 3):

10	Flammable.
15	Contact with water liberates extremely flammable gases.
20	Harmful by inhalation.
36/37/38	Irritating to eyes, respiratory system and skin.
37	Irritating to respiratory system.
51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
65	Harmful: may cause lung damage if swallowed.
66	Repeated exposure may cause skin dryness or cracking.
67	Vapours may cause drowsiness and dizziness.

Department issuing safety data sheet

UMCO Umwelt Consult GmbH
Georg-Wilhelm-Str. 183 b, D-21107 Hamburg
Tel.: +49 40 / 41 92 13 00 Fax: +49 40 / 41 92 13 57 e-mail: umco@umco.de

This information is based on our present state of knowledge. However, it should not constitute a guarantee for any specific product properties and shall not establish a legally valid relationship.

Alterations/supplements:
Alterations to the previous edition are marked in the left-hand margin.

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* 1 Identification of the substance/mixture and of the company/undertaking

* **Product identifier**

* **Trade name:** ***BENDA-LUTZ ® 7038 Aluminium Powder***
* **Substance name:** Aluminium powder (stabilised)
* **CAS Number:** Aluminium: 7429-90-5
* **EC number:**
231-072-3
* **Index number:**
013-002-00-1
* **Registration number** 01-2119529243-45-xxxx

* **Relevant identified uses of the substance or mixture and uses advised against** Inorganic Pigment

* **Details of the supplier of the safety data sheet**
Benda-Lutz Werke GmbH
Ferdinand-Lutz-Straße 8
3134 Nussdorf ob der Traisen
AUSTRIA

Editor: birgit.aigner@benda-lutz.com
* **Emergency telephone number:**
Benda-Lutz Werke GmbH: + 43 (2783) 6202 - 170 (8 - 16 h)
Austrian Poison Information Center: + 43 (1) 406 43 43 (0 - 24 h)

2 Hazards identification

* **Classification of the substance or mixture**
* **Classification according to Regulation (EC) No 1272/2008**
The substance is not classified according to the CLP regulation.

* **Classification according to Directive 67/548/EEC or Directive 1999/45/EC** Not applicable.

* **Label elements**
* **Labelling according to Regulation (EC) No 1272/2008** Void
* **Hazard pictograms** Void
* **Signal word** Void
* **Hazard statements** Void
* **Information concerning particular hazards for human and environment:** None
* **Classification system:**
Classification was done according Annex VI of directive (EU) No. 1272/2008. Nota T was used. Tests and classification were done according Part III, sub-section 33.2.1 and 33.3.1.6, of the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria.
* **Other hazards**
If suspended in air, dust clouds can be ignited in the presence of an ignition source. Explosion risk!
Prolonged contact of Aluminium powder with water may result in a reaction releasing hydrogen – ignition risk.
Aluminium powder will react with oxidising agents, acids and alkalis, causing heating and hydrogen release – explosion risk.
Aluminium powder may react violently with halogens and halogenated hydrocarbons.

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* **Results of PBT and vPvB assessment**
* **PBT:** Not applicable.
* **vPvB:** Not applicable.

* 3 Composition/information on ingredients

* **Chemical characterization: Substances**
* **CAS No. Description**
Aluminium
* **EC number:** 231-072-3
* **Index number:** 013-002-00-1
* **Additional information:** Aluminium powder, flake
* **SVHC** No Substance of very high concern contained.

4 First aid measures

* **Description of first aid measures**
* **General information:** Medical attention/control after first aid measures.
* **After inhalation:**
Remove exposed person out of hazardous area.
Keep breathing passages open.
Supply fresh air.
Call a physician if irritation persists.
* **After skin contact:**
Remove dirty clothes.
Wash with water and soap.
* **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
* **After swallowing:** If symptoms persist consult doctor.
* **Information for doctor:**
* **Most important symptoms and effects, both acute and delayed**
No further relevant information available.
* **Indication of any immediate medical attention and special treatment needed**
Supportive measures required.

5 Firefighting measures

* **Extinguishing media**
* **Suitable extinguishing agents:**
Dry sand
Special powder for metal fires. Do not use water.
Extinguishing media of class D.
* **For safety reasons unsuitable extinguishing agents:**
Water and water based extinguishers
Carbon dioxide
Foam
Extinguishing media of class A, B, C.
* **Special hazards arising from the substance or mixture**
Prolonged contact of the product with water may result in a reaction releasing hydrogen - ignition risk

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* **Advice for firefighters**
* **Protective equipment:**
Wear fully protective suit.
Wear self-contained respiratory protective device.

* 6 Accidental release measures

* **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
Prevent of dust formation.
Keep away from ignition sources.
* **Environmental precautions:**
Do not allow to enter sewers/ surface or ground water.
Dispose contaminated material as waste (see point 13).
* **Methods and material for containment and cleaning up:**
Do not use a vacuum cleaner.
Collect mechanically using non sparking equipment. Prevent of dust formation.
Do not flush with water or aqueous cleaning agents.
* **Reference to other sections**
See Section 1 for information on emergency telephone number.
See Section 4 for information on first aid measures.
See Section 5 for information on firefighting measures.
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

* **Handling:**
* **Precautions for safe handling**
Prevent formation of dust.
Any unavoidable deposit of dust must be regularly removed.
Prevent of sources of ignition (open flames, hot surfaces, electrical / electrostatic and friction sparks/ sparks by striking).
Smoking ban.
Use explosion proof equipment and tools as well as solvent resistant equipment.
While refilling connect containers with grounding clamps.
Equipment and furniture must not be able to load statically.
Keep receptacles tightly sealed.
Close containers carefully after use.
Wash hands after work and before break.
* **Information about fire - and explosion protection:**
Keep ignition sources away. - Do not smoke.
Protect against electrostatic charges.
Use explosion-proof apparatus / fittings and spark-proof tools.
Prevent of dust formation and any deposit of dust.

* **Conditions for safe storage, including any incompatibilities**
* **Storage:**
* **Requirements to be met by storerooms and receptacles:**
Store in a cool and dry place.

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Store in non-combustible containers.
Keep container tightly closed.
Store only in the original receptacle.
Avoid direct sun light.

* **Information about storage in one common storage facility:**
Do not store together with acids and alkalis
Store away from oxidizing agents.
Store away from halogens and halogenated compounds.
Store away from water.
Protect from moisture.
Store away from flammable substances.

* **Further information about storage conditions:** None.

* **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

* **Additional information about design of technical facilities:** No further data; see item 7.

* **Control parameters**

* **Ingredients with limit values that require monitoring at the workplace:**

Aluminium powder (stabilised)

WEL Long-term value: 10* 4** mg/m³
*inhalable dust **respirable dust

* **DNELs**

Inhalative DNEL 3 mg/m3 (Species: n/d/a) (8h TWA)

* **PNECs**

PNEC 48-17800 g/l (Species: n/d/a) (depending on water chemistry)

* **Additional information:** The lists valid during the making were used as basis.

* **Exposure controls**

* **Personal protective equipment:**

* **General protective and hygienic measures:**
Remove and clean contaminated clothes.
Be sure to clean skin thoroughly after work and before breaks.
Wash with water and soap.

* **Respiratory protection:** Filter P1

* **Protection of hands:**

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

* **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

* **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

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* **Eye protection:**

Tightly sealed goggles

* **Body protection:**
None conductive protecting clothes
Fire proof protecting clothes.
None conductive boot according EN 345

* **Limitation and supervision of exposure into the environment**
Consider environmental precautions of point 6.

9 Physical and chemical properties

* **Information on basic physical and chemical properties**
* **General Information**
* **Appearance:**
* **Form:** Powder
* **Colour:** grey/silver glossy
* **Odour:** slightly waxy
* **Odour threshold:** Not determined.

* **pH-value:** Not applicable.

* **Change in condition**
* **Melting point/Melting range:** 660°C
* **Boiling point/Boiling range:** 2467°C

* **Flash point:** Not applicable.

* **Flammability (solid, gaseous):** > 10 minutes (Ann. VI of Directive 1272/2008)

* **Ignition temperature:** 400°C

* **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

* **Explosion limits:**
* **Lower:** 30 g/m³

* **Density at 20°C:** 2.7 g/cm³

* **Solubility in / Miscibility with**
* **water:** Insoluble.

* **Other information** Settled apparent density: 0,5 - 0,9 g/cm³

10 Stability and reactivity

* **Reactivity**
Explosion risk when reacting with:
- water, may liberate extremely flammable hydrogen gas
- oxidizing agents, acids, alkalis, may liberate extremely flammable hydrogen gas under exothermic reaction
Violent reactions with:

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- halogens, halogenated hydrocarbons

* **Chemical stability** No instability under regular conditions.

* **Thermal decomposition / conditions to be avoided:** Stable up to melting point.

* **Possibility of hazardous reactions**

Risk of dust explosion if enriched with fine dust in the presence of air.
May react violently with halogens and halogenated hydrocarbones.
A reaction with water, oxidising agents, acids and alkalis leads to generation of extremely flammable hydrogen - Explosion risk!

* **Conditions to avoid**

Avoid direct sunlight.
Avoid building of sparks.
Keep away from sources of ignition and open fire.

* **Incompatible materials:**

Water
Acids
Alkalis
Oxidising agents
Halogens
Halogenated hydrocarbons

* **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

* **Information on toxicological effects**

* **Acute toxicity:**

* **LD/LC50 values relevant for classification:**

Oral	LD50	> 2000 mg/kg (Rat)
Inhalative	LC50/4 h	> 888 mg/l (Rat)

* **Primary irritant effect:**

* **on the skin:** No irritant effect.

* **on the eye:** No irritating effect.

* **Sensitization:** No sensitizing effects known.

* **Subacute to chronic toxicity:** No effects known.

* **Additional toxicological information:**

When used and handled according to specifications, the product does not have any harmful effects to our experience and the information provided to us.

12 Ecological information

* **Toxicity**

* **Aquatic toxicity:**

Aluminium is not classified ecotoxic according Ann. VI of directive 1272/2008.

EC50 not ecotox. (Species: n/d/a) (acc. Ann. VI, Dir. (EC) 1272/20)

* **Persistence and degradability** No further relevant information available.

* **Behaviour in environmental systems:**

* **Bioaccumulative potential** No further relevant information available.

* **Mobility in soil** No further relevant information available.

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* **Additional ecological information:**
* **General notes:** Generally not hazardous for water
* **Results of PBT and vPvB assessment**
* **PBT:** Not applicable.
* **vPvB:** Not applicable.
* **Other adverse effects** No further relevant information available.

* 13 Disposal considerations

* **Waste treatment methods**
* **Recommendation**
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Can be disposed of with household garbage with prior chemical-physical or biological treatment following consultation with the waste disposal facility operator and the pertinent authorities and adhering to the necessary technical regulations.
* **Waste disposal key:** ---
* **European waste catalogue** 12 01 04 non-ferrous metal dust and particles

* **Uncleaned packaging:**
* **Recommendation:**
Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.

14 Transport information

* **UN-Number**	No dangerous good.
* **ADR, ADN, IMDG, IATA**	Void
* **UN proper shipping name**	No dangerous good.
* **ADR, ADN, IMDG, IATA**	Void
* **Transport hazard class(es)**	No dangerous good.
* **ADR, ADN, IMDG, IATA**	
* **Class**	Void
* **Packing group**	No dangerous good.
* **ADR, IMDG, IATA**	Void
* **Environmental hazards:**	
* **Marine pollutant:**	No
* **Special precautions for user**	Not applicable.
* **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
* **UN "Model Regulation":**	-

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15 Regulatory information

* **Safety, health and environmental regulations/legislation specific for the substance or mixture**

* **National regulations:**

* **Other regulations, limitations and prohibitive regulations**
The product is listed in the following chemical inventories:
AICS ..... Australia
DSL ..... Canada
TSCA ..... USA
MITI ..... Japan

* **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

* 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

* **Reason for Changes** New logo adapted.

* **Department issuing MSDS:** Quality Management Department (Product safety & Dangerous Goods)
* **Contact:** Mrs. Aigner
* **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

SAFETY DATA SHEET

ARADUR® 949-2 ES

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name : ARADUR® 949-2 ES

Registration number / Legal entity :

Product code : 00054351

Product description : Hardener for coating systems

Other means of identification : Not available.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Product use : Hardener for coating systems

1.3 Details of the supplier of the safety data sheet

Supplier : Huntsman Advanced Materials (Europe)BVBA
Everslaan 45
3078 Everberg / Belgium
Tel.: +41 61 299 20 41
Fax: +41 61 299 20 40

e-mail address of person responsible for this SDS : Global_Product_EHS_AdMat@huntsman.com

E-mail address to request full REACH registration number upon EU member State Authority request :
REACH_Registration_Nr_AM@huntsman.com

1.4 Emergency telephone number

Supplier

Telephone number : EUROPE: +32 35 75 1234
France ORFILA: +33(0)145425959
ASIA: +65 6336-6011
China: +86 20 39377888
India: +91 22 4050 6333
Australia: 1800 786 152
New Zealand: 0800 767 437
USA: +1/800/424.9300

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

Classification according to Directive 1999/45/EC [DPD]

The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification : R10
Xn; R22
Xi; R41, R37/38
R67

Physical/chemical hazards : Flammable.

Human health hazards : Harmful if swallowed. Risk of serious damage to eyes. Irritating to respiratory system and skin. Vapours may cause drowsiness and dizziness.

See Section 16 for the full text of the R phrases or H statements declared above.
See Section 11 for more detailed information on health effects and symptoms.

SECTION 2: Hazards identification

2.2 Label elements

Hazard symbol or symbols :

Indication of danger : Harmful

Risk phrases : R10- Flammable.
R22- Harmful if swallowed.
R41- Risk of serious damage to eyes.
R37/38- Irritating to respiratory system and skin.
R67- Vapours may cause drowsiness and dizziness.

Safety phrases : S7/9- Keep container tightly closed and in a well-ventilated place.
S13- Keep away from food, drink and animal feeding stuffs.
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37/39- Wear suitable gloves and eye/face protection.

Hazardous ingredients : butan-1-ol

Supplemental label elements : Not applicable.

Special packaging requirements

Containers to be fitted with child-resistant fastenings : Not applicable.

Tactile warning of danger : Not applicable.

2.3 Other hazards

Other hazards which do not result in classification : Not available.

SECTION 3: Composition/information on ingredients

3.2 Mixtures : Mixture

Product/ingredient name	Identifiers	%	Classification 67/548/EEC	Classification Regulation (EC) No. 1272/2008 [CLP]	Type
butan-1-ol	CAS: 71-36-3 EC: 200-751-6	30-60	R10 Xn; R22 Xi; R41, R37/38 R67	Flam. Liq. 3, H226 Acute Tox. 4, H302 Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE 3, H335 and H336	[1] [2]
1-Methoxypropan-2-ol	CAS: 107-98-2 EC: 203-539-1	3-7	R10 R67	Flam. Liq. 3, H226 STOT SE 3, H336	[1] [2]
			See Section 16 for the full text of the R-phrases declared above.	**See Section 16 for the full text of the H statements declared above.**	

Type

[1] Substance classified with a health or environmental hazard
[2] Substance with a workplace exposure limit
[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : Get medical attention immediately. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact : Severely irritating to eyes. Risk of serious damage to eyes.

Inhalation : Vapours may cause drowsiness and dizziness. Irritating to respiratory system.

Skin contact : Irritating to skin.

Ingestion : Harmful if swallowed. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
respiratory tract irritation
coughing
headache
drowsiness/fatigue
dizziness/vertigo

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : Symptomatic treatment and supportive therapy as indicated. Following severe exposure the patient should be kept under medical review for at least 48 hours.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

5.3 Advice for firefighters

Special precautions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also Section 8 for additional information on hygiene measures.

6.2 Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

SECTION 6: Accidental release measures

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Storage hazard class Huntsman Advanced Materials : Storage class 3, Flammable liquids

7.3 Specific end use(s)

Recommendations : Not available.

Industrial sector specific solutions : Not available.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

SECTION 8: Exposure controls/personal protection

Product/ingredient name	Exposure limit values
butan-1-ol	**EH40/2005 WELs (United Kingdom (UK), 8/2007). Absorbed through skin.** STEL: 154 mg/m³ 15 minute(s). STEL: 50 ppm 15 minute(s).
1-methoxy-2-propanol	**EH40/2005 WELs (United Kingdom (UK), 8/2007). Absorbed through skin.** STEL: 560 mg/m³ 15 minute(s). STEL: 150 ppm 15 minute(s). TWA: 375 mg/m³ 8 hour(s). TWA: 100 ppm 8 hour(s).

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

Derived effect levels

No DELs available.

Predicted effect concentrations

Product/ingredient name	Type	Compartment Detail	Value	Method Detail
1-Methoxypropan-2-ol	PNEC	Fresh water	10 mg/l	-
	PNEC	Marine	1 mg/l	-
	PNEC	PNEC intermittent	100 mg/l	-
	PNEC	Sewage Treatment Plant	100 mg/l	-
	PNEC	Fresh water sediment	52.3 mg/kg	-
	PNEC	Marine water sediment	5.2 mg/kg	-
	PNEC	Soil	5.49 mg/kg	-

8.2 Exposure controls

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Material of gloves for long term application (BTT>480min): : butyl rubber, Ethyl Vinyl Alcohol Laminate (EVAL)

SECTION 8: Exposure controls/personal protection

Material of gloves for short term/splash application (10min<BTT<480min): : nitrile rubber

(BTT = Break Through Time)

Use gloves approved to relevant standards e.g. EN 374 (Europe), F739 (US). Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material and dexterity. Always seek advice from glove suppliers. Additional information can be found for instance at www.gisbau.de.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : In case of inadequate ventilation wear respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state : Liquid.

Colour : Clear.

Odour : of solvent

Odour threshold : Not available.

pH : 4.5 to 6.5 [Conc. (% w/w): 50%]

Melting point/freezing point : Not available.

Initial boiling point and boiling range : 140°C

Flash point : Closed cup: 40°C [DIN 53213]

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Burning time : Not applicable.

Burning rate : Not applicable.

Upper/lower flammability or explosive limits : Not available.

Vapour pressure : 0.0005 kPa [20°C]

Vapour density : Not available.

Relative density : Not available.

Solubility(ies)

Water solubility : partially soluble

20 deg C

Partition coefficient: n-octanol/water ($Log K_{ow}$) : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : >200°C

SECTION 9: Physical and chemical properties

Viscosity : Dynamic (25°C): 100 - 200 mPa·s
Kinematic: Not available.
Kinematic (40°C): Not available.

Explosive properties : Not available.

Oxidising properties : Not available.

9.2 Other information

Density : 0.99 g/cm^3 [25°C (77°F)]

SECTION 10: Stability and reactivity

10.1 Reactivity : No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : The product is stable.

10.3 Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

10.5 Incompatible materials : strong acids, strong bases, strong oxidising agents

10.6 Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Decomposition products may include the following materials:Carbon oxides, Burning produces obnoxious and toxic fumes.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Endpoint	Species	Result	Exposure
ARADUR 949-2 ES	LD50 Oral	Rat	>2000 mg/kg	-
butan-1-ol	LC0 Inhalation Vapour	Rat - Male, Female	>17.76 mg/L	4 hours
	LC50 Inhalation Vapour	Rat	24.67 mg/L	4 hours
	LD50 Dermal	Rabbit - Male	3430 mg/kg	-
	LD50 Oral	Rat - Female	2292 mg/kg	-
1-Methoxypropan-2-ol	LC50 Inhalation Vapour	Rat - Male, Female	>7000 ppm	6 hours
	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
	LD50 Dermal	Rat	>13000 mg/kg	-
	LD50 Oral	Rat - Male, Female	4016 mg/kg	-
	LD50 Oral	Rat	5660 mg/kg	-

Conclusion/Summary : No additional information.

Irritation/Corrosion

Product/ingredient name	Test1	Species	Result
1-Methoxypropan-2-ol	-	Rabbit	Non-irritant.

Conclusion/Summary

Skin : No additional information.

Eyes : No additional information.

Respiratory : No additional information.

SECTION 11: Toxicological information

Sensitiser

Product/ingredient name	Test1	Route of exposure	Species	Result
1-Methoxypropan-2-ol	-	skin	Guinea pig	Not sensitizing

Conclusion/Summary

Skin : No additional information.

Respiratory : No additional information.

Mutagenicity

Product/ingredient name	Test1	Result
butan-1-ol	OECD 476 In vitro Mammalian Cell Gene Mutation Test	Negative
	-	Negative
1-Methoxypropan-2-ol	OECD 473 In vitro Mammalian Chromosomal Aberration Test	Negative
	OECD 476 In vitro Mammalian Cell Gene Mutation Test	Negative
	OECD 471 Bacterial Reverse Mutation Test	Negative

Conclusion/Summary : No additional information.

Carcinogenicity

Product/ingredient name	Test1	Species	Exposure	Result	Route of exposure	Target organs
1-Methoxypropan-2-ol	OECD 453 Combined Chronic Toxicity/Carcinogenicity Studies	Mouse	2 years; 5 days per week	Negative	Inhalation	-
	OECD 453 Combined Chronic Toxicity/Carcinogenicity Studies	Rat	2 years	Negative	Inhalation	-

Conclusion/Summary : No additional information.

Reproductive toxicity

Product/ingredient name	Test1	Species	Result/Result type	Target organs
butan-1-ol	-	Rat	Oral: >500 mg/kg NOAEL	-
1-Methoxypropan-2-ol	OECD 416 Two-Generation Reproduction Toxicity Study	Rat	Inhalation	-

Conclusion/Summary : No additional information.

Teratogenicity

Product/ingredient name	Test1	Species	Result/Result type
butan-1-ol	MITI	Rat - Female	5654 mg/kg NOAEL
1-Methoxypropan-2-ol	OECD 414 Prenatal Developmental Toxicity Study	Rabbit - Female	>3000 ppm NOAEL
	OECD 414 Prenatal Developmental Toxicity Study	Rat - Female	1500 ppm NOAEL

Conclusion/Summary : No additional information.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Inhalation : Vapours may cause drowsiness and dizziness. Irritating to respiratory system.

Ingestion : Harmful if swallowed. Irritating to mouth, throat and stomach.

Skin contact : Irritating to skin.

Eye contact : Severely irritating to eyes. Risk of serious damage to eyes.

SECTION 11: Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
respiratory tract irritation
coughing
headache
drowsiness/fatigue
dizziness/vertigo

Ingestion : No specific data.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Test1	Result type		Result	Target organs
butan-1-ol	-	NOAEL	-	125 mg/kg	nervous system
1-Methoxypropan-2-ol	OECD 407 Repeated Dose 28-day Oral Toxicity Study in Rodents	NOAEL	-	919 mg/kg/d	liver, kidneys
	OECD 410 Repeated Dose Dermal Toxicity: 21/28-day Study	NOAEL		>1000 mg/kg/d	-
	-	NOEC	Vapour	300 ppm	liver, kidneys, nose/sinuses, lungs
	OECD 413 Subchronic Inhalation Toxicity: 90-day Study	NOEC	Vapour	1000 ppm	liver
	OECD 451 Carcinogenicity Studies	NOEC	Vapour	1000 ppm	-
	OECD 413 Subchronic Inhalation Toxicity: 90-day Study	NOEC	Vapour	1000 ppm	-

Conclusion/Summary : No additional information.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Other information : Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Test1	Endpoint	Exposure	Species	Result
butan-1-ol	-	Acute IC50	72 hours	Algae	8500 mg/L
1-Methoxypropan-2-ol	-	Acute EC50	72 hours	Algae	>100 mg/L
	-	Acute EC50	3 hours	Bacteria	>100 mg/L
	-	Acute EC50	48 hours	Daphnia	>100 mg/L
	-	Acute EgC50	7 days Static	Algae	>1000 mg/L
	OECD 209 Activated Sludge, Respiration Inhibition Test	Acute IC50	3 hours Static	Bacteria	>1000 mg/L
	-	Acute LC50	48 hours Static	Daphnia	23300 mg/L
	OECD 203 Fish, Acute Toxicity Test	Acute LC50	96 hours Semi-static	Fish	>1000 mg/L
	ASTM	Acute LC50	96 hours Static	Fish	20800 mg/L
	-	Acute LC50	96 hours	Fish	>4600 mg/L

Conclusion/Summary : No additional information.

12.2 Persistence and degradability

Product/ingredient name	Test1	Period	Result
butan-1-ol	-	28 days	>60 %

Conclusion/Summary : butan-1-ol Readily biodegradable

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
butan-1-ol	-	-	Readily

12.3 Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
butan-1-ol	0.8 to 0.9	-	low
1-Methoxypropan-2-ol	0.43	-	low

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

Not applicable.

12.6 Other adverse effects : No known significant effects or critical hazards.

12.7 Other ecological information

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

SECTION 13: Disposal considerations

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Hazardous waste : Yes.

European waste catalogue (EWC)

Waste code	Waste designation
07 02 08*	other still bottoms and reaction residues

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	14.1 UN number	14.2 UN proper shipping name
ADR/RID	UN1120	BUTANOLS SOLUTION
IMDG	UN1120	BUTANOLS SOLUTION
IATA	UN1120	BUTANOLS SOLUTION

	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards	14.6 Special precautions for user	Additional information
ADR/RID	3 	III	No.	Not available.	**Hazard identification number** 30 **Tunnel code** D/E
IMDG	3 	III	No.	Not available.	**Emergency schedules (EmS)** F-E, S-D

SECTION 14: Transport information

IATA	3 	III	No.	Not available.	**Passenger and Cargo Aircraft** Quantity limitation: 60 L Packaging instructions: 355 **Cargo Aircraft Only** Quantity limitation: 220 L Packaging instructions: 366

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not applicable.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

This product is compliant with the REACH Regulation EC 1907/2006.
Huntsman has pre-registered and is registering all of the substances that it manufactures in or imports into the European Economic Area (EEA) that are subject to Title II of the REACH Regulation.

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Not applicable.

Other EU regulations

Europe inventory : All components are listed or exempted.

Black List Chemicals : Not listed

Priority List Chemicals : Listed

Integrated pollution prevention and control list (IPPC) - Air : Not listed

Integrated pollution prevention and control list (IPPC) - Water : Not listed

National regulations

References : The provision of Safety Data Sheets comes under Regulation 6 of CHIP (CHIP is the recognised abbreviation for the Chemicals Hazard Information and Packaging Regulations). This is an addition to the Health and Safety at Work Act 1974.

International regulations

Australia inventory (AICS) : All components are listed or exempted.

Canada inventory : At least one component is not listed.

China inventory (IECSC) : All components are listed or exempted.

Japan inventory : At least one component is not listed.

Korea inventory (KECI) : All components are listed or exempted.

New Zealand Inventory of Chemicals (NZIoC) : All components are listed or exempted.

SECTION 15: Regulatory information

Philippines inventory (PICCS) : At least one component is not listed.

United States inventory (TSCA 8b) : All components are listed or exempted.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

15.2 Chemical Safety Assessment : This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms : ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DNEL = Derived No Effect Level
EUH statement = CLP-specific Hazard statement
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Flam. Liq. 3, H226
Skin Irrit. 2, H315
Eye Dam. 1, H318
STOT SE 3, H335 and H336

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Flam. Liq. 3, H226	On basis of test data
Skin Irrit. 2, H315	Calculation method
Eye Dam. 1, H318	Calculation method
STOT SE 3, H335 and H336	Calculation method

Full text of abbreviated H statements :

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H335 and H336	May cause respiratory irritation. May cause drowsiness or dizziness.
H336	May cause drowsiness or dizziness.

Full text of classifications [CLP/GHS] :

Acute Tox. 4, H302	ACUTE TOXICITY: ORAL - Category 4
Eye Dam. 1, H318	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
Flam. Liq. 3, H226	FLAMMABLE LIQUIDS - Category 3
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2
STOT SE 3, H335 and H336	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation and Narcotic effects] - Category 3
STOT SE 3, H336	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Narcotic effects] - Category 3

SECTION 16: Other information

Full text of abbreviated R phrases : R10- Flammable.
R22- Harmful if swallowed.
R41- Risk of serious damage to eyes.
R37/38- Irritating to respiratory system and skin.
R67- Vapours may cause drowsiness and dizziness.

Full text of classifications [DSD/DPD] : Xn - Harmful
Xi - Irritant

(M)SDS no. : 00054351

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Date of previous issue : No previous validation.

Version : 1

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THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	**BLACK 1G**
Version #	11
Issue date	09-14-2011
Revision date	10-17-2013
Supersedes date	07-15-2013
Chemical name	COPPER CHROMITE BLACK SPINEL
Product Code	BK0001G
Synonym(s)	C.I. Pigment Black 28 * CI Constitution #77428 * CPMA # 13-38-9
Manufacturer	
Manufacturer Information	THE SHEPHERD COLOR COMPANY 4539 Dues Drive Cincinnati, OH 45246 Phone: 513-874-0714 SHEPHERD COLOR INTERNATIONAL Serskampsteenweg 135A B-9230 Wetteren, Belgium Phone: +32-9-366-1111 SHEPHERD COLOR INTERNATIONAL Kingston Trade Centre 100 Cochranes Road Moorabbin, Victoria 3189 Australia Phone: +61-3-9532-5260 SHEPHERD COLOR INTERNATIONAL Odakyu Dai-ichi Seimei Building 4-F Shinjuku-ku Tokyo, Japan 163-0704 Phone: +813-3344-3010 EMERGENCY INFORMATION: CHEMTREC - Domestic 800-424-9300 CHEMTREC - International 703-527-3887

2. Hazards Identification

Emergency overview	Health injuries are not known or expected under normal use.
Potential health effects	
Routes of exposure	Inhalation. Ingestion.
Eyes	This product may cause slight irritation to the eyes.
Skin	This product may cause irritation to the skin.
Inhalation	Inhalation of dusts may cause respiratory irritation.
Ingestion	Health injuries are not known or expected under normal use.
Signs and symptoms	Product dust may be irritating to eyes, skin and respiratory system.
Potential environmental effects	Ecological injuries are not known or expected under normal use.

3. Composition / Information on Ingredients

Components	CAS #	Percent
COPPER CHROMITE BLACK SPINEL	68186-91-4*	100

Composition comments This product is the result of high temperature calcination of the component substances. Due to its unique crystalline structure the properties of this finished pigment do not necessarily reflect the properties of the component metals or oxides.

4. First Aid Measures

First aid procedures

Eye contact	Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.
Skin contact	Wash the skin immediately with soap and water. Get medical attention if irritation develops or persists.
Inhalation	Remove to fresh air. If the affected person is not breathing, apply artificial respiration. If breathing is difficult, give oxygen. Call a physician if symptoms develop or persist.
Ingestion	Never give anything by mouth to an unconscious person. If swallowed, do NOT induce vomiting. Give several glasses of water to dilute contents of stomach and call a physician.
General advice	If you feel unwell, seek medical advice (show the label where possible). Show this safety data sheet to the doctor in attendance. Where there is a potential for eye exposure to this substance, an eye wash fountain should be provided within the immediate work area for emergency use.

5. Fire Fighting Measures

Flammable properties	The product is not flammable.
Extinguishing media	
Suitable extinguishing media	Use extinguishing agent suitable for type of surrounding fire.
Unsuitable extinguishing media	Not applicable.
Protection of firefighters	
Specific hazards arising from the chemical	None known.
Protective equipment and precautions for firefighters	Use protective equipment appropriate for surrounding materials.
Fire fighting equipment/instructions	Not a fire hazard.
Specific methods	Not established.
General fire hazards	This product is not flammable.

6. Accidental Release Measures

Personal precautions	Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of dust from the spilled material.
Environmental precautions	Do not discharge into drains, water courses or onto the ground.
Methods for containment	Collect material into appropriate containers for reuse or disposal. Material may also be flushed with water to a wastewater treatment system.
Methods for cleaning up	Avoid dust formation. Clean up promptly by scoop or vacuum. Flush the area with water.
Other information	Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling	Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. Keep formation of airborne dusts to a minimum. When using, do not eat, drink or smoke. Wash hands thoroughly after handling.
Storage	Room temperature - normal conditions. Use care in handling/storage. Store in closed original container in a dry place. Keep in properly labelled containers.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	Type	Value	% Metal	Form
CHROMIUM (III) AND COMPOUNDS	TLV	0.5 mg/m3	40 - 50%	(as Cr)
COPPER DUSTS AND MISTS	TLV	1 mg/m3	25 - 33%	(as Cu)

U.S. - OSHA

Components	Type	Value	% Metal	Form
CHROMIUM (III) AND COMPOUNDS	PEL	0.5 mg/m3	40 - 50%	(as Cr)

Components	Type	Value	% Metal	Form
COPPER DUSTS AND MISTS	PEL	1 mg/m3	25 - 33%	(as Cu)

Engineering controls Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Personal protective equipment

Eye / face protection Safety glasses with side-shields.

Skin protection Normal work clothing (long sleeved shirts and long pants) is recommended.

Respiratory protection Use a particulate filter respirator for particulate concentrations exceeding the Occupational Exposure Limit. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use. If airborne concentrations are above the applicable exposure limits, use NIOSH approved respiratory protection. MSHA/NIOSH respirators approved for dusts TC-21C or NIOSH approved cartridges for Non-oil aerosols, N95, N99, N100 (42 CFR 84). If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

General hygiene considerations Use personal protective equipment as required. Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance Powder.

Physical state Solid.

Form Powder.

Color black

Odor None.

Odor threshold Not applicable.

pH 7.3 Shepherd Color Test Method 101

Vapor pressure Not applicable.

Vapor density Not applicable.

Boiling point Not applicable.

Melting point/Freezing point Not applicable.

Solubility (water) Negligible

Specific gravity 5.4 Shepherd Color Test Method 312

Relative density Not available.

Flash point Not applicable.

Flammability limits in air, upper, % by volume Not applicable.

Flammability limits in air, lower, % by volume Not applicable.

Auto-ignition temperature Not applicable.

Evaporation rate Not applicable.

Other data

Decomposition temperature Not applicable.

Flammability (solid, gas) Not applicable.

Loose Packing Density 5.4 lb/gal Shepherd Color Test Method 194

10. Chemical Stability & Reactivity Information

Chemical stability Stable under normal temperature conditions and recommended use.

Conditions to avoid None known.

Incompatible materials None known.

Hazardous decomposition products No hazardous decomposition products are known.

Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Product	Species	Test Results
BLACK 1G		
Acute		
Inhalation		
LD50	Rat	> 11.1 mg/lShepherd Color Test Data
Oral		
LD50	Rat	> 10000 mg/kgShepherd Color Test Data

Components	Species	Test Results
COPPER CHROMITE BLACK SPINEL (CAS 68186-91-4*)		
Acute		
Inhalation		
LD50	Rat	> 11.1 mg/lShepherd Color Test Data
Oral		
LD50	Rat	> 10000 mg/kgShepherd Color Test Data

Sensitization	No data available.
Acute effects	May be slightly irritating to skin and eyes. May cause respiratory irritation.
Component analysis - LD50	Refer to LD 50 information above.
Local effects	Product dust may be irritating to eyes, skin and respiratory system.
Chronic effects	No data available.
Subchronic effects	No data available.
Skin corrosion/irritation	Contact with skin may cause irritation.
Epidemiology	No epidemiological data is available for this product.
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Reproductive effects	No data available.
Teratogenicity	No data available.
Symptoms and target organs	Product dust may be irritating to eyes, skin and respiratory system.
Human experience	Product dust may be irritating to eyes, skin and respiratory system.
Further information	This product is the result of high temperature calcination of the component substances. Due to its unique crystalline structure the properties of this finished material do not necessarily reflect the properties of the component metals or oxides. Repeated overexposure to this compound may cause eye, skin and respiratory tract irritation. Some compounds of the metals used in the manufacturing of this material have demonstrated various toxic properties. However, there is no evidence that this material has these toxic characteristics.

12. Ecological Information

Ecotoxicity	Not expected to be harmful to aquatic organisms.
Environmental effects	Not classified as an environmental hazard.
Aquatic toxicity	This material is not expected to be harmful to aquatic life.
Persistence and degradability	The product is not expected to be biodegradable.
Bioaccumulation / Accumulation	The product does not contain any substances expected to be bioaccumulating.
Mobility in environmental media	The product is insoluble in water.

13. Disposal Considerations

Disposal instructions	All wastes must be handled in accordance with local, state and federal regulations.

Waste from residues / unused products	Dispose of in accordance with local regulations.
Contaminated packaging	Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport Information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations

This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
All components are on the U.S. EPA TSCA Inventory List.
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

THIS PRODUCT CONTAINS A CHEMICAL OR CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OR TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372. THIS INFORMATION MUST BE INCLUDED IN ALL MSDS THAT ARE COPIED AND DISTRIBUTED FOR THIS MATERIAL.
100% CHROMIUM COMPOUND.
100% COPPER COMPOUND

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Not listed.

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Not regulated.

DEA Exempt Chemical Mixtures Code Number

Not regulated.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance	No
SARA 311/312 Hazardous chemical	Yes

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

US state regulations

US. Massachusetts RTK - Substance List

Not regulated.

US. Pennsylvania RTK - Hazardous Substances

Not regulated.

US. Rhode Island RTK

Not regulated.

16. Other Information

Further information

HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings

Health: 1
Flammability: 0
Physical hazard: 0

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.

This data sheet contains changes from the previous version in section(s):

Toxicological Information: Toxicological Data
Regulatory Information: United States
GHS: Classification

SAFETY DATA SHEET

According to EC Directive 1907/2006/EC, Article 31

Revision Date: 11/September/2013
Product Code: M570

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product Name: **CARBON BLACK**

Synonyms: Carbon Black, Furnace Black

REACH Registration Number: 01-2119384822-32

This SDS is valid for the following grades: Carbon Black grade series: BLACK PEARLS®, ELFTEX®, MOGUL®, MONARCH®, REGAL®, SPHERON®, STERLING®, VULCAN®, CSX™, CRX™, IRX™, UNITED®, MACHEM®, SHOBLACK®, DL, PROPEL™. Oxidized grades include: BLACK PEARLS® / MOGUL® L, BLACK PEARLS® / MOGUL® E, MOGUL® H, REGAL® 400/400R. The foregoing are trademarks of the Cabot Corporation.
***Excludes: BLACK PEARLS® / MONARCH® 1000, 1300, 1400, 1500; BLACK PEARLS® 1300B1; Monarch® 4750; Black Pearls® 4350/4750; and all oil pellet grades.**

Use of the Substance/Preparation: Additive for plastic and rubber, Pigment, Chemical reagent, Batteries, Refractories, Various

Supplier:

Cabot EMEA* Headquarters
CABOT SWITZERLAND GmbH
Mühlentalstrasse 36
8200 Schaffhausen
Switzerland
Tel.: +41 (0) 52 630 3838
Fax: +41 (0) 52 630 3810

Cabot EMEA* Shared Services
SPECIALTY CHEMICALS COORDINATION CENTER
Interleuvenlaan 15, I
3001 Leuven
Belgium
Tel.: +32 16 392 400
Fax: +32 16 392 444

* Europe, Middle East and Africa

E-Mail Address: SDS@cabotcorp.com

Emergency Telephone Number: See Section 16
CHEMTREC 1-800-424-9300 or +1-703-527-3887

2. HAZARDS IDENTIFICATION

Pictogram: Not applicable

Indication of danger: Not a hazardous substance according to EC-Directive 67/548/EC, its various amendments and adaptations and EC-Regulation 1272/2008 (CLP)

Signal Word: Not applicable

Hazard Statement(s): Not applicable

Precautionary Statement(s): Not applicable

Principle Routes of Exposure: Inhalation, Eye contact, Skin contact

POTENTIAL HEALTH EFFECTS

Eye Contact: May cause mechanical irritation. Irritating, but will not permanently injure eye tissue. Low hazard for usual industrial or commercial handling.

Skin Contact: May cause mechanical irritation, soiling, and skin drying. No cases of sensitization in humans have been reported.

Inhalation: Dust may be irritating to respiratory tract. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. See also Section 8.

Ingestion: Health injuries are not known or expected under normal use. Low hazard for usual industrial or commercial handling.

Carcinogenic Effects: Substance listed by IARC (International Agency for Research on Cancer). See also Section 11.

Target Organ Effects: Lungs, See Section 11

Medical Conditions Aggravated by Exposure: Asthma, Respiratory disorder

Potential Environmental Effects: No special environmental precautions required. Not soluble in water. See also Section 12.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	EINECS/ELINCS Number	Weight %	EU Classification
Carbon Black	1333-86-4	215-609-9	>99	None

4. FIRST AID MEASURES

Skin Contact: Wash thoroughly with soap and water. Seek medical attention if symptoms develop.

Eye Contact: Flush eyes immediately with large amounts of water for 15 minutes. Seek medical attention if symptoms develop.

Inhalation: If cough, shortness of breath or other breathing problems occur, move to fresh air. Seek medical attention if symptoms persist. If necessary, restore normal breathing through standard first aid measures.

Ingestion: Do not induce vomiting. If conscious, give several glasses of water. Never give anything by mouth to an unconscious person.

Notes to Physician: Treat symptomatically.

5. FIRE AND IGNITION INFORMATION

Extinguishing Media: Use foam, carbon dioxide (CO2), nitrogen (N2), dry chemical or water spray. A fog spray is recommended if water is used. DO NOT USE a solid water stream as it may scatter and spread fire.

Special Protective Equipment for Firefighters: Wear suitable protective equipment. In the event of fire, wear self-contained breathing apparatus. Wet carbon black produces very slippery walking surfaces.

Specific Hazards: It may not be obvious that carbon black is burning unless the material is stirred and sparks are apparent. Carbon black that has been on fire should be observed closely for at least 48 hours to ensure no smoldering material is present. Burning produces irritant fumes. The product is insoluble and floats on water. If possible, try to contain floating material. This material creates a fire hazard because it floats on water.

Hazardous Decomposition and/or Combustion Products: Carbon monoxide, Carbon dioxide, Sulphur oxides, Organic products of combustion.

Risk of Dust Explosion: Do not create a dust cloud by using a brush or compressed air.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: CAUTION: Wet carbon black produces slippery walking surfaces. Avoid dust formation. Ensure adequate ventilation. Use personal protective equipment. See also Section 8.

Methods for Cleaning Up: Clean up promptly by vacuum. Use of a vacuum with high efficiency particulate air (HEPA) filtration is recommended. Do not create a dust cloud by using a brush or compressed air. Pick up and transfer to properly labelled containers. See Section 13.

Environmental Precautions: Do not allow material to contaminate ground water system. The product is insoluble and floats on water. If possible, try to contain floating material. Local authorities should be advised if significant spillages cannot be contained.

7. HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. Do not breathe dust. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. Do not create a dust cloud by using a brush or compressed air. Fine dust is capable of penetrating electrical equipment and may cause electrical shorts. Take precautionary measures against static discharge. If hot work (welding, torch cutting, etc.) is required the immediate work area must be cleared of carbon black product and dust.

Storage: Keep in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Do not store together with strong oxidizing agents. Do not store together with volatile chemicals as they may be adsorbed onto product. Keep in properly labeled containers.

Carbon black is not classifiable as a Division 4.2 self-heating substance under the UN test criteria. However, the UN criteria for determining if a substance is self-heating is volume dependent, i.e., the auto-ignition temperature decreases with increasing volume. This classification may not be appropriate for large volume storage containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS
The table below is a summary. Please see the specific legislation for complete information.

Carbon Black, CAS RN 1333-86-4: Argentina: 3.5 mg/m^3, TWA
Australia: 3.0 mg/m^3, TWA inhalable
Belgium: 3.6 mg/m^3, TWA
Brasil: 3.5 mg/m^3, TWA
Canada (Ontario): 3.0 mg/m^3, TWA inhalable
China: 4.0 mg/m^3, TWA; 8.0 mg/m^3, STEL
Colombia: 3.0 mg/m^3, TWA inhalable
Czech Republic: 2.0 mg/m^3, TWA
Finland: 3.5 mg/m^3, TWA; 7.0 mg/m^3, STEL
France - INRS: 3.5 mg/m^3, TWA/VME inhalable
Germany - TRGS 900: 3.0 mg/m^3, TWA respirable; 10.0 mg/m^3, TWA inhalable
Germany - AGW: 1.5 mg/m^3, TWA respirable; 4.0 mg/m^3, TWA inhalable
Hong Kong: 3.5 mg/m^3, TWA
Indonesia: 3.5 mg/m^3, TWA/NABs
Ireland: 3.5 mg/m^3, TWA; 7.0 mg/m^3, STEL
Italy: 3.0 mg/m^3, TWA inhalable
Japan MHLW: 3.0 mg/m^3
Japan SOH: 4.0 mg/m^3, TWA; 1.0 mg/m^3, TWA respirable
Korea: 3.5 mg/m^3, TWA
Malaysia: 3.5 mg/m^3, TWA
Netherlands - MAC: 3.5 mg/m^3, TWA inhalable
Norway: 3.5 mg/m^3, TWA
Spain: 3.5 mg/m^3, TWA (VLA-ED)
Sweden: 3.0 mg/m^3, TWA
United Kingdom - WEL: 3.5 mg/m^3, TWA inhalable; 7.0 mg/m^3, STEL inhalable
US ACGIH - TLV: 3.0 mg/m^3, TWA inhalable
US OSHA - PEL: 3.5 mg/m^3, TWA

NOTE:

(1) Unless otherwise indicated as "respirable" or "inhalable", the exposure limit represents a "total" value. The inhalable exposure limit has been demonstrated to be more restrictive than the total exposure limit, by a factor of approximately 3.
(2) In its facilities globally, Cabot Corporation manages to the US ACGIH TLV of 3.0 mg/m^3 TWA inhalable.
(3) As required under the EU Registration, Evaluation and Authorization of Chemicals (REACH) regulation, the Carbon Black REACH Consortium (of which Cabot Corporation is a member) developed a Derived No Effect Level (DNEL) for carbon black of 2 mg/m^3 inhalable based on human health studies.

AGW: Arbeitsplatzgrenzwert
INRS: Institut National de Recherche et de Securite (National Institute of Research and Security)
MAC: Maximaal Aanvaarde Concentraties (Maximum allowed concentration)
MHLW: Ministry of Health, Labor and Welfare
NABS: Nilai Ambang Batas (threshold limit value)
OEL: Occupational Exposure Limit
PEL: Permissible Exposure Limit
SOH: Society of Occupational Health
STEL: Short Term Exposure Limit
TLV: Threshold Limit Value
TRGS: Technische Regeln für Gefahrstoffe (Technical Rule for Hazardous Materials)
TWA: Time Weighted Average
US ACGIH: United States American Conference of Governmental Industrial Hygienists
US OSHA: United States Occupational Safety and Health Administration
VME: Valeur Moyenne d'Exposition (Average Level of Exposure)
WEL: Workplace Exposure Limit
VLA-ED: Valor límite ambiental de exposicíon diaria (environmental value of daily exposure limit)

ENGINEERING CONTROLS

Ensure adequate ventilation to maintain exposures below occupational limits. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: An approved air-purifying respirator (APR) for particulates may be permissible where airborne concentrations are expected to exceed occupational exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air supplied respirator if there is any potential for uncontrolled release, exposure levels are not known, or any circumstances where air-purifying respirators may not provide adequate protection. Use of respirators must include a complete respiratory protection program in accordance with national standards and current best practices.

The following agencies/organizations approve respirators and/or criteria for respirator programs:

US: NIOSH approval under 42 CFR 84 required.
OSHA (29 CFR 1910.134). ANSI Z88.2-1992 (Respiratory Protection).

EU: CR592 Guidelines for the Selection and Use of Respiratory Protection.

Germany: DIN/EN 143 Respiratory Protective Devices for Dusty Materials.

UK: BS 4275 Recommendations for the Selection, Use and Maintenance of Respiratory Protective Equipment. HSE Guidance Note HS (G)53 Respiratory Protective Equipment.

Hand Protection: Wear protective gloves to prevent soiling of hands. Use protective barrier cream before handling the product. Wash hands and other exposed skin with mild soap and water.

Eye Protection: Wear eye/face protection. Safety glasses with side-shields. Goggles.

Skin and Body Protection: Wear suitable protective clothing. Wash clothing daily. Work clothing should not be allowed out of the workplace.

Other: Handle in accordance with good industrial hygiene and safety practice. Emergency eyewash and safety shower should be located nearby.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Black Powder or Pellets
Odor:	None.
Odor Threshold:	Not applicable
pH:	4 - 11 [50 g/l water, 68ºF (20ºC)] (non-oxidized carbon black) 2 - 4 (oxidized carbon black)
Density:	1.7 - 1.9 g/cm³ @ 20°C
Bulk Density:	200-680 kg/m^3 (Pellets) 20-380 kg/m^3 (Fluffy)
Vapor Density:	Not applicable
Vapor Pressure:	Not applicable
Boiling Point/Range:	Not applicable
Melting Point/Range:	Not applicable

Water Solubility:	Insoluble
% Volatile (by Weight):	< 2.5% (950ºC) (non-oxidized carbon black) 2 - 8% (oxidized carbon black)
Evaporation Rate:	Not applicable
Viscosity:	Not applicable
Partition Coefficient (n-octanol/water):	Not determined
Flash Point:	Not determined
Explosion Limits in Air - Upper (g/m^3): **Explosion Limits in Air - Lower (g/m^3):**	Not determined 50 g/m^3 (dust)
Flammability classification	Not applicable
Autoignition Temperature:	>140°C (transport)
Method:	IMDG-Code
Minimum Ignition Temperature:	> 500°C (BAM Furnace) VDI 2263 > 315°C (Godberg-Greenwald Furnace) VDI 2263
Burn Velocity:	> 45 seconds (not classifiable as "Highly Flammable", or "Easily Ignitable")
Dust Explosion Classification:	ST 1 (VDI 2263)
Maximum Absolute Explosion Pressure:	10 bar at an initial starting pressure of 1 bar. Higher starting initial pressures will yield higher explosion pressures.
Method:	VDI 2263
Maximum Rate of Pressure Rise:	30 - 400 bar/sec
Method:	VDI 2263 and ASTM E1226-88
Ignition Energy:	> 1 kJ
Method:	VDI 2263
Minimum Ignition Energy:	> 10,000 mJ
Method:	VDI 2263
Decomposition Temperature:	Not determined
Oxidizing Properties:	Not applicable

10. STABILITY AND REACTIVITY

Stability:	Stable.
Incompatible Materials:	Strong oxidizers such as chlorates, bromates, and nitrates.
Reactivity:	May react exothermically upon contact with strong oxidizers.
Hazardous Polymerization:	Hazardous polymerization does not occur.
Mechanical Sensitivity (shock):	Not sensitive to mechanical impact.
Conditions to Avoid:	Do not expose to temperatures above 300°C. Keep away from oxidizing agents in order to avoid exothermic reactions.

Hazardous Decomposition and/or Combustion Products: Carbon monoxide. Carbon dioxide. Oxides of sulphur. Organic products of combustion.

Static Discharge Effects: Take precautionary measures against static discharges. Avoid dust formation. All metal parts of the mixing and processing equipment must be earthed/grounded. Ensure all equipment is electrically earthed/grounded before beginning transfer operations.

11.TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Oral LD50: LD50/oral/rat = > 8000 mg/kg.

Inhalation LC50: No data available.

Dermal LD50: No data available.

STOT - Single Exposure: None observed.

Eye Irritation: Rabbit. Draize score 10-17/110 @ 24 hr. Non-irritating.

Skin Irritation: Rabbit. 0.6/8. Slight irritation. @ 24 hr.
Non-irritating. @ 48 hr.

SUBCHRONIC TOXICITY

Rat, inhalation, duration 90 days
NOAEL = 1.0 mg/m^3
Target organ: lungs
Effect: inflammation, hyperplasia, fibrosis.

Rat / Mouse, inhalation, duration 2 years
Target organ: lungs;
Effect: inflammation, fibrosis, tumors
.

STOT - Repeated Exposure: These effects are the result of exposure under overload conditions, and the effect on rats is specific to species. The information discussed below under the item of “additional information relating to hazard to human” is also relevant to prove the non-classification of carbon black concerning “specific target organs systemic toxicity” (STOT, repeated exposure), Group 1 (lung)
.

CHRONIC TOXICITY

Rat, oral, duration: 2 years
Effect: no tumors

Mouse, oral, duration: 2 years
Effect: no tumors

Mouse, dermal, duration: 18 months
Effect: no skin tumors
.
Mouse/Hamster, inhalation, duration 12-24 months.
Effect: no lung tumors
.

Rat, inhalation, duration: 2 years
Target organ: lungs
Effect: inflammation, fibrosis, tumors

Note: Tumors in the rat lung are related to the fine particle overload phenomenon rather than to a specific chemical effect of the dust particles in the lung. These effects in rats have been reported in studies on other inorganic insoluble particles and appear to be species specific. Tumors have not been observed in other species (i.e., mouse and hamster) for other insoluble particles under similar circumstances and study conditions.
.

Mutagenic Effects: In Vitro
Carbon black is not suitable to be tested in bacterial (Ames test) and other in vitro systems because of its insolubility. When tested, however, results for carbon black showed no mutagenic effects. Organic solvent extracts of carbon black can, however, contain traces of polycyclic aromatic hydrocarbons (PAHs). A study to examine the bioavailability of these PAHs showed that PAHs are very tightly bound to carbon black and not bioavailable. (6)

In Vivo
In an experimental investigation, mutational changes in the hprt gene were reported in alveolar epithelial cells in the rat following inhalation exposure to carbon black. This observation is believed to be rat specific and a consequence of “lung overload” which led to chronic inflammation and release of oxygen species. (see Chronic toxicity above). This is considered to be a secondary genotoxic effect and, thus, carbon black itself would not be considered to be mutagenic.

Reproductive Toxicity: Did not show effects in animal experiments.

Sensitization: Contains no known sensitizers.

Respiratory Sensitization: No data.

Synergistic Materials: None reasonably foreseeable.

Carcinogenic Effects: Carcinogenicity Assessment: Tumor development in rats caused by lung overload, no epidemiological evidence for lung tumors in humans

Carbon Black is listed by IARC (International Agency for Research on Cancer)
ACGIH listed carbon black as A3 “confirmed animal carcinogen with unknown relevance to humans”

Does not contain any substances listed by NTP (National Toxicology Program), OSHA (Occupational Safety and Health Administration), or EU (European Union)

Carbon Black IARC Statement: In 2006 IARC re-affirmed its 1995 classification of carbon black as, Group 2B (possibly carcinogenic to humans).

In 1995 International Agency for Research on Cancer (IARC) concluded, "There is inadequate evidence in humans for the carcinogenicity of carbon black." Based on rat inhalation studies, IARC concluded that there is "sufficient evidence in experimental animals for the carcinogenicity of carbon black", resulting in their classifying carbon black as "possibly carcinogenic to humans (Group 2B)".

The U.S. National Institute of Occupational Safety and Health (NIOSH) 1978 criteria document on carbon black recommends that only carbon blacks with polycyclic aromatic hydrocarbon (PAH) levels greater than 0.1% require the measurement of PAHs in air. As some PAHs are possible human carcinogens, NIOSH recommends an exposure limit of 0.1 mg/m^3 for PAHs in air, measured as the cyclohexane-extractable fraction.

Epidemiology: Results of epidemiological studies of carbon black production workers suggest that cumulative exposure to carbon black may result in small decrements in lung function. A recent U.S. respiratory morbidity study suggested a 27 ml decline in FEV1 from a 1 mg/m^3 (inhalable fraction) exposure over a 40-year period. An older European investigation suggested that exposure to 1 mg/m^3 (inhalable fraction) of carbon black over a 40-year working lifetime would result in a 48 ml decline in FEV1. However, the estimates from both studies were only of borderline statistical significance. Normal age-related decline over a similar period of time would be approximately 1200 ml.

The relationship between other respiratory symptoms and exposure to carbon black is even less clear. In the U.S. study, 9% of the highest exposure group (in contrast to 5% of the unexposed group) reported symptoms consistent with chronic bronchitis. In the European study, methodological limitations in the administration of the questionnaire limit the conclusions that can be drawn about reported symptoms. This study, however, indicated a link between carbon black and small opacities on chest films, with negligible effects on lung function.

A study on carbon black production workers in the UK (Sorahan et al 2001) found an increased risk of lung cancer in two of the five plants studied; however, the increase was not related to the dose of carbon black. Thus, the authors did not consider the increased risk in lung cancer to be due to carbon black exposure. A German study of carbon black workers at one plant (Wellmann et al. 2006, Morfeld et al. 2006(a), Buechte et al. 2006, Morfeld et al. 2006(b)) found a similar increase in lung cancer risk but, like the 2001 UK study, found no association with carbon black exposure. In contrast, a large US study (Dell et al. 2006) of 18 plants showed a reduction in lung cancer risk in carbon black production workers. Based upon these studies, the February 2006 Working Group at IARC concluded that the human evidence for carcinogenicity was inadequate (Baan et al. 2006).

Since this IARC evaluation of carbon black, Sorahan and Harrington (2007) re-analyzed the UK study data using an alternative exposure hypothesis and found a positive association with carbon black exposure in two of the five plants. The same exposure hypothesis was applied by Morfeld and McCunney (2007) to the German cohort; in contrast, they found no association between carbon black exposure and lung cancer risk and, thus, no support for the alternative exposure hypothesis used by Sorahan and Harrington. Overall, as a result of these detailed investigations, no causative link between carbon black exposure and cancer risk in humans has been demonstrated. This view is consistent with the IARC evaluation in 2006.

Inhalation: Additional information relating to hazard to human:

The scientific discussion about the carcinogenic effect of inorganic low solubility particles (fine dusts) - such as carbon black - has not been concluded. In the view of many inhalation toxicologists tumour development resulted in experiments on rats through a type specific mechanism in overloading of the rat lung (overload phenomena).2)

Comparable findings have not yet occurred in the exposure of human beings. The IARC however, evaluated this rat study in the monograph 65 as being a sufficient indicator of the carcinogenic properties of carbon black in tests on animals. According to the IARC there are not sufficient indicators of the carcinogenic effect of carbon black on human beings. An overall evaluation of carbon black resulted from the IARC schematic evaluation as: "possibly carcinogenic for human beings" (Group 2B).

Applying the rules of the Globally Harmonized System of Classification and Labeling (GHS, e.g. UN “Purple Book”, EU CLP Regulation) these results do not lead to classification of carbon black as a carcinogen. UN GHS says, that even if adverse effects are seen in animal studies or in-vitro tests, no classification is needed if the mechanism or mode of action is not relevant to humans.3) The European CLP Regulation also mentions, that no classification is indicated if the mechanism is not relevant to humans.4) Furthermore the CLP guidance on classification and labeling states, that “lung overload” in animals is listed under mechanisms not relevant to humans.5)
.

Aspiration Hazard: Not determined.

12. ECOLOGICAL INFORMATION

Aquatic Toxicity:
Fish (Brachydanio rerio): LC50 (96hr) > 1,000 mg/L. (Method: OECD 203).
Daphnia magna: EC50 (24hr) > 5,600 mg/L. (Method: OECD 202).
Algae (Scenedesmus subspicatus): EC50 (72hr) > 10,000 mg/L.
Algae (Scenedesmus subspicatus): NOEC >= 10,000 mg/L.
Activated sludge: EC0 (3hr) >= 800 mg/L. (Method: DEV L3 TTC test).

ENVIRONMENTAL FATE

Mobility: Not expected to migrate Insoluble

Bioaccumulation: Not expected due to physicochemical properties of the substance

Persistence / Degradability: Not expected to degrade

Distribution to Environmental Compartments: Insoluble Expected to remain on soil surface

PBT and vPvB Assessment: This substance does not fulfill the criteria for PBT or vPvB

Other adverse effects: No other data are available

13. DISPOSAL CONSIDERATIONS

Disclaimer: Disclaimer: Information in this section pertains to the product as shipped in its intended composition as described in Section 3 of this MSDS. Contamination or processing may change waste characteristics and requirements. Regulations may also apply to empty containers, liners or rinsate. State/provincial and local regulations may be different from federal regulations.

Product, as supplied, should be disposed of in accordance with the regulations issued by the appropriate federal, state and local authorities. Same consideration should be given to containers and packaging..

14. TRANSPORT INFORMATION

14. TRANSPORT INFORMATION

The following organizations do not classify carbon black as a "hazardous cargo" if it is "carbon, non-activated, mineral origin". Cabot carbon blacks meets this definition.

- Canadian Transport of Dangerous Goods Regulation
- European Transport of Dangerous Goods Regulation
- GGVS, GGVE, RID, ADR, IMDG Code, ICAO-TI
- United Nations (no UN number)
- US Department of Transportation

UN Number: None

UN Proper Shipping Name: Not classified

UN Shipping Class: Not classified

UN Packing Group: Not classified

International Transportation Identification: "Carbon black, non-activated, mineral origin".
Not dangerous according to IMDG-Code.
Not dangerous according to ICAO-TI.

US Rail Regulations: Not classified

Additional Information:
Seven (7) ASTM reference carbon blacks were tested according to the UN method, Self Heating Solids, and found to be "Not a self-heating substance of Division 4.2"; the same carbon blacks were tested according to the UN method, Readily Combustible Solids, and found to be "Not a readily combustible solid of Division 4.1"; under current UN Recommendations on the Transport of Dangerous Goods.

15. REGULATORY INFORMATION

Indication of danger: Not a hazardous substance according to EC-Directive 67/548/EC, its various amendments and adaptations and EC-Regulation 1272/2008 (CLP).

EU Chemical Safety Assessment:
Per Article 14.1 of the REACH Regulation a Chemical Safety Assessment has been carried out.

EU Exposure Scenarios
Per Article 14.4 of the REACH Regulation no exposure scenario has been developed as the substance is not hazardous.

EU Food Contact Information
This product may be acceptable for applications coming in contact with food. However, due to national regulation variations within the European Union, the applicable laws of each member state should be consulted. Please contact your Cabot area sales manager for more specific information.

US Food Contact Information
Carbon black is permitted for indirect contact with food and drugs when used as a filler in rubber articles intended for repeat use under 21 CFR (Code of Federal Regulations) 177.2600.
LIMITATIONS:
- Total carbon black (channel process and furnace process) in the rubber may not exceed 50% by weight of the rubber products. Cabot carbon blacks are furnace process blacks.

- Furnace process black content may not exceed 10% by weight of rubber product intended for use in contact with milk or edible oils.

Pharmaceutical Use
Not permitted.

California Proposition 65:
"carbon black (airborne, unbound particles of respirable size)" is a California Proposition 65 listed substance. Please note that all three listing qualifiers (airborne, unbound (not bound within a matrix), and respirable size (10 micrometers or less in diameter)) must be met for this substance to be considered a Proposition 65 substance. Please contact your sales representative for additional information.

Cosmetic Use:
Cabot Corporation does not support the use of this product in any cosmetic application
.

International Inventories
All components of this product are listed on or exempt from the following inventories:

YES - Australian Inventory of Chemical Substances (AICS)
YES - Canadian Domestic Substances List (DSL)
YES - Chinese Inventory
YES - European Inventory of Existing Commercial Chemical Substances (EINECS)
YES - Japanese Existing and New Chemical Substances (ENCS)
YES - Korean Existing Chemicals List (KECL)
YES - New Zealand Hazardous Substances and New Organisms Act (HSNO)
YES - Philippine Inventory of Chemicals and Chemical Substances (PICCS)
YES - United States Toxic Substances Control Act (TSCA) Inventory

Germany Water Endangering Class (WGK) Class
Chemical Name
Carbon Black nwg (not water endangering): 1742

Switzerland Giftklasse (Poison Class)Toxic Category
Chemical Name
Carbon Black -- (tested and found to be not toxic): G-8938

16. OTHER INFORMATION

Carbon Black Extracts:
Manufactured carbon blacks generally contain less than 0.1% of solvent extractable polycyclic aromatic hydrocarbons (PAH). Solvent extractable PAH content depends on numerous factors including, but not limited to, the manufacturing process, desired product specifications, and the analytical procedure used to measure and identify solvent extractable materials. Questions concerning PAH content of carbon black and analytical procedures should be addressed to your carbon black supplier.

General Information:
The carbon black industry continues to sponsor research designed to identify adverse health effects from long term exposure to carbon black. This MSDS will be updated as new safety and health information may become available.

Local Contacts:

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48100 Ravenna
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76170 Lillebonne
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Fax: 33 2 35 399 701

Cabot B. V.
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3197 KA Botlek Rt.
NETHERLANDS
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Prepared by: Cabot Corporation - Safety, Health and Environmental Affairs
Revision Date: 11/September/2013
Previous Revision Date: 11/July/2011

Disclaimer:
The information set forth is based on information that Cabot Corporation believes to be accurate. No warranty, expressed or implied, is intended. The information is provided solely for your information and consideration and Cabot assumes no legal responsibility for use or reliance thereon. In the event of a discrepancy between the information on the non-English document and its English counterpart, the English version shall supersede.

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SAFETY DATA SHEET

According to EC Directive 1907/2006/EC, Article 31

Revision Date: 11/September/2013
Product Code: M570

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product Name: **CARBON BLACK**

Synonyms: Carbon Black, Furnace Black

REACH Registration Number: 01-2119384822-32

This SDS is valid for the following grades: Carbon Black grade series: BLACK PEARLS®, ELFTEX®, MOGUL®, MONARCH®, REGAL®, SPHERON®, STERLING®, VULCAN®, CSX™, CRX™, IRX™, UNITED®, MACHEM®, SHOBLACK®, DL, PROPEL™. Oxidized grades include: BLACK PEARLS® / MOGUL® L, BLACK PEARLS® / MOGUL® E, MOGUL® H, REGAL® 400/400R. The foregoing are trademarks of the Cabot Corporation.
***Excludes: BLACK PEARLS® / MONARCH® 1000, 1300, 1400, 1500; BLACK PEARLS® 1300B1; Monarch® 4750; Black Pearls® 4350/4750; and all oil pellet grades.**

Use of the Substance/Preparation: Additive for plastic and rubber, Pigment, Chemical reagent, Batteries, Refractories, Various

Supplier:

Cabot EMEA* Headquarters
CABOT SWITZERLAND GmbH
Mühlentalstrasse 36
8200 Schaffhausen
Switzerland
Tel.: +41 (0) 52 630 3838
Fax: +41 (0) 52 630 3810

Cabot EMEA* Shared Services
SPECIALTY CHEMICALS COORDINATION CENTER
Interleuvenlaan 15, I
3001 Leuven
Belgium
Tel.: +32 16 392 400
Fax: +32 16 392 444

* Europe, Middle East and Africa

E-Mail Address: SDS@cabotcorp.com

Emergency Telephone Number: See Section 16
CHEMTREC 1-800-424-9300 or +1-703-527-3887

2. HAZARDS IDENTIFICATION

Pictogram: Not applicable

Indication of danger: Not a hazardous substance according to EC-Directive 67/548/EC, its various amendments and adaptations and EC-Regulation 1272/2008 (CLP)

Signal Word: Not applicable

Hazard Statement(s): Not applicable

Precautionary Statement(s): Not applicable

Principle Routes of Exposure: Inhalation, Eye contact, Skin contact

POTENTIAL HEALTH EFFECTS

Eye Contact: May cause mechanical irritation. Irritating, but will not permanently injure eye tissue. Low hazard for usual industrial or commercial handling.

Skin Contact: May cause mechanical irritation, soiling, and skin drying. No cases of sensitization in humans have been reported.

Inhalation: Dust may be irritating to respiratory tract. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. See also Section 8.

Ingestion: Health injuries are not known or expected under normal use. Low hazard for usual industrial or commercial handling.

Carcinogenic Effects: Substance listed by IARC (International Agency for Research on Cancer). See also Section 11.

Target Organ Effects: Lungs, See Section 11

Medical Conditions Aggravated by Exposure: Asthma, Respiratory disorder

Potential Environmental Effects: No special environmental precautions required. Not soluble in water. See also Section 12.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	EINECS/ELINCS Number	Weight %	EU Classification
Carbon Black	1333-86-4	215-609-9	>99	None

4. FIRST AID MEASURES

Skin Contact: Wash thoroughly with soap and water. Seek medical attention if symptoms develop.

Eye Contact: Flush eyes immediately with large amounts of water for 15 minutes. Seek medical attention if symptoms develop.

Inhalation: If cough, shortness of breath or other breathing problems occur, move to fresh air. Seek medical attention if symptoms persist. If necessary, restore normal breathing through standard first aid measures.

Ingestion: Do not induce vomiting. If conscious, give several glasses of water. Never give anything by mouth to an unconscious person.

Notes to Physician: Treat symptomatically.

5. FIRE AND IGNITION INFORMATION

Extinguishing Media: Use foam, carbon dioxide (CO2), nitrogen (N2), dry chemical or water spray. A fog spray is recommended if water is used. DO NOT USE a solid water stream as it may scatter and spread fire.

Special Protective Equipment for Firefighters: Wear suitable protective equipment. In the event of fire, wear self-contained breathing apparatus. Wet carbon black produces very slippery walking surfaces.

Specific Hazards: It may not be obvious that carbon black is burning unless the material is stirred and sparks are apparent. Carbon black that has been on fire should be observed closely for at least 48 hours to ensure no smoldering material is present. Burning produces irritant fumes. The product is insoluble and floats on water. If possible, try to contain floating material. This material creates a fire hazard because it floats on water.

Hazardous Decomposition and/or Combustion Products: Carbon monoxide, Carbon dioxide, Sulphur oxides, Organic products of combustion.

Risk of Dust Explosion: Do not create a dust cloud by using a brush or compressed air.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: CAUTION: Wet carbon black produces slippery walking surfaces. Avoid dust formation. Ensure adequate ventilation. Use personal protective equipment. See also Section 8.

Methods for Cleaning Up: Clean up promptly by vacuum. Use of a vacuum with high efficiency particulate air (HEPA) filtration is recommended. Do not create a dust cloud by using a brush or compressed air. Pick up and transfer to properly labelled containers. See Section 13.

Environmental Precautions: Do not allow material to contaminate ground water system. The product is insoluble and floats on water. If possible, try to contain floating material. Local authorities should be advised if significant spillages cannot be contained.

7. HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. Do not breathe dust. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. Do not create a dust cloud by using a brush or compressed air. Fine dust is capable of penetrating electrical equipment and may cause electrical shorts. Take precautionary measures against static discharge. If hot work (welding, torch cutting, etc.) is required the immediate work area must be cleared of carbon black product and dust.

Storage: Keep in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Do not store together with strong oxidizing agents. Do not store together with volatile chemicals as they may be adsorbed onto product. Keep in properly labeled containers.

Carbon black is not classifiable as a Division 4.2 self-heating substance under the UN test criteria. However, the UN criteria for determining if a substance is self-heating is volume dependent, i.e., the auto-ignition temperature decreases with increasing volume. This classification may not be appropriate for large volume storage containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS
The table below is a summary. Please see the specific legislation for complete information.

Carbon Black, CAS RN 1333-86-4: Argentina: 3.5 mg/m^3, TWA
Australia: 3.0 mg/m^3, TWA inhalable
Belgium: 3.6 mg/m^3, TWA
Brasil: 3.5 mg/m^3, TWA
Canada (Ontario): 3.0 mg/m^3, TWA inhalable
China: 4.0 mg/m^3, TWA; 8.0 mg/m^3, STEL
Colombia: 3.0 mg/m^3, TWA inhalable
Czech Republic: 2.0 mg/m^3, TWA
Finland: 3.5 mg/m^3, TWA; 7.0 mg/m^3, STEL
France - INRS: 3.5 mg/m^3, TWA/VME inhalable
Germany - TRGS 900: 3.0 mg/m^3, TWA respirable; 10.0 mg/m^3, TWA inhalable
Germany - AGW: 1.5 mg/m^3, TWA respirable; 4.0 mg/m^3, TWA inhalable
Hong Kong: 3.5 mg/m^3, TWA
Indonesia: 3.5 mg/m^3, TWA/NABs
Ireland: 3.5 mg/m^3, TWA; 7.0 mg/m^3, STEL
Italy: 3.0 mg/m^3, TWA inhalable
Japan MHLW: 3.0 mg/m^3
Japan SOH: 4.0 mg/m^3, TWA; 1.0 mg/m^3, TWA respirable
Korea: 3.5 mg/m^3, TWA
Malaysia: 3.5 mg/m^3, TWA
Netherlands - MAC: 3.5 mg/m^3, TWA inhalable
Norway: 3.5 mg/m^3, TWA
Spain: 3.5 mg/m^3, TWA (VLA-ED)
Sweden: 3.0 mg/m^3, TWA
United Kingdom - WEL: 3.5 mg/m^3, TWA inhalable; 7.0 mg/m^3, STEL inhalable
US ACGIH - TLV: 3.0 mg/m^3, TWA inhalable
US OSHA - PEL: 3.5 mg/m^3, TWA

NOTE:

(1) Unless otherwise indicated as "respirable" or "inhalable", the exposure limit represents a "total" value. The inhalable exposure limit has been demonstrated to be more restrictive than the total exposure limit, by a factor of approximately 3.
(2) In its facilities globally, Cabot Corporation manages to the US ACGIH TLV of 3.0 mg/m^3 TWA inhalable.
(3) As required under the EU Registration, Evaluation and Authorization of Chemicals (REACH) regulation, the Carbon Black REACH Consortium (of which Cabot Corporation is a member) developed a Derived No Effect Level (DNEL) for carbon black of 2 mg/m^3 inhalable based on human health studies.

AGW: Arbeitsplatzgrenzwert
INRS: Institut National de Recherche et de Securite (National Institute of Research and Security)
MAC: Maximaal Aanvaarde Concentraties (Maximum allowed concentration)
MHLW: Ministry of Health, Labor and Welfare
NABS: Nilai Ambang Batas (threshold limit value)
OEL: Occupational Exposure Limit
PEL: Permissible Exposure Limit
SOH: Society of Occupational Health
STEL: Short Term Exposure Limit
TLV: Threshold Limit Value
TRGS: Technische Regeln für Gefahrstoffe (Technical Rule for Hazardous Materials)
TWA: Time Weighted Average
US ACGIH: United States American Conference of Governmental Industrial Hygienists
US OSHA: United States Occupational Safety and Health Administration
VME: Valeur Moyenne d'Exposition (Average Level of Exposure)
WEL: Workplace Exposure Limit
VLA-ED: Valor límite ambiental de exposicíon diaria (environmental value of daily exposure limit)

ENGINEERING CONTROLS

Ensure adequate ventilation to maintain exposures below occupational limits. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: An approved air-purifying respirator (APR) for particulates may be permissible where airborne concentrations are expected to exceed occupational exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air supplied respirator if there is any potential for uncontrolled release, exposure levels are not known, or any circumstances where air-purifying respirators may not provide adequate protection. Use of respirators must include a complete respiratory protection program in accordance with national standards and current best practices.

The following agencies/organizations approve respirators and/or criteria for respirator programs:

US: NIOSH approval under 42 CFR 84 required.
OSHA (29 CFR 1910.134). ANSI Z88.2-1992 (Respiratory Protection).

EU: CR592 Guidelines for the Selection and Use of Respiratory Protection.

Germany: DIN/EN 143 Respiratory Protective Devices for Dusty Materials.

UK: BS 4275 Recommendations for the Selection, Use and Maintenance of Respiratory Protective Equipment. HSE Guidance Note HS (G)53 Respiratory Protective Equipment.

Hand Protection: Wear protective gloves to prevent soiling of hands. Use protective barrier cream before handling the product. Wash hands and other exposed skin with mild soap and water.

Eye Protection: Wear eye/face protection. Safety glasses with side-shields. Goggles.

Skin and Body Protection: Wear suitable protective clothing. Wash clothing daily. Work clothing should not be allowed out of the workplace.

Other: Handle in accordance with good industrial hygiene and safety practice. Emergency eyewash and safety shower should be located nearby.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Black Powder or Pellets
Odor:	None.
Odor Threshold:	Not applicable
pH:	4 - 11 [50 g/l water, 68ºF (20ºC)] (non-oxidized carbon black) 2 - 4 (oxidized carbon black)
Density:	1.7 - 1.9 g/cm³ @ 20°C
Bulk Density:	200-680 kg/m^3 (Pellets) 20-380 kg/m^3 (Fluffy)
Vapor Density:	Not applicable
Vapor Pressure:	Not applicable
Boiling Point/Range:	Not applicable
Melting Point/Range:	Not applicable

Water Solubility:	Insoluble
% Volatile (by Weight):	< 2.5% (950ºC) (non-oxidized carbon black) 2 - 8% (oxidized carbon black)
Evaporation Rate:	Not applicable
Viscosity:	Not applicable
Partition Coefficient (n-octanol/water):	Not determined
Flash Point:	Not determined
Explosion Limits in Air - Upper (g/m^3): **Explosion Limits in Air - Lower (g/m^3):**	Not determined 50 g/m^3 (dust)
Flammability classification	Not applicable
Autoignition Temperature:	>140°C (transport)
Method:	IMDG-Code
Minimum Ignition Temperature:	> 500°C (BAM Furnace) VDI 2263 > 315°C (Godberg-Greenwald Furnace) VDI 2263
Burn Velocity:	> 45 seconds (not classifiable as "Highly Flammable", or "Easily Ignitable")
Dust Explosion Classification:	ST 1 (VDI 2263)
Maximum Absolute Explosion Pressure:	10 bar at an initial starting pressure of 1 bar. Higher starting initial pressures will yield higher explosion pressures.
Method:	VDI 2263
Maximum Rate of Pressure Rise: **Method:**	30 - 400 bar/sec VDI 2263 and ASTM E1226-88
Ignition Energy: **Method:**	> 1 kJ VDI 2263
Minimum Ignition Energy: **Method:**	> 10,000 mJ VDI 2263
Decomposition Temperature:	Not determined
Oxidizing Properties:	Not applicable

10. STABILITY AND REACTIVITY

Stability:	Stable.
Incompatible Materials:	Strong oxidizers such as chlorates, bromates, and nitrates.
Reactivity:	May react exothermically upon contact with strong oxidizers.
Hazardous Polymerization:	Hazardous polymerization does not occur.
Mechanical Sensitivity (shock):	Not sensitive to mechanical impact.
Conditions to Avoid:	Do not expose to temperatures above 300°C. Keep away from oxidizing agents in order to avoid exothermic reactions.

Hazardous Decomposition and/or Combustion Products: Carbon monoxide. Carbon dioxide. Oxides of sulphur. Organic products of combustion.

Static Discharge Effects: Take precautionary measures against static discharges. Avoid dust formation. All metal parts of the mixing and processing equipment must be earthed/grounded. Ensure all equipment is electrically earthed/grounded before beginning transfer operations.

11.TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Oral LD50: LD50/oral/rat = > 8000 mg/kg.

Inhalation LC50: No data available.

Dermal LD50: No data available.

STOT - Single Exposure: None observed.

Eye Irritation: Rabbit. Draize score 10-17/110 @ 24 hr. Non-irritating.

Skin Irritation: Rabbit. 0.6/8. Slight irritation. @ 24 hr.
Non-irritating. @ 48 hr.

SUBCHRONIC TOXICITY

Rat, inhalation, duration 90 days
NOAEL = 1.0 mg/m^3
Target organ: lungs
Effect: inflammation, hyperplasia, fibrosis.

Rat / Mouse, inhalation, duration 2 years
Target organ: lungs;
Effect: inflammation, fibrosis, tumors
.

STOT - Repeated Exposure: These effects are the result of exposure under overload conditions, and the effect on rats is specific to species. The information discussed below under the item of “additional information relating to hazard to human” is also relevant to prove the non-classification of carbon black concerning “specific target organs systemic toxicity” (STOT, repeated exposure), Group 1 (lung)
.

CHRONIC TOXICITY

Rat, oral, duration: 2 years
Effect: no tumors

Mouse, oral, duration: 2 years
Effect: no tumors

Mouse, dermal, duration: 18 months
Effect: no skin tumors
.
Mouse/Hamster, inhalation, duration 12-24 months.
Effect: no lung tumors
.

Rat, inhalation, duration: 2 years
Target organ: lungs
Effect: inflammation, fibrosis, tumors

Note: Tumors in the rat lung are related to the fine particle overload phenomenon rather than to a specific chemical effect of the dust particles in the lung. These effects in rats have been reported in studies on other inorganic insoluble particles and appear to be species specific. Tumors have not been observed in other species (i.e., mouse and hamster) for other insoluble particles under similar circumstances and study conditions.
.

Mutagenic Effects: In Vitro
Carbon black is not suitable to be tested in bacterial (Ames test) and other in vitro systems because of its insolubility. When tested, however, results for carbon black showed no mutagenic effects. Organic solvent extracts of carbon black can, however, contain traces of polycyclic aromatic hydrocarbons (PAHs). A study to examine the bioavailability of these PAHs showed that PAHs are very tightly bound to carbon black and not bioavailable. (6)

In Vivo
In an experimental investigation, mutational changes in the hprt gene were reported in alveolar epithelial cells in the rat following inhalation exposure to carbon black. This observation is believed to be rat specific and a consequence of “lung overload” which led to chronic inflammation and release of oxygen species. (see Chronic toxicity above). This is considered to be a secondary genotoxic effect and, thus, carbon black itself would not be considered to be mutagenic.

Reproductive Toxicity: Did not show effects in animal experiments.

Sensitization: Contains no known sensitizers.

Respiratory Sensitization: No data.

Synergistic Materials: None reasonably foreseeable.

Carcinogenic Effects: Carcinogenicity Assessment: Tumor development in rats caused by lung overload, no epidemiological evidence for lung tumors in humans

Carbon Black is listed by IARC (International Agency for Research on Cancer)
ACGIH listed carbon black as A3 “confirmed animal carcinogen with unknown relevance to humans”

Does not contain any substances listed by NTP (National Toxicology Program), OSHA (Occupational Safety and Health Administration), or EU (European Union)

Carbon Black IARC Statement: In 2006 IARC re-affirmed its 1995 classification of carbon black as, Group 2B (possibly carcinogenic to humans).

In 1995 International Agency for Research on Cancer (IARC) concluded, "There is inadequate evidence in humans for the carcinogenicity of carbon black." Based on rat inhalation studies, IARC concluded that there is "sufficient evidence in experimental animals for the carcinogenicity of carbon black", resulting in their classifying carbon black as "possibly carcinogenic to humans (Group 2B)".

The U.S. National Institute of Occupational Safety and Health (NIOSH) 1978 criteria document on carbon black recommends that only carbon blacks with polycyclic aromatic hydrocarbon (PAH) levels greater than 0.1% require the measurement of PAHs in air. As some PAHs are possible human carcinogens, NIOSH recommends an exposure limit of 0.1 mg/m^3 for PAHs in air, measured as the cyclohexane-extractable fraction.

Epidemiology: Results of epidemiological studies of carbon black production workers suggest that cumulative exposure to carbon black may result in small decrements in lung function. A recent U.S. respiratory morbidity study suggested a 27 ml decline in FEV1 from a 1 mg/m^3 (inhalable fraction) exposure over a 40-year period. An older European investigation suggested that exposure to 1 mg/m^3 (inhalable fraction) of carbon black over a 40-year working lifetime would result in a 48 ml decline in FEV1. However, the estimates from both studies were only of borderline statistical significance. Normal age-related decline over a similar period of time would be approximately 1200 ml.

The relationship between other respiratory symptoms and exposure to carbon black is even less clear. In the U.S. study, 9% of the highest exposure group (in contrast to 5% of the unexposed group) reported symptoms consistent with chronic bronchitis. In the European study, methodological limitations in the administration of the questionnaire limit the conclusions that can be drawn about reported symptoms. This study, however, indicated a link between carbon black and small opacities on chest films, with negligible effects on lung function.

A study on carbon black production workers in the UK (Sorahan et al 2001) found an increased risk of lung cancer in two of the five plants studied; however, the increase was not related to the dose of carbon black. Thus, the authors did not consider the increased risk in lung cancer to be due to carbon black exposure. A German study of carbon black workers at one plant (Wellmann et al. 2006, Morfeld et al. 2006(a), Buechte et al. 2006, Morfeld et al. 2006(b)) found a similar increase in lung cancer risk but, like the 2001 UK study, found no association with carbon black exposure. In contrast, a large US study (Dell et al. 2006) of 18 plants showed a reduction in lung cancer risk in carbon black production workers. Based upon these studies, the February 2006 Working Group at IARC concluded that the human evidence for carcinogenicity was inadequate (Baan et al. 2006).

Since this IARC evaluation of carbon black, Sorahan and Harrington (2007) re-analyzed the UK study data using an alternative exposure hypothesis and found a positive association with carbon black exposure in two of the five plants. The same exposure hypothesis was applied by Morfeld and McCunney (2007) to the German cohort; in contrast, they found no association between carbon black exposure and lung cancer risk and, thus, no support for the alternative exposure hypothesis used by Sorahan and Harrington. Overall, as a result of these detailed investigations, no causative link between carbon black exposure and cancer risk in humans has been demonstrated. This view is consistent with the IARC evaluation in 2006.

Inhalation: Additional information relating to hazard to human:

The scientific discussion about the carcinogenic effect of inorganic low solubility particles (fine dusts) - such as carbon black - has not been concluded. In the view of many inhalation toxicologists tumour development resulted in experiments on rats through a type specific mechanism in overloading of the rat lung (overload phenomena).2)

Comparable findings have not yet occurred in the exposure of human beings. The IARC however, evaluated this rat study in the monograph 65 as being a sufficient indicator of the carcinogenic properties of carbon black in tests on animals. According to the IARC there are not sufficient indicators of the carcinogenic effect of carbon black on human beings. An overall evaluation of carbon black resulted from the IARC schematic evaluation as: "possibly carcinogenic for human beings" (Group 2B).

Applying the rules of the Globally Harmonized System of Classification and Labeling (GHS, e.g. UN “Purple Book”, EU CLP Regulation) these results do not lead to classification of carbon black as a carcinogen. UN GHS says, that even if adverse effects are seen in animal studies or in-vitro tests, no classification is needed if the mechanism or mode of action is not relevant to humans.3) The European CLP Regulation also mentions, that no classification is indicated if the mechanism is not relevant to humans.4) Furthermore the CLP guidance on classification and labeling states, that “lung overload” in animals is listed under mechanisms not relevant to humans.5)
.

Aspiration Hazard: Not determined.

12. ECOLOGICAL INFORMATION

Aquatic Toxicity:
Fish (Brachydanio rerio): LC50 (96hr) > 1,000 mg/L. (Method: OECD 203).
Daphnia magna: EC50 (24hr) > 5,600 mg/L. (Method: OECD 202).
Algae (Scenedesmus subspicatus): EC50 (72hr) > 10,000 mg/L.
Algae (Scenedesmus subspicatus): NOEC >= 10,000 mg/L.
Activated sludge: EC0 (3hr) >= 800 mg/L. (Method: DEV L3 TTC test).

ENVIRONMENTAL FATE

Mobility: Not expected to migrate Insoluble

Bioaccumulation: Not expected due to physicochemical properties of the substance

Persistence / Degradability: Not expected to degrade

Distribution to Environmental Compartments: Insoluble Expected to remain on soil surface

PBT and vPvB Assessment: This substance does not fulfill the criteria for PBT or vPvB

Other adverse effects: No other data are available

13. DISPOSAL CONSIDERATIONS

Disclaimer: Disclaimer: Information in this section pertains to the product as shipped in its intended composition as described in Section 3 of this MSDS. Contamination or processing may change waste characteristics and requirements. Regulations may also apply to empty containers, liners or rinsate. State/provincial and local regulations may be different from federal regulations.

Product, as supplied, should be disposed of in accordance with the regulations issued by the appropriate federal, state and local authorities. Same consideration should be given to containers and packaging..

14. TRANSPORT INFORMATION

14. TRANSPORT INFORMATION

The following organizations do not classify carbon black as a "hazardous cargo" if it is "carbon, non-activated, mineral origin". Cabot carbon blacks meets this definition.

- Canadian Transport of Dangerous Goods Regulation
- European Transport of Dangerous Goods Regulation
- GGVS, GGVE, RID, ADR, IMDG Code, ICAO-TI
- United Nations (no UN number)
- US Department of Transportation

UN Number: None

UN Proper Shipping Name: Not classified

UN Shipping Class: Not classified

UN Packing Group: Not classified

International Transportation Identification: "Carbon black, non-activated, mineral origin".
Not dangerous according to IMDG-Code.
Not dangerous according to ICAO-TI.

US Rail Regulations: Not classified

Additional Information:
Seven (7) ASTM reference carbon blacks were tested according to the UN method, Self Heating Solids, and found to be "Not a self-heating substance of Division 4.2"; the same carbon blacks were tested according to the UN method, Readily Combustible Solids, and found to be "Not a readily combustible solid of Division 4.1"; under current UN Recommendations on the Transport of Dangerous Goods.

15. REGULATORY INFORMATION

Indication of danger: Not a hazardous substance according to EC-Directive 67/548/EC, its various amendments and adaptations and EC-Regulation 1272/2008 (CLP).

EU Chemical Safety Assessment:
Per Article 14.1 of the REACH Regulation a Chemical Safety Assessment has been carried out.

EU Exposure Scenarios
Per Article 14.4 of the REACH Regulation no exposure scenario has been developed as the substance is not hazardous.

EU Food Contact Information
This product may be acceptable for applications coming in contact with food. However, due to national regulation variations within the European Union, the applicable laws of each member state should be consulted. Please contact your Cabot area sales manager for more specific information.

US Food Contact Information
Carbon black is permitted for indirect contact with food and drugs when used as a filler in rubber articles intended for repeat use under 21 CFR (Code of Federal Regulations) 177.2600.
LIMITATIONS:
- Total carbon black (channel process and furnace process) in the rubber may not exceed 50% by weight of the rubber products. Cabot carbon blacks are furnace process blacks.

- Furnace process black content may not exceed 10% by weight of rubber product intended for use in contact with milk or edible oils.

Pharmaceutical Use
Not permitted.

California Proposition 65:
"carbon black (airborne, unbound particles of respirable size)" is a California Proposition 65 listed substance. Please note that all three listing qualifiers (airborne, unbound (not bound within a matrix), and respirable size (10 micrometers or less in diameter)) must be met for this substance to be considered a Proposition 65 substance. Please contact your sales representative for additional information.

Cosmetic Use:
Cabot Corporation does not support the use of this product in any cosmetic application
.

International Inventories
All components of this product are listed on or exempt from the following inventories:

YES - Australian Inventory of Chemical Substances (AICS)
YES - Canadian Domestic Substances List (DSL)
YES - Chinese Inventory
YES - European Inventory of Existing Commercial Chemical Substances (EINECS)
YES - Japanese Existing and New Chemical Substances (ENCS)
YES - Korean Existing Chemicals List (KECL)
YES - New Zealand Hazardous Substances and New Organisms Act (HSNO)
YES - Philippine Inventory of Chemicals and Chemical Substances (PICCS)
YES - United States Toxic Substances Control Act (TSCA) Inventory

Germany Water Endangering Class (WGK) Class
Chemical Name
Carbon Black nwg (not water endangering): 1742

Switzerland Giftklasse (Poison Class)Toxic Category
Chemical Name
Carbon Black -- (tested and found to be not toxic): G-8938

16. OTHER INFORMATION

Carbon Black Extracts:
Manufactured carbon blacks generally contain less than 0.1% of solvent extractable polycyclic aromatic hydrocarbons (PAH). Solvent extractable PAH content depends on numerous factors including, but not limited to, the manufacturing process, desired product specifications, and the analytical procedure used to measure and identify solvent extractable materials. Questions concerning PAH content of carbon black and analytical procedures should be addressed to your carbon black supplier.

General Information:
The carbon black industry continues to sponsor research designed to identify adverse health effects from long term exposure to carbon black. This MSDS will be updated as new safety and health information may become available.

Local Contacts:

Cabot Italiana S. P. A.
Via Baiona, 190
48100 Ravenna
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Tel: 39 (0544) 519511
Fax: 39 (0544) 451946/451944

Cabot Carbone
Route Departementale 173
B. P. 24
76170 Lillebonne
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Tel: 33 (2) 35 394 400
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Prepared by: Cabot Corporation - Safety, Health and Environmental Affairs
Revision Date: 11/September/2013
Previous Revision Date: 11/July/2011

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SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006
Version 5.3 Revision Date 13.12.2012
Print Date 17.04.2014

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

Product name : Cyclohexanone

Product Number : W390909
Brand : Aldrich
Index-No. : 606-010-00-7
CAS-No. : 108-94-1

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Ireland Ltd.
Vale Road
ARKLOW
Wicklow
.
IRELAND

Telephone : +353 402-20300
Fax : +353 402-31147
E-mail address : EIRProductStewardship@sial.com

1.4 Emergency telephone number

Emergency Phone # : 0044(0) 1 865407333 The UK National Chemical Emergency Centre (NCEC)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Flammable liquids (Category 3)
Acute toxicity, Oral (Category 4)
Acute toxicity, Inhalation (Category 4)
Acute toxicity, Dermal (Category 4)
Skin irritation (Category 2)
Serious eye damage (Category 1)

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Flammable. Harmful by inhalation, in contact with skin and if swallowed. Irritating to skin. Risk of serious damage to eyes.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008 [CLP]
Pictogram

Signal word Danger

Hazard statement(s)
H226 Flammable liquid and vapour.
H302 + H312 + H332 Harmful if swallowed, in contact with skin or if inhaled
H315 Causes skin irritation.

H318	Causes serious eye damage.

Precautionary statement(s)

P280	Wear protective gloves/ eye protection/ face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

According to European Directive 67/548/EEC as amended.

Hazard symbol(s)

R-phrase(s)

R10	Flammable.
R20/21/22	Harmful by inhalation, in contact with skin and if swallowed.
R38	Irritating to skin.
R41	Risk of serious damage to eyes.

S-phrase(s)

S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.

2.3 Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula : $C_6H_{10}O$

Molecular Weight : 98.14 g/mol

Component	Concentration
Cyclohexanone	
CAS-No. 108-94-1 EC-No. 203-631-1 Index-No. 606-010-00-7	-

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
Prolonged or repeated exposure to skin causes defatting and dermatitis., Cough, Shortness of breath, Headache, Nausea, Vomiting, Central nervous system depression, Incoordination., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

4.3 Indication of any immediate medical attention and special treatment needed
no data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

7.3 Specific end use(s)
no data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Cyclohexanone	108-94-1	OELV - 8 hrs (TWA)	10 ppm 40.8 mg/m3	Ireland. List of Chemical Agents and Occupational Exposure Limit Values - Schedule 1
	Remarks	Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body Indicative Occupational Exposure Limit Value		
		OELV - 15 min (STEL)	20 ppm 81.6 mg/m3	Ireland. List of Chemical Agents and Occupational Exposure Limit Values - Schedule 1
		Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body Indicative Occupational Exposure Limit Value		

		TWA	10 ppm 40.8 mg/m3	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
		Identifies the possibility of significant uptake through the skin Indicative		
		STEL	20 ppm 81.6 mg/m3	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
		Identifies the possibility of significant uptake through the skin Indicative		

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact
Material: butyl-rubber
Minimum layer thickness: 0.3 mm
Break through time: 480 min
Material tested:Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash protection
Material: Nature latex/chloroprene
Minimum layer thickness: 0.6 mm
Break through time: 35 min
Material tested:Lapren® (KCL 706 / Aldrich Z677558, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: clear, liquid Colour: colourless
b)	Odour	no data available
c)	Odour Threshold	no data available
d)	pH	no data available
e)	Melting point/freezing point	Melting point/range: -47 °C - lit.
f)	Initial boiling point and boiling range	155 °C - lit.
g)	Flash point	44 °C - closed cup
h)	Evaporation rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 9.4 %(V) Lower explosion limit: 1.1 %(V)
k)	Vapour pressure	4.5 hPa at 20 °C 13.3 hPa at 38.7 °C
l)	Vapour density	3.39 - (Air = 1.0)
m)	Relative density	0.947 g/cm3 at 25 °C
n)	Water solubility	86 g/l at 20 °C
o)	Partition coefficient: n-octanol/water	log Pow: 0.81
p)	Auto-ignition temperature	420 °C at 1,013 hPa
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information

Surface tension	35.05 mN/m at 20 °C

10. STABILITY AND REACTIVITY

10.1 Reactivity
no data available

10.2 Chemical stability
no data available

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
Heat, flames and sparks.

10.5 Incompatible materials
Oxidizing agents, Plastics

10.6 Hazardous decomposition products

Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - rat - 1,534 mg/kg

LC50 Inhalation - rat - 4 h - > 6.2 mg/l

LD50 Dermal - rabbit - 794 - 3,160 mg/kg

Skin corrosion/irritation

Skin - rabbit - Irritating to skin. - OECD Test Guideline 404

Serious eye damage/eye irritation

Eyes - rabbit - Risk of serious damage to eyes. - 24 h

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

Genotoxicity in vitro - Ames test - S. typhimurium - with or without metabolic activation - negative

Genotoxicity in vitro - Human - fibroblast - with or without metabolic activation - Laboratory experiments have shown mutagenic effects.

Carcinogenicity

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Cyclohexanone)

Reproductive toxicity

Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Specific target organ toxicity - single exposure

no data available

Acute inhalation toxicity - Breathing difficulties

Specific target organ toxicity - repeated exposure

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation	Harmful if inhaled. Causes respiratory tract irritation.
Ingestion	Harmful if swallowed.
Skin	Harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye burns.

Signs and Symptoms of Exposure

Prolonged or repeated exposure to skin causes defatting and dermatitis., Cough, Shortness of breath, Headache, Nausea, Vomiting, Central nervous system depression, Incoordination., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information

RTECS: GW1050000

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to daphnia and other aquatic	EC50 - Daphnia magna (Water flea) - 820 mg/l - 24 h

invertebrates

12.2 Persistence and degradability
Biodegradability Result: 90 - 100 % - Readily biodegradable.

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
no data available

12.6 Other adverse effects
no data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

14.1 UN number
ADR/RID: 1915 IMDG: 1915 IATA: 1915

14.2 UN proper shipping name
ADR/RID: CYCLOHEXANONE
IMDG: CYCLOHEXANONE
IATA: Cyclohexanone

14.3 Transport hazard class(es)
ADR/RID: 3 IMDG: 3 IATA: 3

14.4 Packaging group
ADR/RID: III IMDG: III IATA: III

14.5 Environmental hazards
ADR/RID: no IMDG Marine Pollutant: no IATA: no

14.6 Special precautions for user
no data available

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
no data available

15.2 Chemical Safety Assessment
no data available

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge

and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006
Version 5.0 Revision Date 21.12.2011
Print Date 03.04.2013

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

Product name : DBE dibasic ester

Product Number : 422053
Brand : Aldrich

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Ireland Ltd.
Vale Road
ARKLOW
Wicklow
.
IRELAND

Telephone : +353 402-20300
Fax : +353 402-31147
E-mail address : EIRProductStewardship@sial.com

1.4 Emergency telephone number

Emergency Phone # : 0044(0) 1 8654 07333 The UK National Chemical Emergency Centre (NCEC)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Eye irritation (Category 2)

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Irritating to eyes.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008 [CLP]
Pictogram

Signal word Warning

Hazard statement(s)
H319 Causes serious eye irritation.

Precautionary statement(s)
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements none

According to European Directive 67/548/EEC as amended.
Hazard symbol(s)

R-phrase(s)
R36 Irritating to eyes.

S-phrase(s)
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

2.3 Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Synonyms : Dibasic ester mixture
DBE

Molecular Weight : 146.1 g/mol

Component		Classification	Concentration
Dimethyl succinate			
CAS-No. EC-No.	106-65-0 203-419-9	Eye Irrit. 2; H319 Xi, R36	25 - 50 %

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES

4.1 Description of first aid measures

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration.

In case of skin contact
Wash off with soap and plenty of water.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water.

4.2 Most important symptoms and effects, both acute and delayed
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

4.3 Indication of any immediate medical attention and special treatment needed
no data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information
no data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Avoid breathing vapors, mist or gas.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Normal measures for preventive fire protection.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end uses
no data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls
General industrial hygiene practice.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Body Protection
impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Respiratory protection not required. For nuisance exposures use type OV/AG (US) or type ABEK (EU EN 14387) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid
b)	Odour	no data available
c)	Odour Threshold	no data available
d)	pH	no data available
e)	Melting point/freezing point	no data available

f)	Initial boiling point and boiling range	196 - 225 °C at 1,013 hPa
g)	Flash point	100 °C - closed cup
h)	Evaporation rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 8 %(V) Lower explosion limit: 0.9 %(V)
k)	Vapour pressure	0.3 hPa at 20 °C
l)	Vapour density	no data available
m)	Relative density	1.092 g/cm3
n)	Water solubility	no data available
o)	Partition coefficient: n-octanol/water	no data available
p)	Autoignition temperature	370 °C
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information
no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
no data available

10.2 Chemical stability
no data available

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
no data available

10.5 Incompatible materials
Bases, Oxidizing agents, Reducing agents, acids

10.6 Hazardous decomposition products
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure
no data available

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information
RTECS: Not available

12. ECOLOGICAL INFORMATION

12.1 Toxicity
no data available

12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
no data available

12.6 Other adverse effects
no data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

14.1 UN number
ADR/RID: - IMDG: - IATA: -

14.2 UN proper shipping name

ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: - IMDG: - IATA: -

14.4 Packaging group

ADR/RID: - IMDG: - IATA: -

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

no data available

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

15.2 Chemical Safety Assessment

no data available

16. OTHER INFORMATION

Text of H-code(s) and R-phrase(s) mentioned in Section 3

Eye Irrit.	Eye irritation
H319	Causes serious eye irritation.
Xi	Irritant
R36	Irritating to eyes.

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006
Version 5.0 Revision Date 21.12.2011
Print Date 03.04.2013

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

Product name : Butyl alcohol

Product Number : W217816
Brand : Aldrich
Index-No. : 603-004-00-6
CAS-No. : 71-36-3

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Ireland Ltd.
Vale Road
ARKLOW
Wicklow
.
IRELAND

Telephone : +353 402-20300
Fax : +353 402-31147
E-mail address : EIRProductStewardship@sial.com

1.4 Emergency telephone number

Emergency Phone # : 0044(0) 1865407333 The UK National Chemical Emergency Centre (NCEC)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Flammable liquids (Category 3)
Acute toxicity, Oral (Category 4)
Specific target organ toxicity - single exposure (Category 3)
Skin irritation (Category 2)
Serious eye damage (Category 1)
Specific target organ toxicity - single exposure (Category 3)

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Flammable. Harmful if swallowed. Irritating to respiratory system and skin. Risk of serious damage to eyes. Vapours may cause drowsiness and dizziness.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008 [CLP]
Pictogram

Signal word Danger

Hazard statement(s)
H226 Flammable liquid and vapour.
H302 Harmful if swallowed.
H315 Causes skin irritation.

H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear protective gloves/ eye protection/ face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements: none

According to European Directive 67/548/EEC as amended.

Hazard symbol(s)

R-phrase(s)

R10	Flammable.
R22	Harmful if swallowed.
R37/38	Irritating to respiratory system and skin.
R41	Risk of serious damage to eyes.
R67	Vapours may cause drowsiness and dizziness.

S-phrase(s)

S 7/9	Keep container tightly closed and in a well-ventilated place.
S13	Keep away from food, drink and animal feedingstuffs.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37/39	Wear suitable gloves and eye/face protection.
S46	If swallowed, seek medical advice immediately and show this container or label.

2.3 Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms : 1-Butanol
Butyl alcohol
n-Butanol

Formula : $C_4H_{10}O$

Molecular Weight : 74.12 g/mol

Component	Concentration
n-Butanol	
CAS-No. 71-36-3 EC-No. 200-751-6 Index-No. 603-004-00-6	-

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
drying, cracking of the skin, Skin irritation

4.3 Indication of any immediate medical attention and special treatment needed
no data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

7.3 Specific end uses
no data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
n-Butanol	71-36-3	OELV - 15 min (STEL)	25 ppm 75 mg/m3	Ireland. List of Chemical Agents and Occupational Exposure Limit Values - Schedule 1
	Remarks	Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body		

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Body Protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid, clear Colour: colourless
b)	Odour	no data available
c)	Odour Threshold	no data available
d)	pH	no data available
e)	Melting point/freezing point	Melting point/range: -90 °C - lit.
f)	Initial boiling point and boiling range	116 - 118 °C - lit.
g)	Flash point	35 °C - closed cup
h)	Evaporation rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 11.2 %(V) Lower explosion limit: 1.4 %(V)
k)	Vapour pressure	5 hPa at 20 °C

l)	Vapour density	2.56 - (Air = 1.0)
m)	Relative density	0.81 g/cm3 at 25 °C
n)	Water solubility	soluble
o)	Partition coefficient: n-octanol/water	no data available
p)	Autoignition temperature	no data available
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information
no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
no data available

10.2 Chemical stability
no data available

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
Heat, flames and sparks.

10.5 Incompatible materials
Oxidizing agents, Alkali metals, Bases, Strong acids, Halogens

10.6 Hazardous decomposition products
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - rat - 790 mg/kg
Remarks: Liver:Fatty liver degeneration. Kidney, Ureter, Bladder:Other changes. Blood:Other changes.

LC50 Inhalation - rat - 4 h - 8000 ppm

LD50 Dermal - rabbit - 3,400 mg/kg

Skin corrosion/irritation
Skin - rabbit - Skin irritation - 24 h

Serious eye damage/eye irritation
Eyes - rabbit - Eye irritation

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure
May cause respiratory irritation.
May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation. Vapours may cause drowsiness and dizziness.
Ingestion	Harmful if swallowed.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes serious eye irritation.

Signs and Symptoms of Exposure
drying, cracking of the skin, Skin irritation

Additional Information
RTECS: EO1400000

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 1,840 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 1,983 mg/l - 48 h

12.2 Persistence and degradability

12.3 Bioaccumulative potential

Bioaccumulation	Oncorhynchus mykiss (rainbow trout) - 24 h -921 mg/l Bioconcentration factor (BCF): 0.38

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
no data available

12.6 Other adverse effects
no data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

14.1 UN number
ADR/RID: 1120 IMDG: 1120 IATA: 1120

14.2 UN proper shipping name

ADR/RID: BUTANOLS
IMDG: BUTANOLS
IATA: Butanols

14.3 Transport hazard class(es)

ADR/RID: 3 IMDG: 3 IATA: 3

14.4 Packaging group

ADR/RID: III IMDG: III IATA: III

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

no data available

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

15.2 Chemical Safety Assessment

no data available

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name: Eastman EastaPure(TM) PM Acetate

Product No.: EAN 433394. 19589-00, P1958900, P1958901, E1958901, E1958902, P1958905

Synonyms, Trade Names: 19589-00

Additional identification

Chemical name:	2-methoxy-1-methylethyl acetate
CAS-No.:	108-65-6

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Solvent
Uses advised against: None known.

1.3 Details of the supplier of the safety data sheet

Manufacturer / Supplier

Eastman Chemical Company
200 South Wilcox Drive
Kingsport, TN 37660-5280 US
+14232292000

Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

National Supplier

Eastman Chemical B.V.
Fascinatio Boulevard 602-614
2909 Capelle aan den IJssel
The Netherlands
Telephone: (31) 10 2402 111
Fax: (31) 10 2402 100

1.4 Emergency telephone number:

For emergency health, safety, and environmental information: telephone 800-EASTMAN or 423 229-4511 in the United States; or +44 (0)1235 239 670 in Europe.

For emergency transportation information, call +44(0)1235 239 670; or 800 964214 in England; 01800559700 in Eire; or 423-229-4511 in the United States. Identify the call as a transportation emergency.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

The product has been classified according to the legislation in force.

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

R10: Flammable.

EU. GHS Classification. CLP Regulation (EC) No 1272/2008, Annex VI, Table 3.1, List of harmonized classification and labeling of hazardous substances

Physical hazards

Flammable liquids	Category 3	H226: Flammable liquid and vapor.

Hazard summary

Physical hazards: Flammable liquid and vapor.

Health hazards

Inhalation: None known.

Eye contact: None known.

Skin contact: None known.

Ingestion: None known.

Other Health Effects: None known.

Environmental hazards: None known.

2.2 Label elements

Signal words: Warning

Hazard Statement(s): H226: Flammable liquid and vapor.

Precautionary statement

Prevention: P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P233: Keep container tightly closed. P240: Ground/bond container and receiving equipment. P241: Use explosion-proof electrical/ventilating/lighting/equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response: P370+P378: In case of fire; Use water spray, carbon dioxide, dry chemical or alcohol foam for extinction. P303+P361+P353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

Storage: P403+P235: Store in a well-ventilated place. Keep cool.

Disposal: P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards: Peroxide former.

SECTION 3: Composition/information on ingredients

3.1 / 3.2 Substances / Mixtures

General information:

Chemical name	Concentration	Additional identification	Notes
propylene glycol monomethyl ether acetate	100%	108-65-6	#

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
# This substance has workplace exposure limit(s).
PBT: persistent, bioaccumulative and toxic substance.
vPvB: very persistent and very bioaccumulative substance.

Classification

Chemical name	Classification		Notes
propylene glycol monomethyl ether acetate	DSD:	R10	
	CLP:	Flam. Liq. 3, H226	

DSD: Directive 67/548/EEC.
CLP: Regulation No. 1272/2008.:

The full text for all R-phrases is displayed in section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation: Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.

Eye contact: Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. Get medical attention if symptoms persist.

Skin contact: Wash with soap and water. Get medical attention if symptoms occur.

Ingestion: Seek medical advice.

4.2 Most important symptoms and effects, both acute and delayed: No known chronic or acute health risks.

4.3 Indication of any immediate medical attention and special treatment needed

Hazards: None known.

Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards: Flammable liquid and vapor.

5.1 Extinguishing media

Suitable extinguishing media: Water spray. Carbon Dioxide. Dry chemical. Alcohol foam.

Unsuitable extinguishing media: None known.

5.2 Special hazards arising from the substance or mixture: Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations. Forms peroxides of unknown stability.

5.3 Advice for firefighters

Special Fire Fighting Procedures: Water may be ineffective in fighting the fire. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures: Wear appropriate personal protective equipment.

6.2 Environmental precautions: Avoid release to the environment.

6.3 Methods and material for containment and cleaning up: Eliminate sources of ignition. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Large Spillages: Use water spray to dilute spill to a nonflammable mixture. Prevent runoff from entering drains, sewers, or streams. Dike for later disposal.

Notification Procedures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:

7.1 Precautions for safe handling: Minimize exposure to air. After opening, purge container with nitrogen before reclosing. Periodically test for peroxide formation on long-term storage. Do not allow to evaporate to near dryness. Do not distill to near dryness. Addition of water or appropriate reducing materials will lessen peroxide formation.

7.2 Conditions for safe storage, including any incompatibilities: Keep container tightly closed. Store away from heat and light.

7.3 Specific end use(s): Solvent

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

If exposure limits have not been established, maintain airborne levels to an acceptable level.

Chemical name	Type	Exposure Limit values	Source
2-methoxy-1-methylethyl acetate	TWA	50 ppm 275 mg/m3	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU (12 2009)
	STEL	100 ppm 550 mg/m3	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU (12 2009)

8.2 Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information: Eye bath. Washing facilities.

Eye/face protection: It is a good industrial hygiene practice to minimize eye contact.

Skin protection

Hand protection: It is a good industrial hygiene practice to minimize skin contact.

Other: No data available.

Respiratory Protection:	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.
Hygiene measures:	Observe good industrial hygiene practices.
Environmental Controls:	No data available.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	
Physical State:	Liquid
Form:	Liquid
Color:	Colorless
Odor:	Sweet
Odor Threshold:	No data available.
pH:	No data available.
Melting Point	-50 °C
Boiling Point:	150 °C
Flash Point:	46 °C
Evaporation Rate:	0,39
Flammability (solid, gas):	No data available.
Flammability Limit - Upper (%)–:	No data available.
Flammability Limit - Lower (%)–:	No data available.
Vapor pressure:	4,9 mbar (20 °C)
Vapor density (air=1):	4,6
Specific Gravity:	0,969
Solubility(ies)	
Solubility in Water:	Appreciable
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	Pow: 3,6 log Pow: 0,56
Autoignition Temperature:	354 °C (ASTM E659)
Decomposition Temperature:	(HPDTA) No exotherm to boiling (at 150 psig)
Dynamic Viscosity:	1,07 mPa.s (25 °C)
Kinematic viscosity:	1,328 mm2/s (20 °C)
Explosive properties:	No data available.
Oxidizing properties:	No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity: May form peroxides of unknown stability.

10.2 Chemical stability: Stable

10.3 Possibility of hazardous reactions: Forms peroxides of unknown stability.

10.4 Conditions to avoid: Heat, sparks, flames. Contact with air.

10.5 Incompatible materials: Strong oxidizing agents.

10.6 Hazardous decomposition products: Carbon Dioxide. Carbon Monoxide.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation: None known.

Ingestion: None known.

Skin contact: None known.

Eye contact: None known.

11.1 Information on toxicological effects

Acute Toxicity

Oral

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate	Oral LD-50: (Rat): 6.190 mg/kg

Dermal

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate	Dermal LD-50: (Rabbit): > 5.000 mg/kg

Inhalation

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate	LC50 (Rat, 6 h): > 4345 ppm

Repeated dose toxicity

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate: No data available.

Skin corrosion/irritation:

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate: (Rabbit, 4 h): none
(Rabbit, 24 h): none

Serious eye damage/eye irritation:

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate: (Rabbit): very slight

Respiratory or skin sensitization:

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate: Skin Sensitization:, (Guinea Pig) - non-sensitizing

Germ cell mutagenicity

In vitro

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate: No data available.

In vivo

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate: No data available.

Carcinogenicity

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate: No data available.

Reproductive toxicity

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate: No data available.

Specific target organ toxicity - single exposure

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate — No data available.

Specific target organ toxicity - repeated exposure

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate — No data available.

Aspiration hazard

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate — No data available.

Other adverse effects: No data available.

SECTION 12: Ecological information

12.1 Toxicity

Acute toxicity

Fish

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate — LC-50 (Fathead Minnow, 96 h): 161 mg/l

Aquatic invertebrates

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate — LC-50 (daphnid, 48 h): 408 mg/l

Chronic Toxicity

Fish

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate — LC-50 (Oryzias latipes, 14 d): 63,5 mg/l
NOEC (Oryzias latipes, 14 d): 47,5 mg/l

Aquatic invertebrates

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate — NOEC (daphnid, 21 d): >= 100 mg/l
EC-50 (daphnid, 21 d): > 100 mg/l

Toxicity to Aquatic Plants

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate	EC-50 (Selenastrum capricornutum, 96 h): > 1.000 mg/l NOEC (Selenastrum capricornutum, 96 h): >= 1.000 mg/l

12.2 Persistence and degradability

Biodegradation

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate	90 % (28 d, Ready Biodegradability: CO2 Evolution Test) Readily biodegradable

Biological Oxygen Demand:

Product No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate	363 mg/g 1.050 mg/g

Chemical Oxygen Demand:

Product No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate	No data available.

BOD/COD ratio

Product No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate	No data available.

12.3 Bioaccumulative potential

Product: No data available.

Specified substance(s)

propylene glycol monomethyl ether acetate	No data available.

12.4 Mobility in soil: No data available.

Known or predicted distribution to environmental compartments

propylene glycol monomethyl ether acetate	No data available.

12.5 Results of PBT and vPvB assessment: No data available.

propylene glycol monomethyl ether acetate	No data available.

12.6 Other adverse effects: No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

General information: No data available.

Disposal Methods: Dispose of waste and residues in accordance with local authority requirements. Mix with compatible chemical which is less flammable and incinerate. Since emptied containers retain product residue, follow label warnings even after container is emptied. Residual vapors may explode on ignition; do not cut, drill, grind, or weld on or near this container.

European Waste Codes
Comply with requirements of waste disposal legislation and any local authority requirements.

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

ADR/RID

Possible Shipping Description(s):

UN 3272 ESTERS, N.O.S. (propylene glycol monomethyl ether acetate)
3 III

IMDG - International Maritime Dangerous Goods Code

Possible Shipping Description(s):

UN 3272 ESTERS, N.O.S. (propylene glycol monomethyl ether acetate) 3 III

IATA

Possible Shipping Description(s):

UN 3272 Esters, n.o.s. (propylene glycol monomethyl ether acetate) 3 III

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture: Directive 98/24/EC on the protection of workers from the risks related to chemical agents at work.:

Chemical name	CAS-No.	Concentration
propylene glycol monomethyl ether acetate	108-65-6	100%

TSCA (US Toxic Substances Control Act): All components of this product are listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act): All components of this product are listed on the DSL. Any impurities present in this product are exempt from listing.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): All components of this product are listed on AICS or otherwise comply with NICNAS.

MITI (Japanese Handbook of Existing and New Chemical Substances): All components of this product are listed in the Handbook or have been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): All components of this product are listed on the Korean inventory or otherwise comply with the Korean Toxic Substances Control Act.

Philippines Inventory (PICCS) : All components of this product are listed on the Philippine inventory or otherwise comply with PICCS.

Inventory of Existing Chemical Substances in China: All components of this product are listed on the Inventory of Existing Chemical Substances in China (IECSC).

15.2 Chemical safety assessment: None.

SECTION 16: Other information

Revision Information: Not relevant.

Key literature references and sources for data: No data available.

Wording of the R-phrases and H-statements in section 2 and 3:

R10 = Flammable.

Flam. Liq. = Flammable liquids
3 = Category 3
H226= Flammable liquid and vapor.

Training information: No data available.

Issue Date: 24.10.2012
SDS No:

Disclaimer: This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

SAFETY DATA SHEET

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

As of the revision date above, this (M)SDS meets the regulations in the United Kingdom & Ireland.

1.1. PRODUCT IDENTIFIER

Product Name: **SOLVESSO 150 ND**
Product Description: Aromatic Hydrocarbon
Registration Name:
Hydrocarbons, C10, aromatics, <1% naphthalene

Registration Number:
01-2119463583-34-0000; 01-2119463583-34

1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Intended Use: Solvent

Identified Uses:
Manufacture of substance
Distribution of substance
Formulation and (re)packing of substances and mixtures
Use in laboratories - Industrial
Use in laboratories - Professional

See Section 16 for list of REACH Use Descriptors for Identified Uses shown above.

Uses advised against: The above Identified Uses are specific to the customer for whom this Safety Data Sheet is intended and are uses for which the information in this Safety Data Sheet is applicable. Other uses for this product may be supported/registered. This product is not recommended for any industrial, professional or consumer use other than those which are supported/registered.

1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Supplier:
ExxonMobil Chemical Belgium
A division of ExxonMobil Petroleum & Chemical
Polderdijkweg 3B
B-2030 Antwerpen
Belgium
Phone: 32 3 543 31 11

Local Contact:
ExxonMobil Chemical Ltd.
MAILPOINT 88
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1.4. EMERGENCY TELEPHONE NUMBER

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SECTION 2 HAZARDS IDENTIFICATION

2.1. CLASSIFICATION OF SUBSTANCE OR MIXTURE

Classification according to Regulation (EC) No 1272/2008
Specific target organ toxicant (central nervous system): Category 3. Aspiration toxicant: Category 1.
Chronic aquatic toxicant: Category 2.
H304: May be fatal if swallowed and enters airways. H336: May cause drowsiness or dizziness.
H411: Toxic to aquatic life with long lasting effects.

Classification according to EU Directive 67/548/EEC / 1999/45 EC
| Xn; R65 | R66 | R67 | N; R51/53 |
Harmful. Dangerous for the environment.
R65; Harmful: may cause lung damage if swallowed. R66; Repeated exposure may cause skin dryness or cracking.
R67; Vapours may cause drowsiness and dizziness. R51/53; Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

The classification of this product is based all or in part on test data.

2.2. LABEL ELEMENTS

Label elements according to Regulation (EC) No 1272/2008

Pictograms:

Signal Word: Danger

Hazard Statements:

H304: May be fatal if swallowed and enters airways. H336: May cause drowsiness or dizziness.
H411: Toxic to aquatic life with long lasting effects.
EUH066: Repeated exposure may cause skin dryness or cracking.

Precautionary Statements:

P210: Keep away from flames and hot surfaces. -- No smoking. P261: Avoid breathing mist / vapours. P271: Use only outdoors or in a well-ventilated area. P273: Avoid release to the environment. P280: Wear protective gloves and eye / face protection.
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P331: Do NOT induce vomiting. P370 + P378: In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) for extinction. P391: Collect spillage.
P403 + P233: Store in a well-ventilated place. Keep container tightly closed. P403 + P235: Store in a well-ventilated place. Keep cool. P405: Store locked up.
P501: Dispose of contents and container in accordance with local regulations.

Contains: Hydrocarbons, C10, aromatics, <1% naphthalene

2.3. OTHER HAZARDS

Physical / Chemical Hazards:

Material can accumulate static charges which may cause an ignition. Material can release vapours that readily form flammable mixtures. Vapour accumulation could flash and/or explode if ignited. Combustible.

Health Hazards:

May be irritating to the eyes, nose, throat, and lungs. Repeated exposure may cause skin dryness or cracking. May cause central nervous system depression.

Environmental Hazards:

No additional hazards. Material does not meet the criteria for PBT or vPvB in accordance with REACH Annex XIII.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

3.1. SUBSTANCES

This material is defined as a substance.

Reportable hazardous substance(s) complying with the classification criteria and/or with an exposure limit (OEL)

Name	CAS#	EC#	Registration#	Concentration*	GHS/CLP classification
Hydrocarbons, C10, aromatics, <1% naphthalene		918-811-1	01-2119463583-34	100 %	Asp. Tox. 1 H304, EUH066, STOT SE 3 H336, [Flam. Liq. 4 H227], [Aquatic Acute 2 H401], Aquatic Chronic 2 H411

Note - any classification in brackets is a GHS building block that was not adopted by the EU in the CLP regulation (No 1272/2008) and therefore is not applicable in the EU or in non-EU countries which have implemented the CLP regulation and is shown for informational purposes only.

Name	CAS#	EC#	Registration#	Concentration*	DSD Symbols/Risk Phrases

Hydrocarbons, C10, aromatics, <1% naphthalene		918-811-1	01-2119463583-34	100 %	Xn;R65, R66, R67, N;R51/53

Reportable hazardous constituent(s) contained in UVCB- and/or multi-constituent substance(s) complying with the classification criteria and/or with an exposure limit (OEL)

Name	CAS#	EC#	Concentration*	GHS/CLP Classification
NAPHTHALENE	91-20-3	202-049-5	< 1%	Acute Tox. 4 H302, Carc. 2 H351, Aquatic Acute 1 H400 (M factor 1), Aquatic Chronic 1 H410 (M factor 1)

Note - any classification in brackets is a GHS building block that was not adopted by the EU in the CLP regulation (No 1272/2008) and therefore is not applicable in the EU or in non-EU countries which have implemented the CLP regulation and is shown for informational purposes only.

Name	CAS#	EC#	Concentration*	DSD Symbols/Risk Phrases
NAPHTHALENE	91-20-3	202-049-5	< 1%	Xn;R22, Xn;Carc. Cat. 3;R40, N;R50/53

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. Concentration values may vary.

Note: Any entry in the EC# column that begins with the number "9" is a Provisional List Number provided by ECHA pending publication of the official EC Inventory Number for the substance. See Section 15 for additional CAS number information for the substance.

Note: See (M)SDS Section 16 for full text of the R-Phrases. See (M)SDS Section 16 for full text of hazard statements.

3.2. MIXTURES Not Applicable. This product is regulated as a substance.

SECTION 4 FIRST AID MEASURES

4.1. DESCRIPTION OF FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

Seek immediate medical attention. Do not induce vomiting.

4.2. MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Headache, dizziness, drowsiness, nausea and other CNS effects.

4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

SECTION 5 FIRE FIGHTING MEASURES

5.1. EXTINGUISHING MEDIA

Suitable Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Unsuitable Extinguishing Media: Straight streams of water

5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Hazardous Combustion Products: Smoke, Fume, Incomplete combustion products, Oxides of carbon

5.3. ADVICE FOR FIRE FIGHTERS

Fire Fighting Instructions: Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Vapour is flammable and heavier than air. Vapour may travel across the ground and reach remote ignition sources, causing a flashback fire danger. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

FLAMMABILITY PROPERTIES

Flash Point [Method]: >61℃ (142℉) [ASTM D-93]
Upper/Lower Flammable Limits (Approximate volume % in air): UEL: 7.0 LEL: 0.6 [Extrapolated]
Autoignition Temperature: >400℃ (752℉) [Extrapolated]

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required, due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: half-face or full-face respirator with filter(s) for organic vapor and, when applicable, H2S, or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to aromatic hydrocarbons are recommended. Note: gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

6.2. ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas. For Large Spills: Cover spill with plastic sheet or tarpaulin to minimise spreading.

6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Land Spill: Stop leak if you can do so without risk. Do not touch or walk through spilled material. Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

6.4. REFERENCES TO OTHER SECTIONS

See Sections 8 and 13.

SECTION 7 HANDLING AND STORAGE

7.1. PRECAUTIONS FOR SAFE HANDLING

Potentially toxic/irritating fumes/vapour may be evolved from heated or agitated material. Use only with adequate ventilation. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Loading/Unloading Temperature: [Ambient]

Transport Temperature: [Ambient]
Transport Pressure: [Ambient]

Static Accumulator: This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a

semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

The container choice, for example storage vessel, may effect static accumulation and dissipation. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Storage containers should be earthed and bonded. Fixed storage containers, transfer containers and associated equipment should be earthed and bonded to prevent accumulation of static charge.

Storage Temperature: [Ambient]
Storage Pressure: [Ambient]

Suitable Containers/Packing: Tank Trucks; Railcars; Barges; Drums
Suitable Materials and Coatings (Chemical Compatibility): Carbon Steel; Stainless Steel; Polyester; Teflon; Polyvinyl Alcohol(PVA)
Unsuitable Materials and Coatings: Butyl Rubber; Natural Rubber; Ethylene-proplyene-diene monomer (EPDM); Polystyrene; Polyethylene; Polypropylene; Polyacrylonitrile

7.3. SPECIFIC END USES: Section 1 informs about identified end-uses. No industrial or sector specific guidance available.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. CONTROL PARAMETERS

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit/Standard			Note	Source
Hydrocarbons, C10, aromatics, <1% naphthalene	Vapour.	RCP - TWA	17 ppm	100 mg/m3	Total Hydrocarbons	ExxonMobil
NAPHTHALENE		STEL	15 ppm		Skin	ACGIH
NAPHTHALENE		TWA	10 ppm		Skin	ACGIH

Note: Information about recommended monitoring procedures can be obtained from the relevant agency(ies)/institute(s):

UK Health and Safety Executive (HSE)

Biological limits:

Substance	Specimen	Sampling Time	Limit	Determinant	Source
NAPHTHALENE	Creatinine in urine	End of shift	4 µmol/mol	1-Hydroxypyrene	UK BMGV

DERIVED NO EFFECT LEVEL (DNEL)/DERIVED MINIMAL EFFECT LEVEL (DMEL)

Worker

Substance Name	Dermal	Inhalation
Hydrocarbons, C10, aromatics, <1% naphthalene	12.5 mg/kg bw/day DNEL, Chronic Exposure, Systemic Effects	150 mg/m3 DNEL, Chronic Exposure, Systemic Effects

Consumer

Substance Name	Dermal	Inhalation	Oral
Hydrocarbons, C10, aromatics, <1% naphthalene	7.5 mg/kg bw/day DNEL, Chronic Exposure, Systemic Effects	32 mg/m3 DNEL, Chronic Exposure, Systemic Effects	7.5 mg/kg bw/day DNEL, Chronic Exposure, Systemic Effects

Note: The Derived No Effect Level (DNEL) is an estimated safe level of exposure that is derived from toxicity data in accord with specific guidance within the European REACH regulation. The DNEL may differ from an Occupational Exposure Limit (OEL) for the same chemical. OELs may be recommended by an individual company, a governmental regulatory body or an expert organization, such as the Scientific Committee for Occupational Exposure Limits (SCOEL) or the American Conference of Governmental Industrial Hygienists (ACGIH). OELs are considered to be safe exposure levels for a typical worker in an occupational setting for an 8-hour work shift, 40 hour work week, as a time weighted average (TWA) or a 15 minute short-term exposure limit (STEL). While also considered to be protective of health, OELs are derived by a process different from that of REACH.

PREDICTED NO EFFECT CONCENTRATION (PNEC)

Substance Name	Aqua (fresh water)	Aqua (marine water)	Aqua (intermittent release)	Sewage treatment plant	Sediment	Soil	Oral (secondary poisoning)
Hydrocarbons, C10, aromatics, <1% naphthalene	NA	NA	NA	NA	NA	NA	NA

For hydrocarbon UVCBs, no single PNEC value is identified for the overall substance or used in risk assessment calculations. Therefore, no PNEC values are disclosed in the above table. For further information, please contact ExxonMobil.

8.2. EXPOSURE CONTROLS

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Adequate ventilation should be provided so that exposure limits are not exceeded. Use explosion-proof ventilation equipment.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications,

handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Half-face filter respirator Type A filter material, European Committee for Standardization (CEN) standards EN 136, 140 and 405 provide respirator masks and EN 149 and 143 provide filter recommendations.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

If prolonged or repeated contact is likely, chemical-resistant gloves are recommended. If contact with forearms is likely, wear gauntlet-style gloves. Nitrile, CEN standards EN 420 and EN 374 provide general requirements and lists of glove types.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

If prolonged or repeated contact is likely, chemical, and oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

For Summary of Risk Management Measures across all identified uses, see Annex.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only

and may not fully represent product specifications. Contact the Supplier for additional information.

9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Form: Clear
Colour: Colourless
Odour: Pungent
Odour Threshold: No data available
pH: No data available
Melting Point: No data available
Freezing Point: No data available
Initial Boiling Point / and Boiling Range: 160℃ (320℉) - 220℃ (428℉) [ASTM D86]
Flash Point [Method]: >61℃ (142℉) [ASTM D-93]
Evaporation Rate (n-butyl acetate = 1): 0.07 [In-house method]
Flammability (Solid, Gas): Not technically feasible
Upper/Lower Flammable Limits (Approximate volume % in air): UEL: 7.0 LEL: 0.6 [Extrapolated]
Vapour Pressure: [N/D at 20 ℃] | 1 kPa (7.5 mm Hg) at 25℃ [Calculated]
Vapour Density (Air = 1): > 1 at 101 kPa [In-house method]
Relative Density (at 15 ℃): 0.801 - 0.951 [With respect to water] [Calculated]
Solubility(ies): water Negligible
Partition coefficient (n-Octanol/Water Partition Coefficient): No data available
Autoignition Temperature: >400℃ (752℉) [Extrapolated]
Decomposition Temperature: No data available
Viscosity: [N/D at 40 ℃] | 0.8 cSt (0.8 mm2/sec) at 20℃ - 2 cSt (2 mm2/sec) at 20℃ [ASTM D7042]
Explosive Properties: None
Oxidizing Properties: None

9.2. OTHER INFORMATION

Density (at 15 ºC): 800 kg/m3 (6.68 lbs/gal, 0.8 kg/dm3) - 950 kg/m3 (7.93 lbs/gal, 0.95 kg/dm3) [ISO 12185]
Pour Point: < -10℃ (14℉) [ASTM D5950]
Molecular Weight: 132 G/MOLE [Calculated]
Hygroscopic: No
Coefficient of Thermal Expansion: 0.00089 V/V/DEG C [Calculated] [In-house method]

SECTION 10 STABILITY AND REACTIVITY

10.1. REACTIVITY: See sub-sections below.

10.2. CHEMICAL STABILITY: Material is stable under normal conditions.

10.3. POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

10.4. CONDITIONS TO AVOID: Open flames and high energy ignition sources.

10.5. INCOMPATIBLE MATERIALS: Strong oxidisers

10.6. HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

SECTION 11 TOXICOLOGICAL INFORMATION

11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: (Rat) LC50 > 4688 mg/m3 (Max attainable vapor conc.) Test scores or other study results do not meet criteria for classification.	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 403
Irritation: No end point data for material.	Elevated temperatures or mechanical action may form vapours, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.
Ingestion	
Acute Toxicity (Rat): LD50 > 5000 mg/kg Test scores or other study results do not meet criteria for classification.	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 401
Skin	
Acute Toxicity (Rabbit): LD50 > 2000 mg/kg Test scores or other study results do not meet criteria for classification.	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 402
Skin Corrosion/Irritation: Data available. Test scores or other study results do not meet criteria for classification.	May dry the skin leading to discomfort and dermatitis. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 404
Eye	
Serious Eye Damage/Irritation: Data available. Test scores or other study results do not meet criteria for classification.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 405
Sensitisation	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: Data available. Test scores or other study results do not meet criteria for classification.	Not expected to be a skin sensitizer. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 406
Aspiration: Data available.	May be fatal if swallowed and enters airways. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: Data available. Test scores or other study results do not meet criteria for classification.	Not expected to be a germ cell mutagen. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 479
Carcinogenicity: No end point data for material.	Not expected to cause cancer.
Reproductive Toxicity: Data available. Test scores or other study results do not meet criteria for classification.	Not expected to be a reproductive toxicant. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 414 416
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	May cause drowsiness or dizziness.
Repeated Exposure: Data available. Test scores or other study results do not meet criteria for classification.	Not expected to cause organ damage from prolonged or repeated exposure. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 408 413 452

TOXICITY FOR SUBSTANCES

NAME	ACUTE TOXICITY
NAPHTHALENE	Dermal Lethality: LD50 > 2500 mg/kg (Rat); Inhalation Lethality: 4 hour(s) LC50 > 0.4 mg/l (Max attainable vapor conc.) (Rat); Oral Lethality: LD 50 622 mg/kg (Mouse)

OTHER INFORMATION

For the product itself:

Vapour concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anaesthetic and may have other central nervous system effects. Prolonged and/or repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Contains:

NAPHTHALENE: Exposure to high concentrations of naphthalene may cause destruction of red blood cells, anemia, and cataracts. Naphthalene caused cancer in laboratory animal studies, but the relevance of these findings to humans is uncertain.

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

12.1. TOXICITY

Material -- Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

12.2. PERSISTENCE AND DEGRADABILITY

Biodegradation:

Material -- Expected to be inherently biodegradable

Hydrolysis:

Material -- Transformation due to hydrolysis not expected to be significant.

Photolysis:

Material -- Transformation due to photolysis not expected to be significant.

Atmospheric Oxidation:

Material -- Expected to degrade rapidly in air

12.3. BIOACCUMULATIVE POTENTIAL Not determined.

12.4. MOBILITY IN SOIL

Material -- Expected to partition to sediment and wastewater solids. Moderately volatile.

12.5. PERSISTENCE, BIOACCUMULATION AND TOXICITY FOR SUBSTANCE(S)

This product is not, or does not contain, a substance that is a PBT or a vPvB.

12.6. OTHER ADVERSE EFFECTS

No adverse effects are expected.

OTHER ECOLOGICAL INFORMATION

VOC: Yes

ECOLOGICAL DATA

Ecotoxicity

Test	Duration	Organism Type	Test Results
Aquatic - Acute Toxicity	48 hour(s)	Daphnia magna	EL50 >=3-<=10 mg/l: data for similar materials
Aquatic - Acute Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	NOELR 2.5 mg/l: data for similar materials
Aquatic - Acute Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	EL50 11 mg/l: data for similar materials
Aquatic - Acute Toxicity	96 hour(s)	Oncorhynchus mykiss	LL50 >=2-<=5 mg/l: data for similar materials

Persistence, Degradability and Bioaccumulation Potential

Media	Test Type	Duration	Test Results: Basis
Water	Ready Biodegradability	28 day(s)	Percent Degraded 49.56

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

13.1. WASTE TREATMENT METHODS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

European Waste Code: 08 XX XX

NOTE: These codes are assigned based upon the most common uses for this material and may not reflect contaminants resulting from actual use. Waste producers need to assess the actual process used when generating the waste and its contaminants in order to assign the proper waste disposal code(s).

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (ADR/RID)

14.1. UN Number: 3082
14.2. UN Proper Shipping Name (Technical Name): ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Alkyl (C3-C5) benzenes)
14.3. Transport Hazard Class(es): 9
14.4. Packing Group: III
14.5. Environmental Hazards: Yes
14.6. Special Precautions for users:
Classification Code: M6
Label(s) / Mark(s): 9, EHS
Hazard ID Number: 90
Hazchem EAC: 3Z

INLAND WATERWAYS (ADNR/ADN)

14.1. UN (or ID) Number: 3082
14.2. UN Proper Shipping Name (Technical Name): ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Alkyl (C3-C5) benzenes)
14.3. Transport Hazard Class(es): 9
14.4. Packing Group: III
14.5. Environmental Hazards: Yes
14.6. Special Precautions for users:
Hazard ID Number: 90
Label(s) / Mark(s): 9 (N2, F), EHS

SEA (IMDG)

14.1. UN Number: 3082
14.2. UN Proper Shipping Name (Technical Name): ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (naphthalene)
14.3. Transport Hazard Class(es): 9
14.4. Packing Group: III
14.5. Environmental Hazards: Marine Pollutant
14.6. Special Precautions for users:
Label(s): 9
EMS Number: F-A, S-F
Transport Document Name: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (naphthalene), 9, PG III, (61℃ c.c.), MARIN E POLLUTANT

SEA (MARPOL 73/78 Convention - Annex II):

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Substance Name: SOLVESSO 150 ND contains Alkyl (C3-C11) benzenes
Ship type required: 2
Pollution category: X

AIR (IATA)

14.1. UN Number: 3082
14.2. UN Proper Shipping Name (Technical Name): ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Alkyl (C3-C5) benzenes)

14.3. Transport Hazard Class(es): 9
14.4. Packing Group: III
14.5. Environmental Hazards: Yes
14.6. Special Precautions for users:
Label(s) / Mark(s): 9, EHS
Transport Document Name: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Alkyl (C3-C5) benzenes), 9, PG III

SECTION 15 REGULATORY INFORMATION

REGULATORY STATUS AND APPLICABLE LAWS AND REGULATIONS

Complies with the following national/regional chemical inventory requirements: AICS, DSL, ENCS, IECSC, KECI, PICCS, TSCA

The following substance(s) in this product is (are) identified by CAS number either in countries not subject to the REACH regulation or in regulations not yet updated with the new naming convention for hydrocarbon solvents.

Name	CAS
Hydrocarbons, C10, aromatics, <1% naphthalene	64742-94-5

15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

Applicable EU Directives and Regulations:

1907/2006 [... on the Registration, Evaluation, Authorisation and Restriction of Chemicals ... and amendments thereto]

2004/42/CE [on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC.]

96/82/EC as extended by 2003/105/EC [... on the control of major-accident hazards involving dangerous substances]. Product contains a substance that falls within the criteria defined in Annex I. Refer to Directive for details of requirements taking into account the volume of product stored on site.

98/24/EC [... on the protection of workers from the risk related to chemical agents at work ...]. Refer to Directive for details of requirements.

1272/2008 [on classification, labelling and packaging of substances and mixtures.. and amendments thereto]

Refer to the relevant EU/national regulation for details of any actions or restrictions required by the above Regulation(s)/Directive(s).

15.2. CHEMICAL SAFETY ASSESSMENT

REACH Information: A Chemical Safety Assessment has been carried out for one or more substances present in the material.

SECTION 16 OTHER INFORMATION

IDENTIFIED USES:
Manufacture of substance (PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b, SU10, SU3, SU8, SU9)
Distribution of substance (PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, SU3, SU8, SU9)
Formulation and (re)packing of substances and mixtures (PROC1, PROC14, PROC15, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, SU10, SU3)
Use in laboratories - Industrial (PROC10, PROC15, SU3)
Use in laboratories - Professional (PROC10, PROC15, SU22)

REFERENCES: Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicology studies, CONCAWE Product Dossiers, publications from other trade associations, such as the EU Hydrocarbon Solvents REACH Consortium, U.S. HPV Program Robust Summaries, the EU IUCLID Data Base, U.S. NTP publications, and other sources, as appropriate.

List of abbreviations and acronyms that could be (but not necessarily are) used in this safety data sheet:

Acronym	Full text
N/A	Not applicable
N/D	Not determined
NE	Not established
VOC	Volatile Organic Compound
AICS	Australian Inventory of Chemical Substances
AIHA WEEL	American Industrial Hygiene Association Workplace Environmental Exposure Limits
ASTM	ASTM International, originally known as the American Society for Testing and Materials (ASTM)
DSL	Domestic Substance List (Canada)
EINECS	European Inventory of Existing Commercial Substances
ELINCS	European List of Notified Chemical Substances
ENCS	Existing and new Chemical Substances (Japanese inventory)
IECSC	Inventory of Existing Chemical Substances in China
KECI	Korean Existing Chemicals Inventory
NDSL	Non-Domestic Substances List (Canada)
NZIoC	New Zealand Inventory of Chemicals
PICCS	Philippine Inventory of Chemicals and Chemical Substances
TLV	Threshold Limit Value (American Conference of Governmental Industrial Hygienists)
TSCA	Toxic Substances Control Act (U.S. inventory)
UVCB	Substances of Unknown or Variable composition, Complex reaction products or Biological materials
LC	Lethal Concentration
LD	Lethal Dose
LL	Lethal Loading
EC	Effective Concentration
EL	Effective Loading
NOEC	No Observable Effect Concentration
NOELR	No Observable Effect Loading Rate

KEY TO THE RISK CODES CONTAINED IN SECTION 2 AND 3 OF THIS DOCUMENT (for information only):
R22; Harmful if swallowed.
R40; Limited evidence of a carcinogenic effect.
R50/53; Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R51/53; Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65; Harmful: may cause lung damage if swallowed.
R66; Repeated exposure may cause skin dryness or cracking.
R67; Vapours may cause drowsiness and dizziness.

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
[Flam. Liq. 4 H227]: Combustible liquid; Flammable Liquid, Cat 4
Acute Tox. 4 H302: Harmful if swallowed; Acute Tox Oral, Cat 4
Asp. Tox. 1 H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1
STOT SE 3 H336: May cause drowsiness or dizziness; Target Organ Single, Narcotic
Carc. 2 H351: Suspected of causing cancer; GHS Carcinogenicity, Cat 2
Aquatic Acute 1 H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
[Aquatic Acute 2 H401]: Toxic to aquatic life; Acute Env Tox, Cat 2
Aquatic Chronic 1 H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1
Aquatic Chronic 2 H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2
EUH066: Repeated exposure may cause skin dryness or cracking.

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Revision Changes:
Section 14: Transport Document Name information was modified.
Section 14: IMO Technical Name - All information was modified.

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Internal Use Only
MHC: 1A, 0, 0, 0, 1, 1

DGN: LAB2585HGB (1017301)

ANNEX

Section 1 Exposure Scenario Title
Title:
Manufacture of substance
Use Descriptor

Sector(s) of Use	SU10, SU3, SU8, SU9
Process Categories	PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b
Environmental Release Categories	ERC1, ERC4
Specific Environmental Release Category	ESVOC 1.1.v1

Processes, tasks, activities covered

Manufacture of the substance or use as an intermediate, process chemical or extracting agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (ncluding marine vessel/barge, road/rail car and bulk container).

Section 2 Operational conditions and risk management measures

Section 2.1 Control of worker exposure

Product Characteristic

Liquid

Duration, frequency and amount

Covers daily exposures up to 8 hours (unless stated differently)[G2]
Covers percentage substance in the product up to 100 %[G13]

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented [G1]
Assumes use at not more than 20℃ above ambient tem perature[G15]

Contributing Scenarios/Specific Risk Management Measures and Operating Conditions
(only required controls to demonstrate safe use listed)

General exposures (closed systems) PROC1
No other specific measures identified.
General exposures (closed systems) PROC2
Handle substance within a closed system.
General exposures (closed systems) PROC3
Handle substance within a closed system.
General exposures (open systems) PROC4
No other specific measures identified.
Process sampling PROC8b
No other specific measures identified.
Laboratory activities PROC15
No other specific measures identified.
Bulk transfers (open systems) PROC8b
No other specific measures identified.
Bulk transfers (closed systems) PROC8b
Handle substance within a closed system.
Equipment cleaning and maintenance PROC8a
No other specific measures identified.
Storage PROC1
Store substance within a closed system.
Storage PROC2
Store substance within a closed system.

Section 2.2 Control of environmental exposure

Product characteristics

Predominantly hydrophobic.
Substance is complex UVCB.

Duration, frequency and amount

Annual site tonnage (tonnes/year): 6000 tons/yr
Continuous release.
Emission Days (days/year): 100 days/yr

Fraction of EU tonnage used in region: 0.1 Fraction of Regional tonnage used Locally: 1 Maximum daily site tonnage (kg/d): 60000 kg / day Regional use tonnage (tonnes/year): 6000 tons/yr
Environmental factors not influenced by risk management
Local freshwater dilution factor [EF1] 10 Local marine water dilution factor: [EF2] 100
Other given operational conditions affecting environmental exposure
Release fraction to air from process (initial release prior to RMM): 0.001 Release fraction to soil from process (initial release prior to RMM): 0.0001 Release fraction to wastewater from process (initial release prior to RMM): 0.0003
Technical conditions and measures at process level (source) to prevent release
Common practices vary across sites thus conservative process release estimates used.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 % Risk from environmental exposure is driven by freshwater sediment. Treat air emissions to provide a typical removal (or abatement?) efficiency of: 90 % Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 60 %
Organisation measures to prevent/limit release from site
Do not apply industrial sludge to natural soils. Prevent discharge of undissolved substance to or recover from wastewater. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant
Assumed domestic sewage treatment plant effluent flow is:[STP5] 10000 m3/day Estimated substance removal from wastewater via domestic sewage treatment is: 94.6 % Not applicable as there is no release to wastewater. The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 440000 kg / day Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.6 %
Conditions and measures related to external treatment of waste for disposal
During manufacturing no waste of the substance is generated [ETW4]
Conditions and measures related to external recovery of waste
During manufacturing no waste of the substance is generated [ERW2]
Section 3 Exposure Estimation
3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21]
3.2. Environment
The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2]
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22] Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]
4.2. Environment
Further details on scaling and control technologies are provided in factsheet Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Maximum Risk Characterisation Ratio for Air Emisions [RCRair] 7e-005
Maximum Risk Characterisation Ratio for Wastewater Emisions [RCRwater] 0.13
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Section 1 Exposure Scenario Title	
Title:	
Distribution of substance	
Use Descriptor	
Sector(s) of Use	SU3, SU8, SU9
Process Categories	PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9
Environmental Release Categories	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6A, ERC6B, ERC6C, ERC6D, ERC7
Specific Environmental Release Category	ESVOC 1.1b.v1
Processes, tasks, activities covered	
Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, distribution and associated laboratory activities.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product Characteristic	
Liquid	
Duration, frequency and amount	
Covers daily exposures up to 8 hours (unless stated differently)[G2] Covers percentage substance in the product up to 100 %[G13]	
Other given operational conditions affecting workers exposure	
Assumes a good basic standard of occupational hygiene is implemented [G1] Assumes use at not more than 20℃ above ambient temperature[G15]	
Contributing Scenarios/Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)	
General exposures (closed systems) PROC1 Handle substance within a closed system. **General exposures (closed systems) PROC2** Handle substance within a closed system. **General exposures (closed systems) PROC3** Handle substance within a closed system. **General exposures (open systems) PROC4** No other specific measures identified. **Process sampling PROC3** No other specific measures identified. **Laboratory activities PROC15** No other specific measures identified. **Bulk transfers (closed systems) PROC8b** No other specific measures identified. **Bulk transfers (open systems) PROC8b** No other specific measures identified. **Drum and small package filling PROC9** No other specific measures identified. **Equipment cleaning and maintenance PROC8a** No other specific measures identified. **Storage PROC1** Store substance within a closed system. Transfer via enclosed lines **Storage PROC2** Store substance within a closed system.	

Transfer via enclosed lines
Section 2.2 Control of environmental exposure
Product characteristics
Predominantly hydrophobic. Substance is complex UVCB.
Duration, frequency and amount
Annual site tonnage (tonnes/year): 0.002 tons/yr Continuous release. Emission Days (days/year): 20 days/yr Fraction of EU tonnage used in region: 0.1 Fraction of Regional tonnage used Locally: 1 Maximum daily site tonnage (kg/d): 0.1 kg / day Regional use tonnage (tonnes/year): 1 tons/yr
Environmental factors not influenced by risk management
Local freshwater dilution factor [EF1] 10 Local marine water dilution factor: [EF2] 100
Other given operational conditions affecting environmental exposure
Release fraction to air from process (initial release prior to RMM): 0.001 Release fraction to soil from process (initial release prior to RMM): 1e-005 Release fraction to wastewater from process (initial release prior to RMM): 1e-005
Technical conditions and measures at process level (source) to prevent release
Common practices vary across sites thus conservative process release estimates used.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 % No secondary wastewater treatment required. Risk from environmental exposure is driven by freshwater. Treat air emissions to provide a typical removal (or abatement?) efficiency of: 90 % Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 0 %
Organisation measures to prevent/limit release from site
Do not apply industrial sludge to natural soils. Prevent discharge of undissolved substance to or recover from wastewater. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant
Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day Estimated substance removal from wastewater via domestic sewage treatment is: 94.6 % Not applicable as there is no release to wastewater. The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 50 kg / day Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.6 %
Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3]
Conditions and measures related to external recovery of waste
External recovery an recycling of waste should comply with applicable local and/or national regulations [ERW1]
Section 3 Exposure Estimation
3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21]
3.2. Environment
The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2]
Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22] Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]
4.2. Environment
Further details on scaling and control technologies are provided in factsheet Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Maximum Risk Characterisation Ratio for Air Emisions [RCRair] 4e-006 Maximum Risk Characterisation Ratio for Wastewater Emisions [RCRwater] 0.0011 Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Section 1 Exposure Scenario Title	
Title:	
Formulation and (re)packing of substances and mixtures	
Use Descriptor	
Sector(s) of Use	SU10, SU3
Process Categories	PROC1, PROC14, PROC15, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9
Environmental Release Categories	ERC2
Specific Environmental Release Category	ESVOC 2.2.v1
Processes, tasks, activities covered	
Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenanance and associated laboratory activities.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product Characteristic	
Liquid	
Duration, frequency and amount	
Covers daily exposures up to 8 hours (unless stated differently)[G2] Covers percentage substance in the product up to 100 %[G13]	
Other given operational conditions affecting workers exposure	
Assumes a good basic standard of occupational hygiene is implemented [G1] Assumes use at not more than 20℃ above ambient temperature[G15]	
Contributing Scenarios/Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)	
General exposures (closed systems) PROC1 Handle substance within a closed system. **General exposures (closed systems) PROC2** Handle substance within a closed system. **General exposures (closed systems) PROC3** Handle substance within a closed system. **General exposures (open systems) PROC4** No other specific measures identified. **Batch processes at elevated temperatures Operation is carried out at elevated temperature (> 20℃ abov e ambient temperature). PROC3** No other specific measures identified. **Process sampling PROC3** Avoid dip sampling. **Laboratory activities PROC15** No other specific measures identified. **Bulk transfers PROC8b** No other specific measures identified. **Mixing operations (open systems) PROC5** No other specific measures identified. **Manual Transfer from/pouring from containers PROC8a** No other specific measures identified. **Drum/batch transfers PROC8b** Use drum pumps or carefully pour from container. **Production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC14** No other specific measures identified.	

Drum and small package filling PROC9 No other specific measures identified. **Equipment cleaning and maintenance PROC8a** No other specific measures identified. **Storage PROC1** Store substance within a closed system. **Storage PROC2** Store substance within a closed system.
Section 2.2 Control of environmental exposure
Product characteristics
Predominantly hydrophobic. Substance is complex UVCB.
Duration, frequency and amount
Annual site tonnage (tonnes/year): 510 tons/yr Continuous release. Emission Days (days/year): 100 days/yr Fraction of EU tonnage used in region: 0.1 Fraction of Regional tonnage used Locally: 1 Maximum daily site tonnage (kg/d): 5100 kg / day Regional use tonnage (tonnes/year): 510 tons/yr
Environmental factors not influenced by risk management
Local freshwater dilution factor [EF1] 10 Local marine water dilution factor: [EF2] 100
Other given operational conditions affecting environmental exposure
Release fraction to air from process (initial release prior to RMM): 0.01 Release fraction to soil from process (initial release prior to RMM): 0.0001 Release fraction to wastewater from process (initial release prior to RMM): 0.0002
Technical conditions and measures at process level (source) to prevent release
Common practices vary across sites thus conservative process release estimates used.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 % No secondary wastewater treatment required. Risk from environmental exposure is driven by freshwater sediment. Treat air emissions to provide a typical removal (or abatement?) efficiency of: 0 % Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 0 %
Organisation measures to prevent/limit release from site
Do not apply industrial sludge to natural soils. Prevent discharge of undissolved substance to or recover from wastewater. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant
Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day Estimated substance removal from wastewater via domestic sewage treatment is: 94.6 % Not applicable as there is no release to wastewater. The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 130000 kg / day Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.6 %
Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3]
Conditions and measures related to external recovery of waste
External recovery an recycling of waste should comply with applicable local and/or national regulations [ERW1]

Section 3 Exposure Estimation
3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21]
3.2. Environment
The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2]
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22] Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]
4.2. Environment
Further details on scaling and control technologies are provided in factsheet Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Maximum Risk Characterisation Ratio for Air Emisions [RCRair] 5.9e-005 Maximum Risk Characterisation Ratio for Wastewater Emisions [RCRwater] 0.038 Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Section 1 Exposure Scenario Title	
Title:	
Use in laboratories - Industrial	
Use Descriptor	
Sector(s) of Use	SU3
Process Categories	PROC10, PROC15
Environmental Release Categories	ERC2, ERC4
Specific Environmental Release Category	
Processes, tasks, activities covered	
Use of the substance within laboratory settings, including material transfers and equipment cleaning.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product Characteristic	
Liquid	
Duration, frequency and amount	
Covers daily exposures up to 8 hours (unless stated differently)[G2] Covers percentage substance in the product up to 100 %[G13]	
Other given operational conditions affecting workers exposure	
Assumes a good basic standard of occupational hygiene is implemented [G1] Assumes use at not more than 20℃ above ambient tem perature[G15]	
Contributing Scenarios/Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)	
Laboratory activities PROC15 No other specific measures identified. **Cleaning PROC10** No other specific measures identified.	
Section 2.2 Control of environmental exposure	
Product characteristics	
Predominantly hydrophobic. Substance is complex UVCB.	
Duration, frequency and amount	
Annual site tonnage (tonnes/year): 0.2 tons/yr Continuous release. Emission Days (days/year): 20 days/yr Fraction of EU tonnage used in region: 0.1 Fraction of Regional tonnage used Locally: 1 Maximum daily site tonnage (kg/d): 10 kg / day Regional use tonnage (tonnes/year): 0.2 tons/yr	
Environmental factors not influenced by risk management	
Local freshwater dilution factor [EF1] 10 Local marine water dilution factor: [EF2] 100	
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM): 0.025 Release fraction to soil from process (initial release prior to RMM): 0.0001 Release fraction to wastewater from process (initial release prior to RMM): 0.02	
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >=	

0 % No secondary wastewater treatment required. Risk from environmental exposure is driven by freshwater sediment. Treat air emissions to provide a typical removal (or abatement?) efficiency of: 0 % Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 0 %
Organisation measures to prevent/limit release from site
Do not apply industrial sludge to natural soils. Prevent discharge of undissolved substance to or recover from wastewater. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant
Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day Estimated substance removal from wastewater via domestic sewage treatment is: 94.6 % Not applicable as there is no release to wastewater. The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 1300 kg / day Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.6 %
Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3]
Conditions and measures related to external recovery of waste
External recovery an recycling of waste should comply with applicable local and/or national regulations [ERW1]
Section 3 Exposure Estimation
3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21]
3.2. Environment
The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2]
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22] Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]
4.2. Environment
Further details on scaling and control technologies are provided in factsheet Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Maximum Risk Characterisation Ratio for Air Emisions [RCRair] 4e-006 Maximum Risk Characterisation Ratio for Wastewater Emisions [RCRwater] 0.0075 Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Section 1 Exposure Scenario Title	
Title:	
Use in laboratories - Professional	
Use Descriptor	
Sector(s) of Use	SU22
Process Categories	PROC10, PROC15
Environmental Release Categories	ERC8A
Specific Environmental Release Category	ESVOC 8.17.v1
Processes, tasks, activities covered	
Use of small quantities within laboratory settings, including material transfers and equipment cleaning.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product Characteristic	
Liquid	
Duration, frequency and amount	
Covers daily exposures up to 8 hours (unless stated differently)[G2] Covers percentage substance in the product up to 100 %[G13]	
Other given operational conditions affecting workers exposure	
Assumes a good basic standard of occupational hygiene is implemented [G1] Assumes use at not more than 20℃ above ambient tem perature[G15]	
Contributing Scenarios/Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)	
Laboratory activities PROC15 No other specific measures identified. **Cleaning PROC10** No other specific measures identified.	
Section 2.2 Control of environmental exposure	
Product characteristics	
Predominantly hydrophobic. Substance is complex UVCB.	
Duration, frequency and amount	
Annual site tonnage (tonnes/year): 5e-005 tons/yr Continuous release. Emission Days (days/year): 365 days/yr Fraction of EU tonnage used in region: 0.1 Fraction of Regional tonnage used Locally: 1 Maximum daily site tonnage (kg/d): 0.00014 kg / day Regional use tonnage (tonnes/year): 0.1 tons/yr	
Environmental factors not influenced by risk management	
Local freshwater dilution factor [EF1] 10 Local marine water dilution factor: [EF2] 100	
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM): 0.5 Release fraction to soil from process (initial release prior to RMM): 0 Release fraction to wastewater from process (initial release prior to RMM): 0.5	
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >=	

0 % No secondary wastewater treatment required. Risk from environmental exposure is driven by freshwater. Treat air emissions to provide a typical removal (or abatement?) efficiency of: 0 % Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 0 %
Organisation measures to prevent/limit release from site
Do not apply industrial sludge to natural soils. Prevent discharge of undissolved substance to or recover from wastewater. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant
Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day Estimated substance removal from wastewater via domestic sewage treatment is: 94.6 % Not applicable as there is no release to wastewater. The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 0.068 kg / day Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.6 %
Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3]
Conditions and measures related to external recovery of waste
External recovery an recycling of waste should comply with applicable local and/or national regulations [ERW1]
Section 3 Exposure Estimation
3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21]
3.2. Environment
The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2]
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22] Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]
4.2. Environment
Further details on scaling and control technologies are provided in factsheet Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Maximum Risk Characterisation Ratio for Air Emisions [RCRair] 7e-006 Maximum Risk Characterisation Ratio for Wastewater Emisions [RCRwater] 0.0011 Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006
Version 5.3 Revision Date 20.05.2013
Print Date 17.04.2014

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name	:	Stearic acid
Product Number	:	W303518
Brand	:	Aldrich
REACH No.	:	A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
CAS-No.	:	57-11-4

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses	:	Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company	:	Sigma-Aldrich Ireland Ltd. Vale Road ARKLOW Wicklow . IRELAND
Telephone	:	+353 402-20300
Fax	:	+353 402-31147
E-mail address	:	EIRProductStewardship@sial.com

1.4 Emergency telephone number

Emergency Phone #	:	0044(0) 1 865407333 The UK National Chemical Emergency Centre (NCEC)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
This substance is not classified as dangerous according to Directive 67/548/EEC.

2.2 Label elements

The product does not need to be labelled in accordance with EC directives or respective national laws.

2.3 Other hazards - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical characterization	:	KCL gloves information
Synonyms	:	Octadecanoic acid
Formula	:	$C_{18}H_{36}O_2$
Molecular Weight	:	284.48 g/mol
CAS-No.	:	57-11-4
EC-No.	:	200-313-4

No components need to be disclosed according to the applicable regulations.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
no data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information
no data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Avoid breathing dust.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end use(s)

A part from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odour	no data available
c)	Odour Threshold	no data available
d)	pH	no data available
e)	Melting point/freezing point	Melting point/range: 67 - 72 °C - lit.
f)	Initial boiling point and boiling range	361 °C - lit.
g)	Flash point	113 °C - closed cup
h)	Evapouration rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	no data available
k)	Vapour pressure	1 hPa at 173.7 °C
l)	Vapour density	no data available
m)	Relative density	0.845 g/cm3
n)	Water solubility	no data available
o)	Partition coefficient: n-octanol/water	no data available
p)	Auto-ignition temperature	no data available
q)	Decomposition temperature	no data available
r)	Viscosity	12 mm2/s at 70 °C -
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information

no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

no data available

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Bases, Oxidizing agents, Reducing agents

10.6 Hazardous decomposition products

Other decomposition products - no data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - rat - > 2,000 mg/kg

LD50 Dermal - rabbit - > 5,000 mg/kg

Skin corrosion/irritation
Skin - rabbit
Result: No skin irritation
(Patch Test 24 Hrs.)

Serious eye damage/eye irritation
Eyes - rabbit
Result: No eye irritation

Respiratory or skin sensitisation
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

Carcinogenicity - mouse - Implant
Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Kidney, Ureter, Bladder:Tumors.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

no data available

Specific target organ toxicity - single exposure
no data available

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Additional Information
RTECS: WI2800000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity
no data available

12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

ADR/RID: - IMDG: - IATA: -

14.2 UN proper shipping name

ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: - IMDG: - IATA: -

14.4 Packaging group

ADR/RID: - IMDG: - IATA: -

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

no data available

SECTION 15: Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Safety Data Sheet

In compliance with Regulation (EC) 1907/2006, Regulation (EC) 1272/2008 and Regulation (EC) 453/2010

Version: 7
Revision date: 16 November 2011

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier: Talc

REACH Registr. No.: Exempted in accordance with Annex V.7.
Synonyms: Steatite, soapstone

Trade names:

CERAMFLUX	**LUZENAC 1445**	**MISTRON® 85-6 GRF**
FLUXITE®	**LUZENAC 2**	**MISTRON® 89-5F**
INVELOP	**LUZENAC 20M0**	**STEABRIGHT®**
JETFINE® 8CF	**LUZENAC 20M00S**	**STEALIM®**
LITHOCOAT® T2F	**LUZENAC 20M2**	**STEAMAS**
LITHOCOAT® T3F	**LUZENAC 2C BRUT**	**STEAMAT®**
LUZENAC 0	**LUZENAC 8218**	**STEAMIC® 00S F**
LUZENAC 00	**LUZENAC G20 F**	**STEAMIC® 00S CF**
LUZENAC 00C	**LUZENAC HAR® T84**	**STEAMIC® T1 CF**
LUZENAC 00S	**LUZENAC MB25**	**STEAPLUS® HAR T77**
LUZENAC 00S CERAM	**LUZENAC OXO**	**STEAPLUS® HAR T84**
LUZENAC 10M0	**LUZENAC PR7841**	**STEOPAC®**
LUZENAC 10M00S	**LUZENAC ST 115**	**STEOPAC® CF**
LUZENAC 10M2	**MISTRON® 85-6F**	

1.2 Relevant identified uses of the substance or mixture and uses advised against

Functional mineral for use in paper, paints, ceramics, plastics, personal care, etc.

1.3 Details of the supplier of the safety data sheet

- Company name: Imerys Talc Luzenac France
- Address: Route Nationale 20
B.P. 11
09250 Luzenac-sur-Ariège
France
- Phone No.: +33 5 61 02 04 06
- Fax No.: +33 5 61 02 04 40
- E-mail of person responsible for SDS: msds.talceurope@imerys.com

1.4 Emergency telephone number

Emergency phone number: +1 303 623 5716
Available outside office hours: Yes

SECTION 2. HAZARD IDENTIFICATION

2.1 Classification of the substance or mixture

This product does not meet the criteria defined in the Regulation EC 1272/2008 and in the Directive 67/548/EC. This product should be handled with care to avoid dust generation.

Classification EU (67/548/EC): No classification

Regulation EC 1272/2008: No classification

2.2 Label elements

Label elements according to Regulation (EC) No 1272/2008

- Pictogram None
- Signal word None
- Hazard statement None
- Precautionary statements None

2.3 Other hazards: This product is an inorganic substance and does not meet the criteria for PBT or vPvB in accordance with Annex XIII of REACH.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

Main constituents:

The above mentioned products are a natural association of talc, chlorite and dolomite.

Main constituents	EINECS	CAS	Amount (%)
Talc	238-877-9	14807-96-6	> 95
Chlorite	215-285-9	1318-59-8	
Dolomite	240-440-2	16389-88-1	< 5

These products contain less than 1% respirable crystalline silica (RCS) and do not meet the classification criteria.

Impurities: These products do not contain any classified impurity

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye contact: Rinse with copious quantities of water and seek medical attention if irritation persists.

Skin contact: No special first aid measures necessary.

Inhalation: No special first aid measures. Remove to fresh air and get medical attention in case of serious respiratory problems.

Ingestion: No first aid measures required.

4.2 Most important symptoms and effects both acute and delayed:
Symptoms of acute accidental exposure would be non-specific and similar to those of a massive inhalation of any dust without toxic effects. These symptoms may include coughing, expectoration, sneezing, and difficulty in breathing due to upper respiratory tract irritation.

4.3 Indication of immediate medical attention and special treatment needed:
No specific actions are required.

SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing media:
All extinguishing media can be used.

5.2 Special hazards arising from the substance or mixture:
The product is not flammable, combustible or explosive. No hazardous thermal decomposition.

5.3 Advice for firefighters:
No specific firefighting protection is required. Use an extinguishing agent suitable for the surrounding fire.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:
Avoid airborne dust generation. If the generation of dust is likely, personal protective equipment should be worn in compliance with national legislation.

6.2 Environmental precautions:
No special requirements. Contain spillage and clean up as indicated below.

6.3 Methods and material for containment and cleaning up:
Dry product should be cleaned with a shovel or vacuum cleaner while wearing personal protective equipment in compliance with national legislation. Washing the floor with water is not recommended since it may cause the floor to become slippery. However, if talc is already wet, and only in this case, the floor should be thoroughly flushed with water to remove slipperiness.

6.4 Reference for other sections:
See sections 8 and 13

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handing:
Avoid airborne dust generation. Provide appropriate exhaust ventilation at places where airborne dust is generated. In case of insufficient ventilation, wear suitable respiratory protective equipment. Handle packaged products carefully to prevent accidental bursting. If you require advice on safe handling techniques, please contact your supplier.

7.2 Conditions for safe storage, including any incompatibilities:

Technical measures/ Precautions:
Keep the product dry and in closed containers.

7.3 Specific end use(s): If you require advice on specific uses, please contact your supplier.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters:
Follow workplace regulatory exposure limits for all types of airborne dust, e. g. total dust, respirable and respirable crystalline silica dust. The OEL (Occupational Exposure Limit) for talc measured as an 8 hour TWA (Time Weighted Average) for several European countries is included in Annex 1. For the equivalent limits in other countries, please consult a competent occupational hygienist or the local regulatory authority.

8.2 Exposure controls

8.2.1 Appropriate engineering controls:
Minimise airborne dust generation. Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels below specified exposure limits. If user operations generate dust, use ventilation to keep exposure to airborne particles below the exposure limit. Apply organisational measures, such as isolating personnel from dusty areas. Remove and wash soiled clothing.

8.2.2 Individual protection measures, such as personal protective equipment:

(a) Eye protection:
Wear safety glasses with side-shields where there is a risk of dust generation which could lead to mechanical irritation of the eye.

(b) Skin protection:
No specific requirement. For hands, see below.

Hand protection:
Protective gloves are not necessary but recommended for those prone to skin irritation or dryness.

(c) Respiratory protection:
In case of prolonged overexposure to airborne dust concentrations, wear respiratory protective equipment that complies with the requirements of national legislation.

8.2.3 Environmental exposure controls
Avoid wind dispersal.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

(a) Appearance: White, off white to light grey powder

(b) Odour: Odourless

(c) Odour threshold: Not relevant

(d) pH: 9-9.5 (suspension of 10% talc in water)

(e) Melting point: >1300°C

(i) Flammability (solid, gas): Not flammable

(j) Upper/lower flammability or explosive limits: Not explosive. Limits do not apply

(m) Relative density: 2.58-2.83

(n) Solubility (ies):
Solubility in water: Negligible
Solubility in hydrofluoric acid: Yes

(p) Auto-ignition temperature: Not relevant

(q) Decomposition temperature: >1000°C

(s) Explosive properties: Not explosive

(t) Oxidising properties: Non oxidizing

9.2 Other information: No other information

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity: Inert, not reactive

10.2 Chemical stability: Chemically stable

10.3 Possibility of hazardous reactions: No hazardous reaction

10.4 Conditions to avoid: None

10.5 Incompatible materials: None known

10.6 Hazardous decomposition products: None

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Information on the likely route of exposure: Inhalation is the primary route of exposure. Repeated and prolonged exposure to large amounts of talc dust might induce a mild pneumoconiosis. This is caused by lung overload exposure, a non specific particle effect, rather than a specific intrinsic fibrogenic activity of talc.

(a) Acute toxicity: Based on available data, the classification criteria are not met

(b) Skin corrosion/irritation: Based on available data, the classification criteria are not met

(c) Serious eye damage/irritation: Based on available data, the classification criteria are not met

(d) Respiratory or skin sensitisation: Based on available data, the classification criteria are not met

(e) Germ cell mutagenicity: Based on available data, the classification criteria are not met

(f) Carcinogenicity: Based on available data, the classification criteria are not met

(g) Reproductive toxicity: No data are available on this product

(h) STOT – single exposure: Based on available data, the classification criteria are not met

(i) STOT – repeated exposure: Based on available data, the classification criteria are not met

(j) Aspiration hazard: Based on available data, the classification criteria are not met

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity: No data are available on this product. No specific adverse effects known

12.2 Persistence and degradability: No data are available on this product. Product is an inorganic substance and therefore is not considered biodegradable

12.3 Bioaccumulative potential: Not relevant

12.4 Mobility in soil: Negligible

12.5 Results of PBT and vPvB assessment: Not relevant

12.6 Other adverse effects: No specific adverse effects known

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste from residue/unused products
Where possible, recycling is preferable to disposal. Can be disposed of in compliance with local regulations.

13.2 Packaging
Dust formation from residues in packaging should be avoided and suitable worker protection assured. Store used packaging in enclosed receptacles. The reuse of packaging is not recommended. Recycling and disposal of packaging should be carried out by an authorized waste management company and in compliance with local regulations.

SECTION 14. TRANSPORT INFORMATION

14.1 UN number: Not relevant

14.2 UN proper shipping name: Not relevant

14.3 Transport hazard class(es):
ADR: not classified
IMDG: not classified
ICAO/IATA: not classified
RID: not classified
DOT: not classified

14.4 Packaging group: Not applicable

14.5 Environmental hazards: Not relevant

14.6 Special precautions for user: No special precautions

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code: Not relevant

SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislations specific for the substance or mixture

International legislation/requirements:

Industrial Safety and Health Law: This product does not contain harmful or controlled hazardous substances under ISHL. Contains <1% silica.

Toxic Chemical Control Act: This product does not contain chemical substances regulated as toxic, observational, restricted or banned under TCCA.

Dangerous Substance Management Law: This product does not contain chemical substances regulated under DSML.

Waste Management Law: Ensure product is disposed of in accordance with the waste treatment standards prescribed in Waste Management Law.

Other regulations based on domestic or foreign laws: The following inventories have been investigated as to the publicly available portion of the lists:

MINERAL	CAS No.	EINECS (EU)	AICS (Australia)	CEPA (DSL/NDSL) (Canada)	KECI (Korea)	ENCS/ISHL (Japan)
Talc	14807-96-6	238-877-9	Yes	Yes (DSL)	Yes	Yes
Chlorite	1318-59-8	215-285-9	No*	No* (DSL)	Yes	No*
Dolomite	16389-88-1	240-440-2	Yes	Yes (NDSL)	Yes	No*

MINERAL	IECSC (China)	PICCS (Philippines)	TSCA (USA)	Swiss ID No. (Switzerland)	NZIoC (New Zealand)
Talc	Yes	Yes	Yes	Yes	Yes
Chlorite	Yes	Yes	No*	Yes	Yes
Dolomite	Yes	Yes	Yes	Yes	Yes

No*: There exists a broad category for naturally occurring chemicals, so these minerals are covered by definition, but not specifically listed.

15.2 Chemical safety assessment
Exempted from REACH registration in accordance with Annex V.7

SECTION 16. OTHER INFORMATION

Indication of the changes made to the previous version of the SDS

Date of previous issue: 21 October 2011

Revision details:
Section 15: Inventories update
Section 16: References and sources update

References and sources:

1. Baan, R, Straif K, Secretan B, Ghissassi FE and Cogliano V. (2006), On behalf of the WHO International Agency for Research on cancer Monograph Working Group. Carcinogenicity of carbon black, titanium dioxide and talc. The Lancet Oncology. 7:295-296.
2. Wild, P.; "Lung cancer risk and talc not containing asbestiform fibers: a review of the epidemiological evidence". Occup. Environ. Med. 2006; 63, 4-9.

3. Cohrssen, B. and Powell C.H. (2001). Talc. In Patty's Toxicology, 5th ed., Bingham, E., Cohrssen, B., and Powell, C.H., eds., John Wiley & Sons, Inc. NY. pp. 519-538.
4. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Volume 93 (2010) Carbon Black, Titanium Dioxide, and Talc.
5. Wild, P. and coll; „Effects of talc dust on respiratory health: results of a longitudinal survey of 378 French and Austrian talc workers", Occup. Environ. Med. 2008; 65, 261-267.
6. USEPA 1992. Health Assessment Document for Talc, Environmental Criteria and Assessment Office, Office of Health and Environmental Assessment, U.S. Environmental Protection Agency, Research Triangle Park, NC. EPA 600/8-91/217, March 1992.
7. P. Leophonte and coll. "La pathologie respiratoire chronique des travailleurs du talc", Rev. Fr. Mal. Resp., 1980, 8, 43-45
8. S. Endo-Capron and coll. "In vitro response of rat pleural mesothelial cells to talc samples in genotoxicity assays (sister chromatid exchanges and DNA repair)" Toxic in vitro, 1993, 7, 7-14.
9. P. Wild, M. Refregier, G. Auburtin, B. Carton, JJ. Moulin "Survey of the respiratory health of the workers of a talc producing factory", Occup. Environ. Med. 1995, 52, 470-477.
10. P. Wild and coll. "A cohort mortality and nested case-control study of French and Austrian talc workers" Occup. Environ. Med 2002, 59, 98-105.
11. M. Coggiola and coll. "An Update of a Mortality Study of Talc Miners and Millers in Italy", Am. J Indust. Med. 2003, 44, 63-69

Notice to reader

This material safety data sheet complements the technical data sheets but does not replace them. The information it contains is based on our present knowledge of the product on the date indicated. It is given in good faith. Users should be warned about the risks associated with using the product for a different purpose than that for which it was developed, and particularly for uses for which we are not qualified to give advice.

These regulatory prescriptions are provided with a view to helping users meet their obligations when using this product. This list should not be considered exhaustive and does not exempt users from ensuring that they are not required to comply with any further prescriptions other than those mentioned above concerning product possession and handling for which they are solely responsible.

Only the original English version is authoritative.

Annex 1

Occupational Exposure Limits in mg/m^3 8 hours TWA
Respirable dust – in EU 27[1] + Norway & Switzerland

Country/Authority *(see caption p. 2)*	Non specified (inert) dust	Quartz	Talc
Austria/I	6	0,15	5
Belgium/II	3	0,1	2
Bulgaria/III	4	0,07	3
Czech Republic/IV		0,1	2
Cyprus/V	/	10k/Q^2	/
Denmark/VI	5	0,1	
Estonia		0,1	
Finland/VII	/	0,2	5
France/VIII		5 or 25k/Q	
France/IX	5	0,1	
Germany/X	3	/[3]	2
Greece/XI	5	0,1	2
Hungary		0,15	2
Ireland/XII	4	0.05	0,8
Italy/XIII	3	0,025	2
Lithuania/XIV	10	0,1	1
Luxembourg/XV	6	0,15	2
Malta[4]/ XVI	/	/	
Netherlands/ XVII	5	0,075	0,25
Norway/ XVIII	5	0,1	2
Poland		0,3	1
Portugal/ XIX	5	0,025	2
Romania/ XX	10	0,1	2
Slovakia		0,1	2
Slovenia		0,15	2
Spain/XXI	3	0,1	2
Sweden/XXII	5	0,1	1
Switzerland/XXIII	6	0,15	2
UK/XXIV	4	0,1	1

[1] Missing information for Latvia – To be completed.
[2] Q : quartz percentage – K=1
[3] Germany has no more OEL for quartz, cristobalite and tridymite. Employers are obliged to minimize exposure as much as possible, and to follow certain protective measures.
[4] When needed, Maltese authorities refer to values from the UK for OELVs which do not exist in the Maltese legislation.

Caption

Country		Adopted by/Law denomination	OEL Name (if specific)
Austria	**I**	Bundesministerium für Arbeit und Soziales	Maximale ArbeitsplatzKoncentration (MAK)
Belgium	**II**	Ministère de l'Emploi et du Travail	
Bulgaria	**III**	Ministry of Labour and Social Policy and Ministry of Health. Ordinance n°13 of 30/12/2003	Limit Values
Cyprus	**IV**	Department of Labour Inspection. Control of factory atmosphere and dangerous substances in factories, Regulations of 1981.	
Czech Republic	**V**	Governmental Directive n°441/2004	
Denmark	**VI**	Direktoratet fot Arbeidstilsynet	Threshold Limit Value (TLV)
Finland	**VII**	National Board of Labour Protection	Occupational Exposure Standard
France	**VIII**	Ministère de l'Industrie (RGIE)	Empoussiérage de référence
	IX	Ministère du Travail	Valeur limite de Moyenne d'Exposition
Germany	**X**	Bundesministerium für Arbeit	Maximale ArbeitsplatzKoncentration (MAK)
Greece	**XI**	Legislation for mining activities	
Ireland	**XII**	2002 Code of Practice for the Safety, Health & Welfare at Work (CoP)	
Italy	**XIII**	Associazone Italiana Degli Igienisti Industriali	Threshold Limit Values (based on ACGIH TLVs)
Lithuania	**XIV**	Dėl Lietuvos higienos normos HN 23:2001	Ilgalaikio poveikio ribinė vertė (IPRV)
Luxembourg	**XV**	Bundesministerium für Arbeit	Maximale ArbeitsplatzKoncentration (MAK)
Malta	**XVI**	OHSA – LN120 of 2003, www.ohsa.org.mt	OELVs
Netherlands	**XVII**	Ministerie van Sociale Zaken en Werkgelegenheid	Publieke grenswaarden http://www.ser.nl/en/oel_database.aspx
Norway	**XVIII**	Direktoratet for Arbeidstilsynet	Administrative Normer (8hTWA) for Forurensing I ArbeidsmiljØet
Portugal	**XIX**	Instituto Portuges da Qualidade, Hygiene & Safety at Workplace NP1796:2007	Valores Limite de Exposição (VLE)
Romania	**XX**	Government Decision n° 355/2007 regarding workers' health surveillance. Government Decision n° 1093/2006 regarding carcinogenic agents (in Annex 3: Quartz, Cristobalite, Tridymite).	OEL
Spain	**XXI**	Instrucciones de Técnicas Complementarias (ITC) Orden ITC/2585/2007	Valores Limites
Sweden	**XXII**	National Board of Occupational Safety and Health	Yrkeshygieniska Gränsvärden
Switzerland	**XXIII**		Valeur limite de Moyenne d'Exposition
United Kingdom	**XXIV**	Health & Safety Executive	Workplace Exposure Limits (WEL)

Source : IMA-Europe. Date : May 2010, updated version available at http://www.ima-europe.eu/otherPublications.html

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 17.07.2013 **Version number 1** **Revision: 17.07.2013**

1 Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
Trade name: **KRONOS 2971 (Titanium dioxide E 171)**
CAS Number: 13463-67-7
EC number: 236-675-5
Registration number 01-2119489379-17-xxxx

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses of the substance or mixture White pigment for application in Foodstuffs, cosmetics, pharmaceuticals
Uses advised against None.

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier: KRONOS INTERNATIONAL, Inc.
Peschstraße 5
51373 Leverkusen, Germany
Tel.: INT +49 214 356-0

Informing department: KRONOS INTERNATIONAL, Inc.
Department Safety, Health & Environment
Tel.: +49 214 356-0
Fax: +49 214 42150
e-mail: MSDS@kronosww.com

1.4 EMERGENCY TELEPHONE NUMBER: Tel.: INT + 49 214 356-4444

2 Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008 The substance is not classified according to the CLP regulation.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC not applicable
Information concerning particular hazards for human and environment: Dust load

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008 not applicable
Hazard pictograms not applicable
Signal word not applicable
Hazard statements not applicable

3 Composition/information on ingredients

3.1 Chemical characterization: Substances
CAS No. Designation: 13463-67-7 Titanium dioxide
EC number: 236-675-5

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Safety data sheet
according to 1907/2006/EC, Article 31

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Trade name: KRONOS 2971 (Titanium dioxide E 171)

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Additional information: Standard EN ISO 591-1
Labelled as foodstuff colourant Titanium dioxide E 171

4 First aid measures

4.1 Description of first aid measures

General information: No special measures required.

After inhalation: Supply fresh air; consult doctor in case of symptoms.

After skin contact: Instantly wash with water and soap and rinse thoroughly.

After eye contact: Rinse opened eye for several minutes under running water.

After swallowing: In case of persistent symptoms consult doctor.

4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents: Use fire fighting measures that suit the environment.
The product is not inflammable.

5.2 Special hazards arising from the substance or mixture None

5.3 Advice for firefighters

Protective equipment: Use protective measures that suit the hazard conditions.

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures Not required.

6.2 Environmental precautions: No special measures required.

6.3 Methods and material for containment and cleaning up: Collect mechanically.

6.4 Reference to other sections See Section 8 for information on personal protection equipment.

(Contd. on page 3)

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 17.07.2013 **Version number 1** **Revision: 17.07.2013**

Trade name: KRONOS 2971 (Titanium dioxide E 171)

(Contd. of page 2)

See Section 13 for information on disposal.

7 Handling and storage

Handling:
7.1 Precautions for safe handling Provide suction extractors if dust is formed.
Information about protection against explosions and fires: The product is not inflammable.

7.2 Conditions for safe storage, including any incompatibilities
Requirements to be met by storerooms and containers: No special requirements.
Information about storage in one common storage facility: Not required.
Further information about storage conditions: Store under dry conditions.

7.3 Specific end use(s) There are no further specific end uses than those named in section 1.2.

8 Exposure controls/personal protection

8.1 Control parameters
Components with critical values that require monitoring at the workplace:
13463-67-7 Titanium dioxide
WEL long-term exposure limit (8-hour TWA reference period)
10 mg/m³ (total inhalable)
4 mg/m³ (respirable)

DNELs
Worker Local long-term effects, inhalative: 10 mg/m³
Professional user Local long-term effects, inhalative: 10 mg/m³
Consumer Systemic long-term effects, oral: 700 mg/kg/d

PNECs
Water PNEC water (freshwater): 0.127 mg/l
PNEC water (marine waters): 1 mg/l
PNEC water (intermittend release): 0.61 mg/l
Sewage treatment plants (STP) PNEC STP 100 mg/l
Sediment PNEC Sediment (freshwater): 1000 mg/kg dry weight
PNEC Sediment (marine water): 100 mg/kg dry weight
Soil PNEC soil: 100 mg/kg dry weight
Oral (food chain) PNEC oral: 1667 mg/kg food

(Contd. on page 4)

(Contd. of page 3)

8.2 Exposure controls

Personal protective equipment:

General protective and hygienic measures: The usual precautionary measures should be adhered to in handling the chemicals.
Titanium dioxide pigments are not irritant but as with all fine powders can absorb moisture and natural oil from the surface of the skin during prolonged exposure. Prolonged exposure should be avoided by wearing suitable protective gloves and clothing.

Breathing equipment: Use breathing protection with high concentrations.
EN 149: FFP2

Protection of hands: Requirements according to EN 420
Check protective gloves prior to each use for their proper condition.
Preventive skin protection by use of skin-protecting agents is recommended.

Material of gloves Polychloroprene

Penetration time of glove material Value for the permeation: Level ≥ 1 (EN 420)

Eye protection: Safety glasses

Body protection: Protective work clothing.

9 Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information

Appearance:

Form: Powder

Colour: White

Smell: Odourless

Odour threshold: Not relevant

pH-value (100 g/l) at 20 °C: 7

Melting point/Melting range: >1800 °C

Boiling point/Boiling range: Not relevant

Flash point: Not applicable

Flammability (solid, gaseous): Product is not inflammable.

Ignition temperature: Not applicable

Danger of explosion: Product is not explosive.

Density at 20 °C: 4.2 g/cm³

Apparent density at 20 °C: 600 kg/m3

(Contd. on page 5)

(Contd. of page 4)

Vapour density	Not applicable.
Evaporation rate	Not applicable.
Solubility in / Miscibility with Water:	Insoluble
Partition coefficient (n-octanol/water):	Not applicable
Viscosity: dynamic:	Not applicable.
9.2 Other information	No further relevant information available.

10 Stability and reactivity

10.1 Reactivity	The substance is stable under normal use conditions.
10.2 Chemical stability Thermal decomposition / Conditions to be avoided:	No decomposition if used according to specifications.
10.3 Possibility of hazardous reactions	No dangerous reactions known
10.4 Conditions to avoid	No further data; see item 7.
10.5 Incompatible materials:	No further data; see item 7.
10.6 Hazardous decomposition products:	No dangerous decomposition products known

11 Toxicological information

11.1 Information on toxicological effects

Acute toxicity:
LD/LC50 values that are relevant for classification:

13463-67-7 titanium dioxide

Oral	LD50	> 5000 mg/kg (rat) (OECD 425)
Dermal	LD50	> 5000 mg/kg (rabbit)
Inhalative	LC50/4 h	> 6.8 mg/l (rat)

Primary irritant effect:	
on the skin:	OECD 404: No irritant effect
on the eye:	OECD 405: No irritant effect Eye exposure (to dust) may produce irritation.
Sensitization:	OECD 406, OECD 429

(Contd. on page 6)

(Contd. of page 5)

No sensitizing effect known.

Subacute to chronic toxicity: Titanium dioxide

Oral	NOAEL	3500 mg/kg/day (rat, 90 days)
Dermal	NOAEL	no relevant data available
Inhalative	NOAEC	10 mg/m³ (rat, 90 days)

Additional toxicological information:
As with any nuisance dust, long-term exposure to concentrations of dust above the recommended exposure level may overload lung clearance mechanism and cause adverse lung effects.

Toxicokinetics, metabolism and distribution
No substantial accumulation of titanium was observed in tissues following oral administration of titanium dioxide.
Dermal absorption can be considered negligible, as titanium dioxide has been shown not to penetrate human skin to any appreciable degree.

CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)
There are no indications of CMR effects in humans.

Specific target organ toxicity (STOT)
No specific target organ toxicity according to the criteria defined in Regulation (EC) No. 1272/2008.

Aspiration hazard Not relevant

12 Ecological information

12.1 Toxicity

Toxicity to fish Titanium dioxide

Freshwater fish:
Pimephales promelas LC50 (96 h): > 1000 mg/l (static, EPA-540/9-85-006, Acute Toxicity Test for Freshwater Fish)
Oncorhynchus mykiss LC50 (96 h): > 100 mg/l (static, equivalent or similar to OECD 203)
Marine water fish:
Cyprinodon variegatus LC50 (96 h): > 10000 mg/l (semi-static, OECD 203)

Toxicity to Daphnia and other aquatic invertebrates Titanium dioxide

Freshwater:
Daphnia magna LC50 (48 h): > 100 mg/l (static, equivalent or similar to OECD 202)
Marine water:
Acartia tonsa LC50 (48 h): > 10000 mg/l (ISO 14669 (1999); ISO 5667-16 (1998))

Toxicity to algae and aquatic plants Titanium dioxide

Freshwater:
Pseudokirchnerella subcapitata EC50 (72 h): 16 mg/l (static, EPA-600-9/78-018; ASTM Annual Book of Standards E1218-90, Vol 11.04))

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Toxicity to micro-organisms

Marine water:
Skeletonema costatum EC50 (72 h): > 10000 mg/l (ISO 10253)
Titanium dioxide

Freswhwater:
Hyalella azteca NOEC(28 d): ≥ 100000 mg/kg sediment dw (semi-static, ASTM 1706)
Marine water:
Corophium volutator NOEC (10 d): ≥ 14989 mg/kg sediment dw (semi-static, OSPARCOM guidelines (1995))

12.2 Persistence and degradability Not relevant for inorganic substances.

12.3 Bioaccumulative potential Does not accumulate in organisms

12.4 Mobility in soil The substance is immobile in soil.

12.5 Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

12.6 Other adverse effects No further relevant information available.

13 Disposal considerations

13.1 Waste treatment methods
European waste catalogue Waste code number according to origin of waste

Uncleaned packagings:
Recommendation: Disposal according to official regulations
Packaging can be reused or recycled after cleaning.

14 Transport information

14.1 UN-Number
ADR, ADN, IMDG, IATA not applicable
14.2 UN proper shipping name
ADR, ADN, IMDG, IATA not applicable
14.3 Transport hazard class(es)

ADR, ADN, IMDG, IATA
Class not applicable
14.4 Packing group
ADR, IMDG, IATA not applicable
14.5 Environmental hazards No environmentally hazardous substance.
14.6 Special precautions for user Not applicable.
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not relevant.

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15 Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations:

Water hazard class: not hazardous for water

15.2 Chemical Safety Assessment

Substances of very high concern (SVHC) according to REACH, Article 57 The product is not listed as SVHC, it does not contain any substances of very high concern.

Chemical safety assessment: A Chemical Safety Assessment has been carried out.

16 Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.
Carcinogenicity: In February 2006 IARC concluded, "There is inadequate evidence in humans for the carcinogenicity of titanium dioxide." Based on rat inhalation studies IARC concluded that there is "sufficient evidence in experimental animals for the carcinogenicity of titanium dioxide," IARC's overall evaluation was that "Titanium dioxide is possibly carcinogenic to humans (Group 2b)".
This conclusion was based on IARC's guidelines which require such a classification if two or more independent studies in one species carried out at different times or in different laboratories or under different protocols show evidence of tumours.

Department issuing data specification sheet: Environment & Safety

Contact:
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Tel.: INT + 49 214 356-0
Fax: INT + 49 214 42150
e-mail: MSDS@kronosww.com

Abbreviations and acronyms:
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organization
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

*** Data compared to the previous version altered.** Amended according to Regulation (EU) no 431/2010

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Safety data sheet
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Annex: Exposure scenario

1. Short title of the exposure scenario Not relevant

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006
Version 5.2 Revision Date 09.09.2013
Print Date 17.04.2014

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name	:	Xylenes
Product Number	:	214736
Brand	:	Aldrich
Index-No.	:	601-022-00-9
REACH No.	:	A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
CAS-No.	:	1330-20-7

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses	:	Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company	:	Sigma-Aldrich Ireland Ltd. Vale Road ARKLOW Wicklow . IRELAND
Telephone	:	+353 402-20300
Fax	:	+353 402-31147
E-mail address	:	EIRProductStewardship@sial.com

1.4 Emergency telephone number

Emergency Phone #	:	0044(0) 1 865407333 The UK National Chemical Emergency Centre (NCEC)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008
Flammable liquids (Category 3), H226
Acute toxicity, Inhalation (Category 4), H332
Acute toxicity, Dermal (Category 4), H312
Skin irritation (Category 2), H315

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

		R10
Xn	Harmful	R20/21
Xi	Irritant	R38

For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008
Pictogram

Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H332	Harmful if inhaled.
Precautionary statement(s)	
P280	Wear protective gloves/ protective clothing.
Supplemental Hazard Statements	none

2.3 Other hazards - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical characterization	:	KCL gloves information
Synonyms	:	Xylene mixture of isomers
Formula	:	C_8H_{10}
Molecular Weight	:	106.17 g/mol
CAS-No.	:	1330-20-7
EC-No.	:	215-535-7
Index-No.	:	601-022-00-9

Hazardous ingredients according to Regulation (EC) No 1272/2008

Component		Classification	Concentration
Xylene			
CAS-No. EC-No. Index-No.	1330-20-7 215-535-7 601-022-00-9	Flam. Liq. 3; Acute Tox. 4; Skin Irrit. 2; H226, H312 + H332, H315	<= 100 %

Hazardous ingredients according to Directive 1999/45/EC

Component		Classification	Concentration
Xylene			
CAS-No. EC-No. Index-No.	1330-20-7 215-535-7 601-022-00-9	Xn, R10 - R20/21 - R38	<= 100 %

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
no data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

7.3 Specific end use(s)
A part from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Xylene	1330-20-7	TWA	50 ppm 221 mg/m3	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
	Remarks	Identifies the possibility of significant uptake through the skin Indicative		
		STEL	100 ppm 442 mg/m3	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
		Identifies the possibility of significant uptake through the skin Indicative		
		OELV - 8 hrs (TWA)	50 ppm 221 mg/m3	Ireland. List of Chemical Agents and Occupational Exposure Limit Values - Schedule 1
		Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body Indicative Occupational Exposure Limit Value		
		OELV - 15 min (STEL)	100 ppm 442 mg/m3	Ireland. List of Chemical Agents and Occupational Exposure Limit Values - Schedule 1
		Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body Indicative Occupational Exposure Limit Value		

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 35 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of

anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: clear, liquid Colour: colourless
b)	Odour	no data available
c)	Odour Threshold	no data available
d)	pH	no data available
e)	Melting point/freezing point	< 0 °C
f)	Initial boiling point and boiling range	137 - 140 °C - lit.
g)	Flash point	25 °C - closed cup
h)	Evapouration rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 7 %(V) Lower explosion limit: 1.1 %(V)
k)	Vapour pressure	24 hPa at 37.70 °C
l)	Vapour density	3.67 - (Air = 1.0)
m)	Relative density	0.86 g/mL at 25 °C
n)	Water solubility	no data available
o)	Partition coefficient: n-octanol/water	no data available
p)	Auto-ignition temperature	no data available
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information

Relative vapour density	3.67 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity
no data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
Heat, flames and sparks.

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Other decomposition products - no data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - rat - 4,300 mg/kg
Remarks: Liver:Other changes. Kidney, Ureter, Bladder:Other changes.

LC50 Inhalation - rat - 4 h - 5000 ppm

LD50 Dermal - rabbit - > 1,700 mg/kg

Skin corrosion/irritation
Skin - rabbit
Result: Skin irritation - 24 h

Serious eye damage/eye irritation
Eyes - rabbit
Result: Mild eye irritation

Respiratory or skin sensitisation
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Xylene)

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure
no data available

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Additional Information
RTECS: Not available

Blurred vision, Incoordination., Headache, Nausea, Vomiting, Dizziness, Weakness, anemia, Prolonged or repeated exposure to skin causes defatting and dermatitis.

Liver - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Morone saxatilis - 2 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 75.49 mg/l - 24 h
Toxicity to algae	Growth inhibition EC50 - Pseudokirchneriella subcapitata - 72 mg/l - 14 d

12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
Toxic to aquatic life.

no data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 1307 IMDG: 1307 IATA: 1307

14.2 UN proper shipping name
ADR/RID: XYLENES
IMDG: XYLENES
IATA: Xylenes

14.3 Transport hazard class(es)
ADR/RID: 3 IMDG: 3 IATA: 3

14.4 Packaging group
ADR/RID: III IMDG: III IATA: III

14.5 Environmental hazards
ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user
no data available

SECTION 15: Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox.	Acute toxicity
Flam. Liq.	Flammable liquids
H226	Flammable liquid and vapour.
H312	Harmful in contact with skin.
H312 + H332	Harmful in contact with skin or if inhaled
H315	Causes skin irritation.
H332	Harmful if inhaled.

Full text of R-phrases referred to under sections 2 and 3

Xn	Harmful
R10	Flammable.
R20/21	Harmful by inhalation and in contact with skin.
R38	Irritating to skin.

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Material Safety Data Sheet

Zinc Metal Pigment

1 . Chemical product and company identification

Common name : **Zinc Metal Pigment**

Trade name : 4P16 ; 4P32 ; 4P64 ; 4P645 ; MP20 ; Larvik Super Extra ; Larvik Super Fine ; Larvik Standard 5 ; Larvik Standard 7 ; Larvik ZS ; EE/F ; EE/C ; EE/RS ; ZP90 ; Microfine ; GMQ; BZM-1; BZM-2

Material uses : Anti-corrosion paint
Manufacture of chemicals.

IPDS Code : 93682668

e-mail address of person responsible for this SDS : info.ipds@umicore.com Canada

Validation date : 3/07/2012.

In case of emergency : For transport in the USA and Canada: 1-877 986 4267
For transport in Europe, Central- and South America, Israel and Africa (Non-Arabic speaking countries): +32 3 213 15 70
For transport in the Middle East (Israel excluded) & Arabic speaking Africa: +32 3 213 33 79
For transport in Asia and the Pacific (China excluded): +65 62 64 78 36
For transport in China: 400 88 71 190

Supplier or representative of supplier : Umicore Zinc Chemicals

Rue de Chênée 53
4031 Angleur
BE Belgium
Phone : +32 43666411

2 . Hazards identification

Physical state : Solid. [Very fine powder.]

Odor : Odorless.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview :

CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.

Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat. Contains material that can cause target organ damage.

Routes of entry : Not available.

Potential acute health effects

Eyes : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.

Skin : No known significant effects or critical hazards.

Inhalation : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Ingestion : No known significant effects or critical hazards.

Potential chronic health effects

2 . Hazards identification

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

Additional hazards : Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.

3 . Composition/information on ingredients

Name	CAS number	%
Zinc.	7440-66-6	94 - 98
zinc oxide	1314-13-2	<6

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 . First aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Skin contact : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if irritation occurs.

Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion : Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If potentially dangerous quantities of this material have been swallowed, call a physician immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

5 . Fire-fighting measures

Flammability of the product : No specific fire or explosion hazard.

Hazardous combustion products : None.

Extinguishing media

Suitable : Use dry chemical, CO_2 or sand.

Not suitable : Do not use water or foam.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Special protective equipment for fire-fighters : See Section 11 for more detailed information on health effects and symptoms. Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

5 . Fire-fighting measures

Special remarks on fire hazards : Original packaging can be wetted using water for extinguishing surrounding fire in well ventilated areas.
Wetted powder will heat and release gases (hydrogen)
Isolate wetted packaging and powder from combustible materials and dry powder and store in an excellent ventilated area.
Avoid runoff to sewers.

Special remarks on explosion hazards : May present an explosion hazard when material is suspended in air in confined areas or equipment and subjected to spark, heat or flame.

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Large spill : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Small spill : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dust. Avoid release to the environment. Refer to special instructions/safety data sheet. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Keep away from sources of ignition. Keep away from heat.

Additional information : Use explosion-proof electrical (ventilating, lighting and material handling) equipment.
Keep area clean and tidy.
Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame).
Keep container dry.

8 . Exposure controls/personal protection

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Zinc.	US ACGIH 1/2009	-	10	-	-	-	-	-	-	-	[a]
		-	3	-	-	-	-	-	-	-	[b]
zinc oxide	US ACGIH 2/2010	-	2	-	-	10	-	-	-	-	[c][A]
	AB 4/2009	-	2	-	-	10	-	-	-	-	[d]
	BC 9/2010	-	2	-	-	10	-	-	-	-	[d]
	ON 7/2010	-	2	-	-	10	-	-	-	-	[c]
	QC 6/2008	-	5	-	-	10	-	-	-	-	[e]

Form: [a]Inhalable; Particulates (Insoluble) Not Otherwise Specified (PNOS) [b]Respirable; Particulates (Insoluble) Not Otherwise Specified (PNOS) [c]Respirable fraction [d]Respirable [e]fume
Notes: [A]Respirable fraction; see Appendix C, paragraph C. ACGIH 2003 Adoption

Consult local authorities for acceptable exposure limits.

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If operating conditions cause high dust concentrations to be produced, use dust goggles.

Skin protection / Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Personal protective equipment (Pictograms) :

Hygiene measures

General information : Eating, drinking and smoking should be prohibited in area where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking.

9 . Physical and chemical properties

Physical state and Appearance : Solid. [Very fine powder.]

Color : Gray.

Odor : Odorless.

Boiling/condensation point : 908°C (1666,4°F)

Melting/freezing point : 420°C (788°F)

Relative density : 7,14

VOC : 0 % (w/w)

Oxidizing properties : Not available.

Solubility : Insoluble in the following materials: cold water.

Flammability of the product : May be combustible at high temperature.

10 . Stability and reactivity

Stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Materials to avoid : Reactive or incompatible with the following materials: oxidizing materials and acids.
Use explosion-proof electrical (ventilating, lighting and material handling) equipment.
Keep area clean and tidy.
Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame).
Keep container dry.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Conditions of reactivity : May present an explosion hazard when material is suspended in air in confined areas or equipment and subjected to spark, heat or flame.
Highly flammable in the presence of the following materials or conditions: oxidizing materials.
Original packaging can be wetted using water for extinguishing surrounding fire in well ventilated areas.
Wetted powder will heat and release gases (hydrogen)
Isolate wetted packaging and powder from combustible materials and dry powder and store in an excellent ventilated area.
Avoid runoff to sewers.

11 . Toxicological information

Canada

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Zinc.	LD50 Oral	Rat	>2000 mg/kg	-
zinc oxide	LC50 Inhalation Dusts and mists	Rat	>5700 mg/m³	4 hours
	LD50 Oral	Rat	15000 mg/kg	-
Zinc Metal Pigment	LC50 Inhalation Dusts and mists	Rat	>5,4 mg/l	4 hours
	LD50 Oral	Rat	>2000 mg/kg	-

Chronic toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Not available.				

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Not available.					

Conclusion/Summary : Not available.

Skin : Non-irritating to the skin.

Eyes : Non-irritating to the eyes.

Respiratory : Based on the read-across from ZnO, the product is not a skin or respiratory sensitizer

Sensitizer

Product/ingredient name	Route of exposure	Species	Result
Not available.			

Conclusion/Summary : Not available.

11 . Toxicological information

Skin : Not sensitizing

Respiratory : Not sensitizing

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Not available.				

Conclusion/Summary : Based on read across from ZnSO4: No data indicating any concern for carcinogenicity. No classification required.

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
zinc oxide	A4	-	-	-	-	-

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Not available.			

Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Not available.				

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Development toxin	Species	Dose	Exposure
Not available.						

Conclusion/Summary : Based on read across from ZnO: No classification required.

Chronic effects on humans : **CARCINOGENIC EFFECTS**: Classified A4 (Not classifiable for humans or animals.) by ACGIH [zinc oxide].
Contains material which causes damage to the following organs: lungs, upper respiratory tract.

Other toxic effects on humans : No specific information is available in our database regarding the other toxic effects of this material to humans.

Sensitization

Ingestion : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Eyes : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.

Skin : No known significant effects or critical hazards.

Synergistic products : Not available.

12 . Ecological information

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure

12 . Ecological information

Zinc.	-	Acute LC50 109 ug/L Fresh water	Crustaceans - Water flea - Ceriodaphnia dubia - Neonate	48 hours
	-	Acute LC50 238 to 269 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas - Newly or recently hatched - <24 hours	96 hours
	-	Chronic NOEC 72,9 ug/L Fresh water	Algae - Green algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours
	-	Chronic NOEC 143 ug/L Fresh water	Daphnia - Water flea - Daphnia magna - <24 hours	21 days
	-	Chronic NOEC 172 ug/L Fresh water	Fish - Mottled sculpin - Cottus bairdi - 35 mm - 0,442 g	30 days
zinc oxide	(growth rate)	Acute EC50 0,17 mg/l	Algae - Selenastrum Capricornutum	72 hours
	-	Acute LC50 1,1 to 2,5 ppm Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
	-	Chronic NOEC 0,017 mg/L Fresh water	Algae - Green algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours

Biodegradability

Product/ingredient name	Test	Result	Dose	Inoculum

Not available.

Environmental precautions : Water polluting material. May be harmful to the environment if released in large quantities.

Mobility : Not available.

Other adverse effects : No known significant effects or critical hazards.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
This product is recyclable. Consideration of disposal via this route should be given.

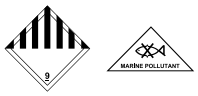
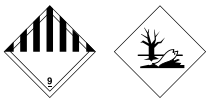
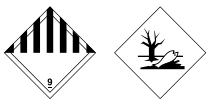
13 . Disposal considerations

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

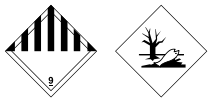
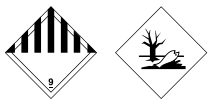
The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN3077	Environmentally hazardous substance, solid, n.o.s. (Zinc., mixture)	9	III		Limited quantity Yes. Special provisions 8, 146, 335, B54, IB8, IP3, N20, T1, TP33
TDG Classification	UN3077	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc., zinc oxide). Marine pollutant (Zinc., zinc oxide)	9	III		Explosive Limit and Limited Quantity Index 5 Special provisions 16
Mexico Classification	UN3077	SUSTANCIA SOLIDA POTENCIALMENTE PELIGROSA PARA EL MEDIO AMBIENTE, N.E.P. (Zinc., zinc oxide). Marine pollutant (Zinc., zinc oxide)	9	III		Special provisions 179, 274
ADR/RID Class	UN3077	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc., zinc oxide)	9	III		Hazard identification number 90 Limited quantity 5 kg Special provisions 274 335 601 Tunnel code (E)

14 . Transport information

IMDG Class	UN3077	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc., zinc oxide). Marine pollutant (Zinc., zinc oxide)	9	III		**Emergency schedules (EmS)** F-A, S-F
IATA-DGR Class	UN3077	Environmentally hazardous substance, solid, n.o.s. (Zinc., zinc oxide)	9	III		**Passenger and Cargo Aircraft** Quantity limitation: 400 kg Packaging instructions: 956 **Cargo Aircraft Only** Quantity limitation: 400 kg Packaging instructions: 956 **Limited Quantities - Passenger Aircraft** Quantity limitation: 30 kg Packaging instructions: Y956

RQ (Lbs/Kg): CERCLA: Hazardous substances: Zinc.: 1000 lbs. (454 kg); zinc oxide;

Remarks : The product qualities covered by this MSDS have been tested according to the criteria for classes 4.1, 4.2 and 4.3. The test results show that these qualities don't meet the criteria for classification as dangerous goods in the classes 4.1, 4.2 or 4.3 for transport: BAM, 2005 Report II.2-916/04.

Remarks : DOT classification applies only if at least one RQ relevant substance equals or exceeds it's RQ-threshold. Only substances indicated by a quantity in lbs/kg are RQ relevant. The RQ is limited to pieces of the metal having a diameter smaller than 100 micrometers (0.004 inches)

15 . Regulatory information

WHMIS (Canada) : Not controlled under WHMIS (Canada).

CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Zinc; Zinc
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

Canada inventory : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

EU regulations

15 . Regulatory information

Hazard symbol or symbols :

Risk phrases : R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases : S60- This material and its container must be disposed of as hazardous waste.
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

International regulations

International lists : **Australia inventory (AICS)**: All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: At least one component is not listed.
Korea inventory: All components are listed or exempted.
New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.

USA : **TSCA 8(a) IUR Exempt/Partial exemption**: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.

16 . Other information

Hazardous Material Information System (U.S.A.) :

Health	0
Flammability	0
Physical hazards	0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

Date of issue : 3/07/2012.

Date of previous issue : 13/01/2012.

Version : 16.01

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained in this Material Safety Data Sheet is accurate and reliable on presently available resources. However, neither the seller nor any of its subsidiaries assumes any responsibility or liability whatsoever for the accuracy or completeness of the information contained herein.
This Material Safety Data Sheet shall not constitute a guarantee for any specific product features. Final determination of suitability of this material is the sole responsibility of the user.
All materials may present unknown hazards and should be used and handled with caution and following reasonable safety procedures. Consequently the buyer assumes all risks in connection with the use and handling of this material.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name	:	White Spirit
Chemical family	:	Hydrocarbon.
EC number	:	919-446-0(Provisional.)
REACH Registration number	:	01-2119458049-33-0007
CAS number	:	64742-82-1
Product code	:	32549UK
Product description	:	Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)
Product type	:	Liquid.
Other means of identification	:	Content in Benzene < 0.1% w/w.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses
Use in Cleaning Agents - Professional
Use in Cleaning Agents - Industrial
Use in Lubricants.-Professional: low Environmental Release Category
Use in Lubricants.-Industrial: high Environmental Release Category
Uses in Coatings - Consumer
Use in Lubricants. - Industrial
Use in Lubricants. Consumer: Low release
Use in Lubricants. Consumer: high Environmental Release Category
Use in Metal working fluids/rolling oils - Industrial
Use in Metal working fluids/rolling oils - Professional
Use in Agrochemicals uses - Professional
Use in Agrochemicals uses - Consumer
Use as a fuel - Industrial
Use as a fuel - Professional
Use in Cleaning Agents - Consumer
Use as a fuel - Consumer
Use as functional fluids. - Industrial
Distribution of substance - Industrial
Manufacture of substance -Industrial
Formulation and (re)packing of substances and mixtures - Industrial
Manufacture of substance -Industrial
Uses in Coatings - Industrial
Use as functional fluids. - Professional
Use as functional fluids. - Consumer
Use in laboratories - Professional
Uses Road and construction applications - Professional
Use in laboratories - Industrial

1.3 Details of the supplier of the safety data sheet

Supplier
CEPSA UK LTD
Audrey House
16 - 20 Ely Place
London EC1N 6SN - United Kingdom

Email : email address: sales@cepsa.com

1.4 Emergency telephone number

Telephone number : (+44) 0207 831 2788

Emergency telephone number	:	(+44) 01865 407333
Hours of operation	:	24-hour telephone and/or website

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : UVCB
Content in Benzene < 0.1% w/w.

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Flam. Liq. 3, H226
STOT SE 3, H336i
Asp. Tox. 1, H304
Aquatic Chronic 2, H411

Classification according to Directive 67/548/EEC [DSD]

R10
Xn; R65
R66, R67
N; R51/53

See Section 16 for the full text of the R phrases or H statements declared above.
See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms :

Signal word : Danger

Hazard statements :

H226	Flammable liquid and vapour.
H336i	May cause drowsiness or dizziness.
H304	May be fatal if swallowed and enters airways.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

General	:	Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.
Prevention	:	P210 - Keep away from heat, sparks, open flames and hot surfaces. - No smoking. P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. P273 - Avoid release to the environment.
Response	:	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
Storage	:	Keep cool.
Disposal	:	Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazardous ingredients	:	Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)
Supplemental label elements	:	Repeated exposure may cause skin dryness or cracking.

Special packaging requirements

Containers to be fitted with child-resistant fastenings : Yes, applicable.

Tactile warning of danger : Yes, applicable.

2.3 Other hazards

Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII : No.

Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII : No.

Other hazards which do not result in classification : Not available.

SECTION 3: Composition/information on ingredients

Substance/mixture : UVCB
Content in Benzene < 0.1% w/w.

Product/ingredient name	Identifiers	%	Classification 67/548/EEC	Classification Regulation (EC) No. 1272/2008 [CLP]	Type
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	REACH #: 01-2119458049-33	100	R10 Xn; R65 R66, R67 N; R51/53 **See Section 16 for the full text of the R-phrases declared above.**	Flam. Liq. 3, H226 STOT SE 3, H336i Asp. Tox. 1, H304 Aquatic Chronic 2, H411 **See Section 16 for the full text of the H statements declared above.**	[A]

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

Type

[*] Substance
[A] Constituent
[B] Impurity
[C] Stabilising additive

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately.

Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Skin contact : Defatting to the skin. May cause skin dryness and irritation.

Ingestion : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Skin contact : Adverse symptoms may include the following:
irritation
dryness
cracking

Ingestion : Adverse symptoms may include the following:
nausea or vomiting

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable : In case of fire, use water spray, foam, dry chemical or CO_2.

Not suitable : Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : Flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : No specific data.

5.3 Advice for firefighters

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

Fire-fighting measures : In use, may form flammable/explosive vapour-air mixture.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions : This product is readily biodegradable.

6.3 Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not swallow. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

7.3 Specific end use(s)

Recommendations : Not available.

Industrial sector specific solutions : Not available.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

Remarks : CEPSA recommends a limit on occupational exposure based on the CEFIC-HSPA guideline figures (Reciprocal Calculation Procedure) of: 1200 mg/m3

8.1 Control parameters

Occupational exposure limits

No exposure limit value known.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

Derived effect levels

Product/ingredient name	Type	Exposure	Value	Population	Effects
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	DNEL	Long term Dermal	44 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	330 mg/m³	Workers	-
	DNEL	Long term Dermal	26 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	71 mg/m³	Consumers	Systemic
	DNEL	Long term Oral	26 mg/kg bw/day	Consumers	Systemic

Predicted effect concentrations

No PECs available.

8.2 Exposure controls

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: Tightly-fitting goggles

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. >8 hours (breakthrough time): Impervious gloves. nitrile rubber PVC Viton®

Body protection : Use suitable protective equipment.

Other skin protection : Suitable protective footwear.

Respiratory protection : If operating conditions cause high vapour concentrations or the TLV is exceeded, use supplied-air respirator.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state : Liquid. [Colourless.]

Colour : Not available.

Odour : Hydrocarbon.

Odour threshold : Not available.

pH : Not applicable.

Melting point/freezing point : <-20°C

Initial boiling point and boiling range	:	135 to 200°C
Flash point	:	Closed cup: 38,5°C Open cup: 41°C
Evaporation rate	:	Not available.
Flammability (solid, gas)	:	Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
Burning time	:	Not applicable.
Burning rate	:	Not applicable.
Upper/lower flammability or explosive limits	:	Lower: 0,6% Upper: 7,2%
Vapour pressure	:	0,23 kPa [20°C]
Vapour density	:	Not available.
Relative density	:	720
Density	:	0,72 to 0,82 g/cm^3 [15°C]
Solubility(ies)	:	Insoluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	:	Not available.
Auto-ignition temperature	:	>200°C
Decomposition temperature	:	Not available.
Viscosity	:	Kinematic: 0,012 cm^2/s Kinematic (40°C): 0,00918 cm^2/s
Explosive properties	:	Not available.
Oxidising properties	:	Not available.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity : No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : The product is stable.

10.3 Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

10.5 Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

10.6 Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	LC50 Inhalation Vapour	Rat	>1,58 mg/l	4 hours
	LD50 Dermal	Rabbit	>3400 mg/kg	-
	LD50 Oral	Rat	>15000 mg/kg	-

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	Skin - Oedema	Rabbit	1	-	-
	Skin - Erythema/Eschar	Rabbit	1,22	-	-
	Eyes - Redness of the conjunctivae	Rabbit	0,3	-	-
	Eyes - Oedema of the conjunctivae	Rabbit	0	-	-
	Eyes - Iris lesion	Rabbit	0	-	-

Conclusion/Summary

Skin : Based on available data, the classification criteria are not met.

Eyes : Based on available data, the classification criteria are not met.

Sensitisation

Product/ingredient name	Route of exposure	Species	Result
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	skin	Guinea pig	Not sensitizing
	skin	Human	Not sensitizing

Conclusion/Summary

Skin : Based on available data, the classification criteria are not met.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	-	Experiment: In vitro Subject: Bacteria	Negative
	-	Experiment: In vitro Subject: Mammalian-Animal	Negative

Conclusion/Summary : Not mutagenic in a standard battery of genetic toxicological tests.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	Negative	Negative	Negative	Rat	Inhalation	-

Conclusion/Summary : Based on available data, the classification criteria are not met.

Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	Negative - Oral	Rat	-	-

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	Category 3	Inhalation	Narcotic effects

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Product/ingredient name	Result
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Skin contact : Defatting to the skin. May cause skin dryness and irritation.

Ingestion : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Skin contact : Adverse symptoms may include the following:
irritation
dryness
cracking

Ingestion : Adverse symptoms may include the following:
nausea or vomiting

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	Sub-chronic NOAEL Oral	Rat	>1056 mg/kg	90 days
	Sub-chronic NOAEL Dermal	Rat	>490 mg/kg	90 days
	Sub-chronic NOAEL Inhalation Vapour	Rat	690 mg/m3	90 days

Conclusion/Summary : Not available.

General : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Other information : Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	EC50 4,6 to 10 mg/l	Algae	72 hours
	EC50 10 to 20 mg/l	Daphnia - Daphnia magna	48 hours
	EC50 10 to 30 mg/l	Fish - Oncorhynchus mykiss	96 hours
	NOEC 0,28 mg/l	Daphnia - Daphnia magna	21 days
	NOEC 0,13 mg/l	Fish - Oncorhynchus mykiss	28 days

Conclusion/Summary : Not available.

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	301F Ready Biodegradability - Manometric Respirometry Test	74,7 % - Readily - 28 days	-	-

Conclusion/Summary : May decompose on exposure to moist air and water.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Not available.	-	-	Biodegradable

12.3 Bioaccumulative potential

Not available.

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

PBT : No.

vPvB : No.

12.6 Other adverse effects : No known significant effects or critical hazards.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN/ADNR	IMDG	IATA
14.1 UN number	UN1300	UN1300	UN1300	UN1300
14.2 UN proper shipping name	Turpentine Substitute	Turpentine Substitute	Turpentine Substitute	Turpentine Substitute
14.3 Transport hazard class(es)	3 	3 	3 	3 
14.4 Packing group	III	III	III	III
14.5 Environmental hazards	Yes.	Yes.	Yes.	Yes.
14.6 Special precautions for user	Not available.	Not available.	Not available.	Not available.

Additional information	**Special provisions** **Tunnel code** (D/E)	-	**Emergency schedules (EmS)** F-E, S-D	**Passenger and Cargo Aircraft**Quantity limitation: 60 Packaging instructions: 309 **Cargo Aircraft Only** Quantity limitation: 220 Packaging instructions: 310 **Limited Quantities - Passenger Aircraft** Quantity limitation: 10 Packaging instructions: Y309

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Proper shipping name : White spirit, low (15–20%) aromatic
Ship type : 2
Pollution category : Y

Remarks:

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Restricted to professional users.

Other EU regulations

Europe inventory : This material is listed or exempted.
Black List Chemicals : Not listed
Priority List Chemicals : Not listed
Integrated pollution prevention and control list (IPPC) - Air : Not listed
Integrated pollution prevention and control list (IPPC) - Water : Not listed

International regulations

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

15.2 Chemical Safety Assessment : Complete.

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms : ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DNEL = Derived No Effect Level
EUH statement = CLP-specific Hazard statement
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Flam. Liq. 3, H226	Expert judgment
STOT SE 3, H336i	Expert judgment
Asp. Tox. 1, H304	Expert judgment
Aquatic Chronic 2, H411	Expert judgment

Full text of abbreviated H statements :
H226 Flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H336i May cause drowsiness or dizziness.
H411 Toxic to aquatic life with long lasting effects.

Full text of classifications [CLP/GHS] :
Aquatic Chronic 2, H411 AQUATIC TOXICITY (CHRONIC) - Category 2
Asp. Tox. 1, H304 ASPIRATION HAZARD - Category 1
Flam. Liq. 3, H226 FLAMMABLE LIQUIDS - Category 3
STOT SE 3, H336i SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE): INHALATION [Narcotic effects] - Category 3

Full text of abbreviated R phrases : R10- Flammable.
R65- Harmful: may cause lung damage if swallowed.
R66- Repeated exposure may cause skin dryness or cracking.
R67- Vapours may cause drowsiness and dizziness.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Full text of classifications [DSD/DPD] : Xn - Harmful
N - Dangerous for the environment

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Version : 5

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Remarks

For maritime transport, the Safety Data Sheet does not need to include the Annex with the Exposure Scenarios that begins in the next page. The total number of pages indicated takes into account this Annex.

Annex to the extended Safety Data Sheet (eSDS)

Consumer

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Uso en recubrimientos - Consumidor
List of use descriptors	:	**Identified use name:** Uses in Coatings - Consumer **Substance supplied to that use in form of:** As such **Sector of end use:** SU21 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC08a, ERC08d, ESVOC SpERC 8.3c.v1 **Market sector by type of chemical product:** PC01, PC04, PC08, PC09a, PC09b, PC15, PC18, PC23, PC24, PC31, PC34, PC09c
Environmental contributing scenarios	:	**Use as a fuel**
Health Contributing scenarios	:	
Processes and activities covered by the exposure scenario	:	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Use as a fuel

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Concentration of substance in mixture or article	:	
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 4400 Fraction of Regional tonnage used locally: 0.000005 Annual site tonnage (tonnes/year): 2.2 Maximum daily site tonnage (kg/day): 6
Frequency and duration of use	:	Emission Days (days/year): 365 - Continuous release.
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.985 Release fraction to wastewater from wide dispersive use: 0.01 Release fraction to air from wide dispersive use (regional only): 0.005
Conditions and measures related to municipal sewage treatment plant	:	Risk from environmental exposure is driven by soil. Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 1900 Assumed domestic sewage treatment plant flow (m3/d): 2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling consumer exposure for 0: Use as a fuel

Concentration of substance in mixture or article : Unless otherwise stated. Covers concentrations up to 100%

Physical state : Liquid, vapour pressure < 0.5 kPa at STP. - Vapour pressure 200 Pa

Amounts used : Unless otherwise stated.Covers use up to 13800 g.
Covers skin contact area up to 857.5 cm2

Frequency and duration of use : Unless otherwise stated.Covers use up to1 application per day
Use duration: 6h

Other given operational conditions affecting consumers exposure : Unless otherwise stated. Assumes activities are at ambient temperature (unless stated differently). - Covers use in room size of 20m3 - Provide adequate ventilation.

Product Categories - Operational conditions and risk management measures

Adhesives, sealants Glues, hobby use
Unless otherwise stated, Covers concentrations up to 30% - Covers use up to 365 days/year - Covers exposure up to 1 application per day - Covers skin contact area up to 35.73 cm2 - Covers exposure up to 9 g. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 4 h/per task: - Covers use under typical household ventilation.

Adhesives, sealants Glues DIY-use (carpet glue, tile glue, wood parquet glue)
Unless otherwise stated. Covers concentrations up to 30% - Covers use up to 1 days/year - Covers use up to 1 application per day - Covers skin contact area up to 110 cm2 - For each use event, covers use amounts up to 6390 g. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 6 h - Covers use under typical household ventilation. - No specific risk management measure identified beyond those operational conditions stated.

Adhesives, sealants Glue from spray
Unless otherwise stated, Covers concentrations up to 30 % - Covers use up to 6 days/year - Covers use up to 1 application per day - Covers skin contact area up to 35.73 cm2 - For each use event, covers use amounts up to 85.05 g. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 4 h - Covers use under typical household ventilation. - No specific risk management measure identified beyond those operational conditions stated.

Adhesives, sealants Sealants
Unless otherwise stated. Covers concentrations up to 30 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 35.73 cm2 - For each use event, covers use amounts up to 75 g. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 1 h - Covers use under typical household ventilation. - No specific risk management measure identified beyond those operational conditions stated.

Anti-Freeze and de-icing products - Washing car window
Unless otherwise stated.Covers concentrations up to 1 % - Covers use up to 365 days/year - Covers use up to 1 application per day - For each use event, covers use amounts up to 0.5 g. - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in room size of 34 m3 - For each use event, covers use amounts up to 0.02 h - No specific risk management measure identified beyond those operational conditions stated.

Anti-Freeze and de-icing products Pouring into radiator
Covers concentrations up to 10 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428 cm2 - For each use event, covers use amounts up to 2000 g. - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in room size of 34 m3 - For each use event, covers use amounts up to 0.17 h - No specific risk management measure identified beyond those operational conditions stated.

Anti-Freeze and de-icing products - Lock de-icer
Unless otherwise stated. Covers concentrations up to 50 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 214 cm2 - For each use event, covers use amounts up to 4 g. - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in room size of 34 m3 - For each use event, covers use amounts up to 0.25 h - No specific risk management measure identified beyond those operational conditions stated.

Biocidal products (e.g. Disinfectants, pest control) - Laundry and dish-washing products
Covers concentrations up to Unless otherwise stated. 5 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 857.50 cm2 - For each use event, covers use amounts up to 15 g. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.5 h - Covers use under typical household ventilation. - No specific risk management measure identified beyond those operational conditions stated.

Biocidal products (e.g. Disinfectants, pest control) - Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)
Unless otherwise stated, Covers concentrations up to 5 % - Covers use up to 128 days/year - Covers use up to 1 application per day - Covers skin contact area up to 857.50 cm2 - For each use event, covers use amounts up to 27 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.33 h - No specific risk management measure identified beyond those operational conditions stated.

Biocidal products (e.g. Disinfectants, pest control) - Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)
Unless otherwise stated, Covers concentrations up to 15 % - Covers use up to 128 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428.00 cm2 - For each use event, covers use amounts up to 35 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.17 h - No specific risk management measure identified beyond those operational conditions stated.

Coatings and paints, thinners, paint removers - Water-borne latex wall paint
Covers concentrations up to Unless otherwise stated. 1.5 % - Covers use up to 4 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428.75 cm2 - For each use event, covers use amounts up to 2260 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 2.20 h - No specific risk management measure identified beyond those operational conditions stated.

Coatings and paints, thinners, paint removers - Solvent-rich, high-solid, water-borne paint
Unless otherwise stated. Covers concentrations up to 27.5 % - Covers use up to 6 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428.75 cm2 - Covers use up to 744 g. - Covers use in room size of 20m3 - Covers use under typical household ventilation. - For each use event, covers use amounts up to 2.20 h - No specific risk management measure identified beyond those operational conditions stated.

Coatings and paints, thinners, paint removers - Aerosol spray can
Unless otherwise stated. Covers exposure up to 50 % - Covers use up to 2 days/year - Covers use up to 1 application per day - Covers use up to 215 g. - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in room size of 34 m3 - For each use event, covers use amounts up to 0.33 h - No specific risk management measure identified beyond those operational conditions stated.

Coatings and paints, thinners, paint removers - Removers (paint-, glue-, wall paper-, sealant-remover)
Unless otherwise stated. Covers concentrations up to 50 % - Covers use up to 3 days/year - Covers use up to 1 application per day - Covers skin contact area up to 857.50 cm2 - For each use event, covers use amounts up to 491 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 2.00 h. - No specific risk management measure identified beyond those operational conditions stated.

Fillers, putties, plasters, modelling clay - Fillers and putty
Unless otherwise stated, Covers concentrations up to 2 % - Covers use up to 12 days/year - Covers use up to 1 application per day - Covers skin contact area up to 35.73 cm2 - For each use event, covers use amounts up to 85 g. - Covers use in room size of 20m3 - Covers use under typical household ventilation. - For each use event, covers use amounts up to 4.00 h - No specific risk management measure identified beyond those operational conditions stated.

Fillers, putties, plasters, modelling clay - Plasters and floor equalisers
Unless otherwise stated, Covers concentrations up to 2% Covers use up to 12 days/year - Covers use up to 1 application per day - Covers skin contact area up to 857.50 cm2 - For each use event, covers use amounts up to 13800 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 2.00 h - No specific risk management measure identified beyond those operational conditions stated.

Fillers, putties, plasters, modelling clay - Modelling clay
Unless otherwise stated, Covers concentrations up to 1 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 254.4 cm2 - For each use event, assumes swallowed amount of 1g. - No specific risk management measure identified beyond those operational conditions stated.

Finger paints
Unless otherwise stated, Covers concentrations up to 50 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 254.40 cm2 - For each use event, assumes swallowed amount of 1.35 g. - Avoid using at a product concentration greater than 5 %

Non-metal-surface treatment products - Water-borne latex wall paint
Unless otherwise stated, Covers concentrations up to 1.5 % - Covers use up to 4 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428.75 cm2 - For each use event, covers use amounts up to 2760 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 2.20 h - No specific risk management measure identified beyond those operational conditions stated.

Non-metal-surface treatment products - Solvent-rich, high-solid, water-borne paint
Unless otherwise stated, Covers concentrations up to 27.5 % - Covers use up to 6 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428.75 cm2 - For each use event, covers use amounts up to 744 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 2.20 h - No specific risk management measure identified beyond those operational conditions stated.

Non-metal-surface treatment products - Aerosol spray can
Unless otherwise stated, Covers concentrations up to50 % Covers use up to 2 days/year - Covers use up to 1 application per day - For each use event, covers use amounts up to 215 g. - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in room size of 34 m3 - For each use event, covers use amounts up to 0.33 h - No specific risk management measure identified beyond those operational conditions stated.

Non-metal-surface treatment products - Removers (paint-, glue-, wall paper-, sealant-remover)
Unless otherwise stated, Covers concentrations up to 50 % - Covers use up to 3 days/year - Covers use up to 1 application per day - Covers skin contact area up to 857.50 cm2 - For each use event, covers use amounts up to 491g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 2.00 h - No specific risk management measure identified beyond those operational conditions stated.

Ink and toners
Unless otherwise stated, Covers concentrations up to 10 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 71.40 cm2 - For each use event, covers use amounts up to 40 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 2.20 h - No specific risk management measure identified beyond those operational conditions stated.

Leather tanning, dye, finishing, impregnation and care products - Polishes, wax/cream (floor, furniture, shoes)
Unless otherwise stated, Covers concentrations up to 50 % Covers use up to 29 days/year - Covers use up to 1 application per day - Covers skin contact area up to 430.00 cm2 - For each use event, covers use amounts up to 56 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 1.23 h - No specific risk management measure identified beyond those operational conditions stated.

Leather tanning, dye, finishing, impregnation and care products - Polishes, spray (furniture, shoes)
Unless otherwise stated, Covers concentrations up to 50 % - Covers use up to 8 days/year - Covers use up to 1 application per day - Covers skin contact area up to 430.00 cm2 - For each use event, covers use amounts up to 56 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.33 h - No specific risk management measure identified beyond those operational conditions stated.

Lubricants, greases, release products - Liquids
Unless otherwise stated, Covers concentrations up to 100 % - Covers use up to 4 days/year - Covers use up to 1 application per day - Covers skin contact area up to 468.00 cm2 - For each use event, covers use amounts up to 2200 g. - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in room size of 34 m3 - For each use event, covers use amounts up to 0.17 h/per task: - No specific risk management measure identified beyond those operational conditions stated.

Lubricants, greases, release products - Pastes
Unless otherwise stated, Covers concentrations up to 20 % - Covers use up to 10 days/year - Covers use up to 1 application per day - Covers skin contact area up to 468.00 cm2 - For each use event, covers use amounts up to 34 g. - No specific risk management measure identified beyond those operational conditions stated.

Lubricants, greases, release products Sprays
Unless otherwise stated, Covers concentrations up to 50 % - Covers use up to 6 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428.75 cm2 - For each use event, covers use amounts up to 73 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 0.17 h - No specific risk management measure identified beyond those operational conditions stated.

Polishes and wax blends - Polishes, wax/cream (floor, furniture, shoes)
Unless otherwise stated, Covers concentrations up to 50 % - Covers use up to 29 days/year - Covers use up to 1 application per day - Covers skin contact area up to 430 cm2 - For each use event, covers use amounts up to 142 g. - Covers use in room size of 20m3 - Covers use under typical household ventilation. - For each use event, covers use amounts up to 1.23 h - No specific risk management measure identified beyond those operational conditions stated.

Polishes and wax blends - Polishes, spray (furniture, shoes)
Unless otherwise stated, Covers concentrations up to 50 % - Covers use up to 8 days/year - Covers use up to 1 application per day - Covers skin contact area up to 430 cm2 - For each use event, covers use amounts up to 35 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.33 h - No specific risk management measure identified beyond those operational conditions stated.

Textile dyes, finishing and impregnating products; including bleaches and other processing aids
Unless otherwise stated, Covers concentrations up to 10 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 857.50 cm2 - For each use event, covers use amounts up to 115 g. - Covers use in room size of 20m3 - Covers use under typical household ventilation. - For each use event, covers use amounts up to 1 h - No specific risk management measure identified beyond those operational conditions stated.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not available.

Exposure estimation and reference to its source - Environment: 1: Use as a fuel

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Consumers: 0: Use as a fuel

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. - Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. - Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Consumer

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Lubricants - Consumer: Low Environmental Release
List of use descriptors	:	**Identified use name:** Use in Lubricants. Consumer: Low release **Sector of end use:** SU21 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC09a, ERC09b, ESVOC SpERC 9.6d.v1 **Market sector by type of chemical product:** PC01, PC24, PC31
Environmental contributing scenarios	:	**Use in Lubricants.**
Health Contributing scenarios	:	
Processes and activities covered by the exposure scenario	:	Covers the consumer use of formulated lubricants in closed and open systems including transfer operations, application, operation of engines and similar articles, equipment maintenance and disposal of waste oil.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Use in Lubricants.

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 25 Fraction of Regional tonnage used locally: 2.2 Annual site tonnage (tonnes/year): 0.013 Maximum daily site tonnage (kg/day): 0.034
Frequency and duration of use	:	Continuous release. Emission Days (days/year):365
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.5 Release fraction to wastewater from wide dispersive use: 0.05 Release fraction to soil from wide dispersive use (regional only): 0.05
Conditions and measures related to municipal sewage treatment plant	:	Risk from environmental exposure is driven by freshwater. Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 38 Assumed domestic sewage treatment plant flow (m3/d): 2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling consumer exposure for 0: Use in Lubricants.

Concentration of substance in mixture or article	:	Unless otherwise stated. Covers concentrations up to 100%
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP. - Vapour pressure: 200 Pa
Amounts used	:	Unless otherwise stated. Covers use up to 6390 g Covers skin contact area up to 468 cm2
Frequency and duration of use	:	Unless otherwise stated. Covers use up to 1 application per day Covers exposure up to 6 hr per task:
Other given operational conditions affecting consumers exposure	:	Unless otherwise stated. Assumes activities are at ambient temperature (unless stated differently). Covers use in room size of 20m3; Provide adequate ventilation.

Product Categories - Operational conditions and risk management measures

Lubricants, greases, release products - Sprays
Unless otherwise stated, Covers concentrations up to 50% - Covers use up to 6 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428.75 cm2 - For each use event, covers use amounts up to 73g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 0.17 hr/ Single event. - No specific risk management measure identified beyond those operational conditions stated.

Adhesives, sealants - Glues, hobby use
Unless otherwise stated, Covers concentrations up to 30% - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 35.73 cm2 - For each use event, covers use amounts up to 9g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 4 hr/Single event. - No specific risk management measure identified beyond those operational conditions stated.

Adhesives, sealants - Glue from spray
Unless otherwise stated, Covers concentrations up to 30% - Covers use up to 6 days/year - Covers use up to 1 application per day - Covers skin contact area up to 35.73 cm2 - For each use event, covers use amounts up to 85.05g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 4.00 hr/Single event. - No specific risk management measure identified beyond those operational conditions stated.

Adhesives, sealants
Unless otherwise stated, Covers concentrations up to 30% - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 35.73 cm2 - For each use event, covers use amounts up to 75g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers use up to 1.00 hr/Single event. - No specific risk management measure identified beyond those operational conditions stated.

Polishes and wax blends - Polishes, wax/cream (floor, furniture, shoes)
Unless otherwise stated, Covers concentrations up to 50% - Covers use up to 29 days/year - Covers use up to 1 application per day - Covers skin contact area up to 430.00 cm2 For each use event, covers use amounts up to 142g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 1.23 hr/Single event. - No specific risk management measure identified beyond those operational conditions stated.

Polishes and wax blends - Polishes, spray (furniture, shoes)
Unless otherwise stated, Covers concentrations up to 50% - Covers use up to 8 days/year - Covers use up to 1 application per day - Covers skin contact area up to 430.00 cm2 - For each use event, covers use amounts up to 35g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 0.33 hr/Single event. - No specific risk management measure identified beyond those operational conditions stated.

Lubricants, greases, release products - Liquids
Unless otherwise stated, Covers concentrations up to 100% - Covers use up to 4 days/year - Covers use up to 1 application per day - Covers skin contact area up to 468.00 cm2 - For each use event, covers use amounts up to 2200g - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in room size of

34m3 - Covers exposure up to 0.17 hr/ Single event. - No specific risk management measure identified beyond those operational conditions stated.

Lubricants, greases, release products - Pastes
Unless otherwise stated, Covers concentrations up to 20% - Covers use up to 10 days/year - Covers use up to 1 application per day - Covers skin contact area up to 468cm2 - For each use event, covers use amounts up to 34g - No specific risk management measure identified beyond those operational conditions stated.

Adhesives, sealants, Glues DIY-use (carpet glue, tile glue, wood parquet glue)
Unless otherwise stated, Covers concentrations up to 30% - Covers use up to 1 application per day - Covers use up to 1 days/year - Covers skin contact area up to 110cm2 - For each use event, covers use amounts up to 6390g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 6hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: Use in Lubricants.

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Consumers: 0: Use in Lubricants.

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. - Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Consumer

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Lubricants - Consumer: High Environmental Release
List of use descriptors	:	**Identified use name:** Use in Lubricants. Consumer: high Environmental Release Category **Sector of end use:** SU21 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC08a, ERC08d, ESVOV SpERC 8.6e.v1 **Market sector by type of chemical product:** PC01, PC21, PC31
Environmental contributing scenarios	:	**Use in Lubricants.**
Health Contributing scenarios	:	
Processes and activities covered by the exposure scenario	:	Covers the consumer use of formulated lubricants in closed and open systems including transfer operations, application, operation of engines and similar articles, equipment maintenance and disposal of waste oil.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Use in Lubricants.

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 250 Regional use tonnage (tonnes/year): 25 Fraction of Regional tonnage used locally: 0.00005 Annual site tonnage (tonnes/year): 0.013 Maximum daily site tonnage (kg/day): 0.034
Frequency and duration of use	:	Continuous release. Emission Days (days/year):365
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.15 Release fraction to wastewater from wide dispersive use: 0.05 Release fraction to soil from wide dispersive use (regional only): 0.05
Conditions and measures related to municipal sewage treatment plant	:	Risk from environmental exposure is driven by freshwater. Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d):38 Assumed domestic sewage treatment plant flow (m3/d): 2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling consumer exposure for 0: Use in Lubricants.

Concentration of substance in mixture or article	:	Unless otherwise stated. Covers concentrations up to 100%
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP. - Vapour pressure: 200 Pa
Amounts used	:	Unless otherwise stated. Covers use up to 6390 g Covers skin contact area up to 468 cm2
Frequency and duration of use	:	Unless otherwise stated. Covers use up to 1 application per day Covers exposure up to 6 hr per task:
Other given operational conditions affecting consumers exposure	:	Unless otherwise stated. Assumes activities are at ambient temperature (unless stated differently). Covers use in room size of 20m3; Provide adequate ventilation.

Product Categories - Operational conditions and risk management measures

Lubricants, greases, release products - Sprays
Unless otherwise stated, Covers concentrations up to 50% - Covers use up to 6 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428.75 cm2 - For each use event, covers use amounts up to 73g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 0.17 hr/ Single event. - No specific risk management measure identified beyond those operational conditions stated.

Adhesives, sealants - Glues, hobby use
Unless otherwise stated, Covers concentrations up to 30% - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 35.73 cm2 - For each use event, covers use amounts up to 9g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 4 hr/Single event. - No specific risk management measure identified beyond those operational conditions stated.

Adhesives, sealants - Glue from spray
Unless otherwise stated, Covers concentrations up to 30% - Covers use up to 6 days/year - Covers use up to 1 application per day - Covers skin contact area up to 35.73 cm2 - For each use event, covers use amounts up to 85.05g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 4.00 hr/Single event. - No specific risk management measure identified beyond those operational conditions stated.

Adhesives, sealants
Unless otherwise stated, Covers concentrations up to 30% - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 35.73 cm2 - For each use event, covers use amounts up to 75g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers use up to 1.00 hr/Single event. - No specific risk management measure identified beyond those operational conditions stated.

Polishes and wax blends - Polishes, wax/cream (floor, furniture, shoes)
Unless otherwise stated, Covers concentrations up to 50% - Covers use up to 29 days/year - Covers use up to 1 application per day - Covers skin contact area up to 430.00 cm2 For each use event, covers use amounts up to 142g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 1.23 hr/Single event. - No specific risk management measure identified beyond those operational conditions stated.

Polishes and wax blends - Polishes, spray (furniture, shoes)
Unless otherwise stated, Covers concentrations up to 50% - Covers use up to 8 days/year - Covers use up to 1 application per day - Covers skin contact area up to 430.00 cm2 - For each use event, covers use amounts up to 35g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 0.33 hr/Single event. - No specific risk management measure identified beyond those operational conditions stated.

Lubricants, greases, release products - Liquids
Unless otherwise stated, Covers concentrations up to 100% - Covers use up to 4 days/year - Covers use up to 1 application per day - Covers skin contact area up to 468.00 cm2 - For each use event, covers use amounts up to 2200g - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in room size of

34m3 - Covers exposure up to 0.17 hr/ Single event. - No specific risk management measure identified beyond those operational conditions stated.

Lubricants, greases, release products - Pastes
Unless otherwise stated, Covers concentrations up to 20% - Covers use up to 10 days/year - Covers use up to 1 application per day - Covers skin contact area up to 468cm2 - For each use event, covers use amounts up to 34g - No specific risk management measure identified beyond those operational conditions stated.

Adhesives, sealants, Glues DIY-use (carpet glue, tile glue, wood parquet glue)
Unless otherwise stated, Covers concentrations up to 30% - Covers use up to 1 application per day - Covers use up to 1 days/year - Covers skin contact area up to 110cm2 - For each use event, covers use amounts up to 6390g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 6hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: Use in Lubricants.

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Consumers: 0: Use in Lubricants.

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. - Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. - Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Consumer

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Agrochemical - Consumer
List of use descriptors	:	**Identified use name:** Use in Agrochemicals uses - Consumer **Substance supplied to that use in form of:** As such **Sector of end use:** SU21 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC08a, ERC08d, ESVOC SpERC 8.11b.v1 **Market sector by type of chemical product:** PC12, PC27
Environmental contributing scenarios	:	**Use as a fuel**
Health Contributing scenarios	:	
Processes and activities covered by the exposure scenario	:	Covers the consumer use in agrochemicals in liquid and solid forms.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Use as a fuel

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Concentration of substance in mixture or article	:	
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 1.8 Fraction of Regional tonnage used locally: 2.2 Annual site tonnage (tonnes/year): 0.036 Maximum daily site tonnage (kg/day): 0.0099
Frequency and duration of use	:	Emission Days (days/year): 365 - Continuous release.
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.9 Release fraction to wastewater from wide dispersive use: 0.01 Release fraction to soil from wide dispersive use (regional only): 0.09
Conditions and measures related to municipal sewage treatment plant	:	Risk from environmental exposure is driven by freshwater. Estimated substance removal from wastewater via domestic sewage treatment (%): 93.6 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 12 Assumed domestic sewage treatment plant flow (m3/d): 2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling consumer exposure for 0: Use as a fuel

Concentration of substance in mixture or article	:	Unless otherwise stated. Covers concentrations up to 50%
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP. - Vapour pressure 200 Pa
Amounts used	:	Covers skin contact area up to 857.5 cm2
Frequency and duration of use	:	Unless otherwise stated. Covers use up to 1 application per day
Other given operational conditions affecting consumers exposure	:	Unless otherwise stated. Assumes activities are at ambient temperature (unless stated differently). - Covers use in room size of 20m3 - Provide adequate ventilation.

Product Categories - Operational conditions and risk management measures

Fertilisers. Lawn and garden preparations
Unless otherwise stated, Covers concentrations up to 50% - Covers use up to 365 days/year - Covers exposure up to 1 application per day - Covers skin contact area up to 857.5 cm2 - For each use event, assumes swallowed amount of 0.3 g. - No specific risk management measure identified beyond those operational conditions stated.

Plant Protection Product
Unless otherwise stated. Covers concentrations up to 50% - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 857.5 cm2 - For each use event, assumes swallowed amount of 0.3 g. - No specific risk management measure identified beyond those operational conditions stated.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website:	:	Not available.

Exposure estimation and reference to its source - Environment: 1: Use as a fuel

Exposure assessment (environment):	:	Not available.
Exposure estimation	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Consumers: 0: Use as a fuel

Exposure assessment (human):	:	Not available.
Exposure estimation	:	The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. - Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health	:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. - Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Consumer

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Cleaning Agent - Consumer
List of use descriptors	:	**Identified use name:** Use in Cleaning Agents - Consumer **Substance supplied to that use in form of:** As such **Sector of end use:** SU21 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC08a, ERC08d, ESVOC SpERC 8.4c.v1 **Market sector by type of chemical product:** PC08, PC09a, PC09b, PC24, PC03, PC04, PC09c, PC35, PC38
Environmental contributing scenarios	:	**Use as a fuel**
Health Contributing scenarios	:	

Processes and activities covered by the exposure scenario	:	Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air-care products.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Use as a fuel

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Concentration of substance in mixture or article	:	
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 50 Fraction of Regional tonnage used locally: 2.2 Annual site tonnage (tonnes/year): 0.25 Maximum daily site tonnage (kg/day): 0.068
Frequency and duration of use	:	Emission Days (days/year): 365 - Continuous release.
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.95 Release fraction to wastewater from wide dispersive use: 0.025 Release fraction to air from wide dispersive use (regional only): 0.025
Conditions and measures related to municipal sewage treatment plant	:	Risk from environmental exposure is driven by soil. Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 77 Assumed domestic sewage treatment plant flow (m3/d): 2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling consumer exposure for 0: Use as a fuel

Concentration of substance in mixture or article	:	Unless otherwise stated. Covers concentrations up to 100%
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP. - Vapour pressure 200 Pa
Amounts used	:	Unless otherwise stated.Covers use up to 13800 g. Covers skin contact area up to 857.5 cm2
Frequency and duration of use	:	Unless otherwise stated. Covers use up to 4 application per day - Covers exposure up to 8h/per task:
Other given operational conditions affecting consumers exposure	:	Unless otherwise stated. Assumes activities are at ambient temperature (unless stated differently). - Covers use in room size of 20m3 - Use with adequate ventilation.

Product Categories - Operational conditions and risk management measures

Air care, instant action (aerosol sprays)
Unless otherwise stated, Covers concentrations up to 50% - Covers use up to 365 days/year - Covers exposure up to 4 application per day - For each use event, covers use amounts up to 0.1 g. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.25 hr/per task: - Covers use under typical household ventilation. - No specific risk management measure identified beyond those operational conditions stated.

Air care, instant action (aerosol sprays) - Pesticide. - excipient only
Unless otherwise stated. Covers concentrations up to 50% - Covers use up to 365 days/year - Covers use up to 4 application per day - For each use event, covers use amounts up to 5 g. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.25 h/per task: - Covers use under typical household ventilation. - No specific risk management measure identified beyond those operational conditions stated.

Air care, continuous action (solid and liquid)
Unless otherwise stated, Covers concentrations up to 10 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 35.7 cm2 - For each use event, covers use amounts up to 0.48 g. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 8hr/per task: - Covers use under typical household ventilation. - No specific risk management measure identified beyond those operational conditions stated.

Anti-freezing agents - Washing car window
Unless otherwise stated. Covers concentrations up to 1 % - Covers use up to 365 days/year - Covers use up to 1 application per day - For each use event, covers use amounts up to 0.5 g. - Covers use in room size of 34 m2 - For each use event, covers use amounts up to 0.2 hr/per task: - Covers use in a one car garage (34 m3) under typical ventilation. - No specific risk management measure identified beyond those operational conditions stated.

Welding and soldering agents,Fluxing agents
Unless otherwise stated.Covers concentrations up to 20 % - Covers use up to 365 days/year - Covers use up to 1 application per day - For each use event, covers use amounts up to 12 g. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 1 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Anti-Freeze and de-icing products Pouring into radiator
Covers concentrations up to 10 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428 cm2 - For each use event, covers use amounts up to 2000 g. - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in a one car garage (34 m3) under typical ventilation. - For each use event, covers use amounts up to 0.17 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Anti-Freeze and de-icing products - Lock de-icer
Unless otherwise stated. Covers concentrations up to 50 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 214 cm2 - For each use event, covers use amounts up to 4 g. - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in room size of 34 m3 - For each use event, covers use amounts up to 0.25 hr/per task: - No specific risk

management measure identified beyond those operational conditions stated.

Biocidal products (e.g. Disinfectants, pest control) - Laundry and dish-washing products
Covers concentrations up to Unless otherwise stated. 5 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 857.50 cm2 - For each use event, covers use amounts up to 15 g. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.5 hr/per task: - Covers use under typical household ventilation. - No specific risk management measure identified beyond those operational conditions stated.

Biocidal products (e.g. Disinfectants, pest control) - Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)
Unless otherwise stated, Covers concentrations up to 5 % - Covers use up to 128 days/year - Covers use up to 1 application per day - Covers skin contact area up to 857.50 cm2 - For each use event, covers use amounts up to 27 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.33 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Biocidal products (e.g. Disinfectants, pest control) - Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)
Unless otherwise stated, Covers concentrations up to 15 % - Covers use up to 128 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428.00 cm2 - For each use event, covers use amounts up to 35 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.17 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Coatings and paints, thinners, paint removers - Water-borne latex wall paint
Covers concentrations up to Unless otherwise stated. 1.5 % - Covers use up to 4 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428.75 cm2 - For each use event, covers use amounts up to 2760 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 2.20 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Coatings and paints, thinners, paint removers - Solvent-rich, high-solid, water-borne paint
Unless otherwise stated. Covers concentrations up to 27.5 % - Covers use up to 6 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428.75 cm2 - Covers use up to 744 g. - Covers use in room size of 20m3 - Covers use under typical household ventilation. - For each use event, covers use amounts up to 2.2 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Coatings and paints, thinners, paint removers - Aerosol spray can
Unless otherwise stated. Covers exposure up to 50 % - Covers use up to 2 days/year - Covers use up to 1 application per day - Covers use up to 215 g. - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in room size of 34 m3 - For each use event, covers use amounts up to 0.33 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Coatings and paints, thinners, paint removers - Removers (paint-, glue-, wall paper-, sealant-remover)
Unless otherwise stated. Covers concentrations up to 50 % - Covers use up to 3 days/year - Covers use up to 1 application per day - Covers skin contact area up to 857.50 cm2 - For each use event, covers use amounts up to 491 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 2.00 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Fillers, putties, plasters, modelling clay - Fillers and putty
Unless otherwise stated, Covers concentrations up to 2 % - Covers use up to 12 days/year - Covers use up to 1 application per day - Covers skin contact area up to 35.73 cm2 - For each use event, covers use amounts up to 85 g. - Covers use in room size of 20m3 - Covers use under typical household ventilation. - For each use event, covers use amounts up to 4.00 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Fillers, putties, plasters, modelling clay - Plasters and floor equalisers
Unless otherwise stated, Covers concentrations up to 2% Covers use up to 12 days/year - Covers use up to 1 application per day - Covers skin contact area up to 857.50 cm2 - For each use event, covers use amounts up to 13800 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 2.00 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Fillers, putties, plasters, modelling clay - Modelling clay
Unless otherwise stated, Covers concentrations up to 1 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 254.4 cm2 - For each use event, assumes swallowed amount of 1g. - No specific risk management measure identified beyond those operational conditions stated.

Finger paints
Unless otherwise stated, Covers concentrations up to 50 % - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 254.40 cm2 - For each use event, assumes swallowed amount of 1.35 g. - Avoid using at a product concentration greater than 5 %

Cleaning and Washing operations. - Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)
Unless otherwise stated, Covers concentrations up to 15 % - Covers use up to 128 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428 cm2 - For each use event, covers use amounts up to 35 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.17hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Cleaning and Washing operations. - Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)
Unless otherwise stated, Covers concentrations up to 5 % - Covers use up to 128 days/year - Covers use up to 1 application per day - Covers skin contact area up to 457.5 cm2 - For each use event, covers use amounts up to 27 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.33 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Cleaning and Washing operations. - Laundry and dish-washing products
Unless otherwise stated, Covers concentrations up to 5 % Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 857.5 cm2 - For each use event, covers use amounts up to 15 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.5 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Lubricants, greases, release products - Liquids
Unless otherwise stated, Covers concentrations up to 100 % - Covers use up to 4 days/year - Covers use up to 1 application per day - Covers skin contact area up to 468.00 cm2 - For each use event, covers use amounts up to 2200 g. - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in room size of 34 m3 - For each use event, covers use amounts up to 0.17 h/per task: - No specific risk management measure identified beyond those operational conditions stated.

Lubricants, greases, release products - Pastes
Unless otherwise stated, Covers concentrations up to 20 % - Covers use up to 10 days/year - Covers use up to 1 application per day - Covers skin contact area up to 468.00 cm2 - For each use event, covers use amounts up to 34 g. - No specific risk management measure identified beyond those operational conditions stated.

Lubricants, greases, release products Sprays
Unless otherwise stated, Covers concentrations up to 50 % - Covers use up to 6 days/year - Covers use up to 1 application per day - Covers skin contact area up to 428.75 cm2 - For each use event, covers use amounts up to 73 g. - Covers use under typical household ventilation. - Covers use in room size of 20m3 - For each use event, covers use amounts up to 0.17 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not available.

Exposure estimation and reference to its source - Environment: 1: Use as a fuel

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Consumers: 0: Use as a fuel

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. - Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. - Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Consumer

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use as a Fuel - Consumer
List of use descriptors	:	**Identified use name:** Use as a fuel - Consumer **Substance supplied to that use in form of:** As such **Sector of end use:** SU21 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC09a, ERC09b, ESVOC SpERC 9.12c.v1 **Market sector by type of chemical product:** PC13
Environmental contributing scenarios	:	**Use as a fuel**
Health Contributing scenarios	:	
Processes and activities covered by the exposure scenario	:	Covers consumer uses in liquid fuels.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Use as a fuel

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Concentration of substance in mixture or article	:	
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 29 Fraction of Regional tonnage used locally: 2.2 Annual site tonnage (tonnes/year): 0.015 Maximum daily site tonnage (kg/day): 0.04
Frequency and duration of use	:	Emission Days (days/year): 365 - Continuous release.
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.0001 Release fraction to wastewater from wide dispersive use: 0.00001 Release fraction to soil from wide dispersive use (regional only): 0.00001
Conditions and measures related to municipal sewage treatment plant	:	Risk from environmental exposure is driven by freshwater. Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 49 Assumed domestic sewage treatment plant flow (m3/d): 2000
Conditions and measures related to external treatment of waste for disposal	:	Combustion emissions limited by required exhaust emission controls. - Combustion emissions considered in regional exposure assessment. - External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	This substance is consumed during use and no waste from the substance is generated.

Contributing exposure scenario controlling consumer exposure for 0: Use as a fuel

Concentration of substance in mixture or article	:	Unless otherwise stated. Covers concentrations up to 100%
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP. - Vapour pressure 200 Pa
Amounts used	:	Covers skin contact area up to 420 cm2 - Unless otherwise stated, Covers concentrations up to 37500g
Frequency and duration of use	:	Unless otherwise stated. Covers use up to 1 application per day - Covers exposure up to 2 hr/per task:
Other given operational conditions affecting consumers exposure	:	Unless otherwise stated. Assumes activities are at ambient temperature (unless stated differently). - Covers use in room size of 20m3 - Provide adequate ventilation.

Product Categories - Operational conditions and risk management measures

Fuel. Liquid: Automotive Refuelling
Unless otherwise stated, Covers concentrations up to 100% - Covers exposure up to 1 application per day - Covers use up to 52 days/year - Covers skin contact area up to 210 cm2 - For each use event, covers use amounts up to 37500 g. - Covers outdoor use. - Covers use in room size of 100 m3 - Covers exposure up to 0.03 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Fuel. Liquid Scooter Refuelling
Unless otherwise stated. Covers concentrations up to 100% - Covers use up to 52 days/year - Covers use up to 1 application per day - Covers skin contact area up to 210 cm2 - For each use event, covers use amounts up to 3750 g. - Covers outdoor use. - Covers use in room size of 100 m3 - Covers exposure up to 0.03 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Fuel. Liquid Garden Equipment - Use
Unless otherwise stated. Covers concentrations up to 100% - Covers use up to 26 days/year - Covers use up to 1 application per day - For each use event, covers use amounts up to 750g - Covers outdoor use. - Covers use in room size of 100m3 - Covers exposure up to 2 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Fuel. Liquid: Garden Equipment - Refuelling
Unless otherwise stated. Covers concentrations up to 100% - Covers use up to 26 days/year - Covers use up to 1 application per day - Covers skin contact area up to 420 cm2 - For each use event, covers use amounts up to 750g - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in room size of 34 m3 - Covers exposure up to 0.03 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Fuel. Liquid: Home space heater fuel
Unless otherwise stated. Covers concentrations up to 100% - Covers use up to 365 days/year - Covers use up to 1 application per day - Covers skin contact area up to 210 cm2 - For each use event, covers use amounts up to 3000g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers exposure up to 0.03 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Fuel. Liquid: Lamp oil
Unless otherwise stated. Covers concentrations up to 100% - Covers use up to 52 days/year - Covers use up to 1 application per day - Covers skin contact area up to 210 cm2 - For each use event, covers use amounts up to 100g - Covers use under typical household ventilation. - Covers use in room size of 20m3 - Covers use up to 0.01 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not available.

Exposure estimation and reference to its source - Environment: 1: Use as a fuel

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Consumers: 0: Use as a fuel

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. - Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. - Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Consumer

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use as Functional Fluids - Consumer
List of use descriptors	:	**Identified use name:** Use as functional fluids. - Consumer **Substance supplied to that use in form of:** As such **Sector of end use:** SU21 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC09a, ERC09b, ESVOC SpERC 9.13c **Market sector by type of chemical product:** PC16, PC17
Environmental contributing scenarios	:	**Use as a fuel**
Health Contributing scenarios	:	
Processes and activities covered by the exposure scenario	:	Use of sealed items containing functional fluids e.g. transfer oils, hydraulic fluids, refrigerants.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Use as a fuel

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Concentration of substance in mixture or article	:	
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 20 Fraction of Regional tonnage used locally: 2.2 Annual site tonnage (tonnes/year): 0.01 Maximum daily site tonnage (kg/day): 0.027
Frequency and duration of use	:	Emission Days (days/year): 365 - Continuous release.
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.05 Release fraction to wastewater from wide dispersive use: 0.025 Release fraction to soil from wide dispersive use (regional only): 0.025
Conditions and measures related to municipal sewage treatment plant	:	Risk from environmental exposure is driven by freshwater. Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 33 Assumed domestic sewage treatment plant flow (m3/d): 2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling consumer exposure for 0: Use as a fuel

Concentration of substance in mixture or article	:	Unless otherwise stated. Covers concentrations up to 100%
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP. - Vapour pressure 200 Pa
Amounts used	:	Covers skin contact area up to 468 cm2 - Unless otherwise stated, Covers concentrations up to 2200g
Frequency and duration of use	:	Covers exposure up to 0.167 hr/per task: - Exposure duration per day: 0.01
Other given operational conditions affecting consumers exposure	:	Unless otherwise stated. Assumes activities are at ambient temperature (unless stated differently). - Covers use in room size of 20m3 - Provide adequate ventilation.

Product Categories - Operational conditions and risk management measures

Heat transfer agents, liquid, Fluid.
Unless otherwise stated, Covers concentrations up to 100% - Covers exposure up to 1 application per day - Covers use up to 4 days/year - Covers skin contact area up to 468 cm2 - For each use event, covers use amounts up to 2200 g. - Covers use in a one car garage (34 m3) under typical ventilation. - Covers use in room size of 34 m3 - Covers exposure up to 0.17 hr/per task: - No specific risk management measure identified beyond those operational conditions stated.

Hydraulic fluids and additives, liquid
Unless otherwise stated. Covers concentrations up to 100% - Covers use up to 4 days/year - Covers use up to 1 application per day - Covers skin contact area up to 468 cm2 - For each use event, covers use amounts up to 2200 g. - Covers use in room size of 34 m3 - Covers exposure up to 0.17 hr/per task: - Covers use in a one car garage (34 m3) under typical ventilation. - No specific risk management measure identified beyond those operational conditions stated.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website:	:	Not available.

Exposure estimation and reference to its source - Environment: 1: Use as a fuel

Exposure assessment (environment):	:	Not available.
Exposure estimation	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Consumers: 0: Use as a fuel

Exposure assessment (human):	:	Not available.
Exposure estimation	:	The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. - Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health	:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. - Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Cleaning Agents - Professional
List of use descriptors	:	**Identified use name:** Use in Cleaning Agents - Professional **Process Category:** PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC10, PROC11, PROC13 **Sector of end use:** SU22 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC08a, ERC08d, ESVOC SpERC 8.4b.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Use in Cleaning Agents**
Health Contributing scenarios	:	**Use in Cleaning Agents**
Processes and activities covered by the exposure scenario	:	Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand).

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Use in Cleaning Agents

Product Characteristics	:	Substance is complex UVCB Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region:0.1 Regional use tonnage (tonnes/year):340 Fraction of Regional tonnage used locally:0.0005 Annual site tonnage (tonnes/year):0.17 Maximum daily site tonnage (kg/day):0.47
Frequency and duration of use	:	Continuous release. Emission Days (days/year):365
Environmental factors not influenced by risk management	:	Local freshwater dilution factor:10 Local marine water dilution factor:100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only):0.02 Release fraction to wastewater from wide dispersive use:0.000001 Release fraction to soil from wide dispersive use (regional only):0
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%):N/A Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%):0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%):93.7 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%):93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d):580 Assumed domestic sewage treatment plant flow (m3/d):2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Use in Cleaning Agents

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented. Contributing scenarios - Operational conditions and risk management measures Filling/preparation of equipment from drums or containers No other specific measures identified. Automatic processing with: (semi) Closed system - Use in contained systems No other specific measures identified. Automatic processing with: (semi) Closed system - Drum/batch transfers - Use in contained systems No other specific measures identified. Semi-automated process. (e.g. Semi-automatic application of floor care and maintenance products) No other specific measures identified. Filling/preparation of equipment from drums or containers No other specific measures identified. Manual Surfaces Cleaning Dipping, immersion and pouring No other specific measures identified. Cleaning with low-pressure washers - Rolling, Brushing no spraying No other specific measures identified. Cleaning with high-pressure washers - Spraying Indoor. Provide enhanced general ventilation by mechanical means. Cleaning with high-pressure washers - Spraying Outdoor. Ensure operation is undertaken outdoors. - Limit the substance content in the product to 25%. Manual Cleaning Spraying No other specific measures identified. Ad hoc manual application via trigger sprays, dipping etc. Rolling, Brushing No other specific measures identified. Application of cleaning products in closed systems Outdoor.

No other specific measures identified.

Cleaning of medical devices
No other specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website:	:	Not applicable.

Exposure estimation and reference to its source - Environment: 1: Use in Cleaning Agents

Exposure assessment (environment):	:	Not available.
Exposure estimation	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Use in Cleaning Agents

Exposure assessment (human):	:	Not available.
Exposure estimation	:	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health	:	Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Uses in Cleaning Agent - Industrial
List of use descriptors	:	**Identified use name:** Use in Cleaning Agents - Industrial **Process Category:** PROC02, PROC03, PROC04, PROC07, PROC08a, PROC08b, PROC10, PROC13 **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC04, ESVOC SpERC 4.4a.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Use in Cleaning Agents**
Health Contributing scenarios	:	**Use in Cleaning Agents**
Industry Association	:	ESIG
Processes and activities covered by the exposure scenario	:	Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand).

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Use in Cleaning Agents

Product Characteristics	:	Substance is complex UVCB Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region:0.1 Regional use tonnage (tonnes/year):1400 Fraction of Regional tonnage used locally:0.071 Annual site tonnage (tonnes/year):100 Maximum daily site tonnage (kg/day):5000
Frequency and duration of use	:	Continuous release. Emission Days (days/year):20
Environmental factors not influenced by risk management	:	Local freshwater dilution factor:10 Local marine water dilution factor:100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from process (initial release prior to RMM):1.0 Release fraction to wastewater from process (initial release prior to RMM):0.00003 Release fraction to soil from process (initial release prior to RMM):0
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by soil. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%):70 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%):0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):0

Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%):93.7 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%):93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d):5100000 Assumed domestic sewage treatment plant flow (m3/d):2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Use in Cleaning Agents

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature (unless stated differently). Contributing scenarios - Operational conditions and risk management measures Bulk transfers No other specific measures identified. Automatic processing with: (semi) Closed system - Use in contained systems No other specific measures identified. Automatic processing with: (semi) Drum/batch transfers No other specific measures identified. Application of cleaning products in closed systems No other specific measures identified. Filling/preparation of equipment from drums or containers No other specific measures identified. Use in contained batch processes No other specific measures identified. Degreasing small objects in cleaning station No other specific measures identified. Cleaning with low-pressure washers No other specific measures identified. Cleaning with high-pressure washers Provide enhanced general ventilation by mechanical means. Manual Surfaces Cleaning No other specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: Use in Cleaning Agents

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Use in Cleaning Agents

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Lubricant - Professional: Low environmental Release
List of use descriptors	:	**Identified use name:** Use in Lubricants.-Professional: low Environmental Release Category **Process Category:** PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC09, PROC10, PROC11, PROC13, PROC17, PROC18, PROC20 **Sector of end use:** SU22 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC09a, ERC09b, ESVOV SpERC 9.6b.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Manufacture of substance**
Health Contributing scenarios	:	**Manufacture of substance**
Processes and activities covered by the exposure scenario	:	Covers the use of formulated lubricants within closed or contained systems including incidental exposures during material transfers, operation of machinery/engines and similar articles, equipment maintenance and disposal of wastes.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substance

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 35 kTm/Year Fraction of Regional tonnage used locally: 1 Annual site tonnage (tonnes/year): 0.018 Maximum daily site tonnage (kg/day): 0.048
Frequency and duration of use	:	Continuous release. Emission Days (days/year): 365
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.15 Release fraction to wastewater from wide dispersive use: 0.05 Release fraction to soil from wide dispersive use (regional only): 0.05
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required. Treat air emission to provide the required removal efficiency of (%): N/A Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Assumed domestic sewage treatment plant flow (m3/d): 2000 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 52
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Manufacture of substance

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented. Contributing scenarios - Operational conditions and risk management measures General exposures (closed systems) No other specific measures identified. General exposures (open systems) No other specific measures identified. Operation of equipment containing engine oils and similar No other specific measures identified. Bulk transfers No other specific measures identified. Filling/preparation of equipment from drums or containers - Dedicated facility No other specific measures identified. Filling/preparation of equipment from drums or containers - Non-dedicated facility No other specific measures identified. Operation and lubrication of high energy open equipment - Indoor. No other specific measures identified. Operation and lubrication of high energy open equipment No other specific measures identified. Manual applications e.g. brushing, rolling No other specific measures identified. Treatment by dipping and pouring No other specific measures identified. Maintenance (of larger plant items) and machine set-up - Operation is carried out at elevated temperature (> 20°C above ambient temperature). No other specific measures identified. Maintenance (of larger plant items) and machine set-up

No other specific measures identified.

Operation and lubrication of high energy open equipment - Outdoor.
No other specific measures identified.

Maintenance of small items - Operation is carried out at elevated temperature (> 20°C above ambient temperature).
No other specific measures identified.

Engine lubricant service
No other specific measures identified.

Spraying
Provide enhanced general ventilation by mechanical means.

Material storage
No other specific measures identified.

Area of use:	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently).
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Engineering controls	:	Drain down system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website:	:	Not applicable.

Exposure estimation and reference to its source - Environment: 1: Manufacture of substance

Exposure assessment (environment):	:	Not available.
Exposure estimation	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Manufacture of substance

Exposure assessment (human):	:	Not available.
Exposure estimation	:	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health	:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Lubricant - Professional: High environmental Release
List of use descriptors	:	**Identified use name:** Use in Lubricants.-Industrial: high Environmental Release Category **Process Category:** PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC09, PROC10, PROC11, PROC13, PROC17, PROC18, PROC20 **Sector of end use:** SU22 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC08a, ERC08d, ESVOC SpERC 8.6c.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Manufacture of substance**
Health Contributing scenarios	:	**Manufacture of substance**
Processes and activities covered by the exposure scenario	:	Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of engines and similar articles, reworking on reject articles, equipment maintenance and disposal of waste oil.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substance

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 35 kTm/Year Fraction of Regional tonnage used locally: 0.0005 Annual site tonnage (tonnes/year): 0.018 Maximum daily site tonnage (kg/day): 0.048
Frequency and duration of use	:	Continuous release. Emission Days (days/year): 365
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.15 Release fraction to wastewater from wide dispersive use: 0.05 Release fraction to soil from wide dispersive use (regional only): 0.05
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required. Treat air emission to provide the required removal efficiency of (%): 0 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Assumed domestic sewage treatment plant flow (m3/d): 2000 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 57
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Manufacture of substance

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented. Contributing scenarios - Operational conditions and risk management measures General exposures (closed systems) No other specific measures identified. General exposures (open systems) No other specific measures identified. Operation of equipment containing engine oils and similar No other specific measures identified. Bulk transfers No other specific measures identified. Filling/preparation of equipment from drums or containers - Dedicated facility No other specific measures identified. Filling/preparation of equipment from drums or containers - Non-dedicated facility No other specific measures identified. Operation and lubrication of high energy open equipment - Indoor. No other specific measures identified. Operation and lubrication of high energy open equipment No other specific measures identified. Manual applications e.g. brushing, rolling No other specific measures identified. Treatment by dipping and pouring No other specific measures identified. Maintenance (of larger plant items) and machine set-up - Operation is carried out at elevated temperature (> 20°C above ambient temperature). No other specific measures identified. Maintenance (of larger plant items) and machine set-up

No other specific measures identified.

Operation and lubrication of high energy open equipment - Outdoor.
No other specific measures identified.

Maintenance of small items - Operation is carried out at elevated temperature (> 20°C above ambient temperature).
No other specific measures identified.

Engine lubricant service
No other specific measures identified.

Spraying
Provide enhanced general ventilation by mechanical means.

Material storage
No other specific measures identified.

Area of use:	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently).
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Engineering controls	:	Drain down system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website:	:	Not applicable.

Exposure estimation and reference to its source - Environment: 1: Manufacture of substance

Exposure assessment (environment):	:	Not available.
Exposure estimation	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Manufacture of substance

Exposure assessment (human):	:	Not available.
Exposure estimation	:	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health	:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Lubricants - Industrial
List of use descriptors	:	**Identified use name:** Use in Lubricants. - Industrial **Process Category:** PROC01, PROC02, PROC03, PROC04, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC17, PROC18 **Substance supplied to that use in form of:** As such **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC04, ERC07, ESVOC SpERC 4.6a.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Use in Lubricants.**
Health Contributing scenarios	:	**Use in Lubricants.**

Industry Association	:	Concawe
Processes and activities covered by the exposure scenario	:	Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Use in Lubricants.

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 10 Fraction of Regional tonnage used locally: 1 Annual site tonnage (tonnes/year): 10 Maximum daily site tonnage (kg/day): 500
Frequency and duration of use	:	Continuous release. - Emission Days (days/year): 20
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from process (initial release prior to RMM): 0.005 Release fraction to wastewater from process (initial release prior to RMM): 0.000003 Release fraction to soil from process (initial release prior to RMM): 0.001
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. Prevent discharge of undissolved substance to or recover from onsite wastewater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%): 70 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0

Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. - Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 570000 Assumed domestic sewage treatment plant flow (m3/d): 2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Use in Lubricants.

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). - Assumes a good basic standard of occupational hygiene is implemented. Contributing scenarios - Operational conditions and risk management measures General exposures (closed systems) No other specific measures identified. General exposures (open systems) No other specific measures identified. Bulk transfers No other specific measures identified. Filling/preparation of equipment from drums or containers No other specific measures identified. Initial factory fill of equipment No other specific measures identified. Operation and lubrication of high energy open equipment No other specific measures identified. Manual applications e.g. brushing, rolling No other specific measures identified. Treatment by dipping and pouring Allow time for product to drain from workpiece. Spraying Provide enhanced general ventilation by mechanical means. Maintenance (of larger plant items) and machine set-up No other specific measures identified. Maintenance (of larger plant items) and machine set-up - Operation is carried out at elevated temperature (> 20°C above ambient temperature). Drain down and flush system prior to equipment break-in or maintenance.

Remanufacture of reject articles
No other specific measures identified.

Maintenance of small items
Avoid manual contact with wet work pieces.

Material storage
Store substance within a closed system. - Transfer via enclosed lines.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website:	:	Not applicable.

Exposure estimation and reference to its source - Environment: 1: Use in Lubricants.

Exposure assessment (environment):	:	Not available.
Exposure estimation	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Use in Lubricants.

Exposure assessment (human):	:	Not available.
Exposure estimation	:	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health	:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Metal Working Fluids/Rolling Oilst - Industrial
List of use descriptors	:	**Identified use name:** Use in Metal working fluids/rolling oils - Industrial **Process Category:** PROC01, PROC02, PROC03, PROC04, PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC17 **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC04, ESVOC SpERC 4.7a.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Manufacture of substance**
Health Contributing scenarios	:	**Manufacture of substance**
Processes and activities covered by the exposure scenario	:	Covers the use in formulated MWFs/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substance

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 1 Annual site tonnage (tonnes/year): 100 Maximum daily site tonnage (kg/day): 5000
Frequency and duration of use	:	Continuous release. Emission Days (days/year): 20
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.02 Release fraction to wastewater from process (initial release prior to RMM): 0.0003 Release fraction to soil from process (initial release prior to RMM): 0
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required. Treat air emission to provide the required removal efficiency of (%): 70 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Assumed domestic sewage treatment plant flow (m3/d): 2000 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 6400000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Manufacture of substance

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). - Assumes a good basic standard of occupational hygiene is implemented. **Contributing scenarios - Operational conditions and risk management measures** General exposures (closed systems) No other specific measures identified. General exposures (open systems) No other specific measures identified. Bulk transfers No other specific measures identified. Filling/preparation of equipment from drums or containers No other specific measures identified. Material storage No other specific measures identified. Process sampling No other specific measures identified. Metal machining operations No other specific measures identified. Treatment by dipping and pouring No other specific measures identified. Spraying Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Manual applications e.g. brushing, rolling No other specific measures identified. Automated metal rolling/forming - Operation is carried out at elevated temperature (> 20°C above ambient temperature). No other specific measures identified.

Semi-automated metal rolling/forming - Operation is carried out at elevated temperature (> 20°C above ambient temperature).
No other specific measures identified.

Equipment cleaning and maintenance - Dedicated facility
No other specific measures identified.

Equipment cleaning and maintenance - Non-dedicated facility
No other specific measures identified.

Area of use: : Assumes use at not more than 20°C above ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release : Common practices vary across sites thus conservative process release estimates used.

Engineering controls : Drain down system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source - Environment: 1: Manufacture of substance

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Manufacture of substance

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Metal Working Fluids/Rolling Oilst - Professional
List of use descriptors	:	**Identified use name:** Use in Metal working fluids/rolling oils - Professional **Process Category:** PROC01, PROC02, PROC03, PROC08b, PROC09, PROC10, PROC11, PROC13, PROC17 **Sector of end use:** SU22 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC08a, ERC09a, ESVOC SpERC 8.7c.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Manufacture of substance**
Health Contributing scenarios	:	**Manufacture of substance**
Processes and activities covered by the exposure scenario	:	Covers the use in formulated MWFs/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substance

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 19 Fraction of Regional tonnage used locally: 1 Annual site tonnage (tonnes/year): 0.0093 Maximum daily site tonnage (kg/day): 0.025
Frequency and duration of use	:	Continuous release. Emission Days (days/year): 365
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.015 Release fraction to wastewater from wide dispersive use: 0.05 Release fraction to soil from wide dispersive use (regional only): 0.05
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%): N/A Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Assumed domestic sewage treatment plant flow (m3/d): 2000 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 29
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Manufacture of substance

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). - Assumes a good basic standard of occupational hygiene is implemented.

Contributing scenarios - Operational conditions and risk management measures

General exposures (closed systems)
No other specific measures identified.

Bulk transfers
No other specific measures identified.

Filling/preparation of equipment from drums or containers - Dedicated facility
No other specific measures identified.

Filling/preparation of equipment from drums or containers - Non-dedicated facility
No other specific measures identified.

Material storage
No other specific measures identified.

Process sampling
No other specific measures identified.

Metal machining operations
No other specific measures identified.

Treatment by dipping and pouring
No other specific measures identified.

Spraying
Provide enhanced general ventilation by mechanical means.

Manual applications e.g. brushing, rolling
No other specific measures identified.

Equipment cleaning and maintenance - Dedicated facility
No other specific measures identified.

Equipment cleaning and maintenance - Non-dedicated facility

No other specific measures identified.

Area of use:	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently).
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Engineering controls	:	Drain down system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website:	:	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source - Environment: 1: Manufacture of substance

Exposure assessment (environment):	:	Not available.
Exposure estimation	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Manufacture of substance

Exposure assessment (human):	:	Not available.
Exposure estimation	:	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health	:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Agrochemicals - Professional
List of use descriptors	:	**Identified use name:** Use in Agrochemicals uses - Professional **Process Category:** PROC01, PROC02, PROC04, PROC08a, PROC08b, PROC11, PROC13 **Sector of end use:** SU22 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC08a, ERC08d, ESVOC SpERC 8.11a.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Manufacture of substance**
Health Contributing scenarios	:	**Manufacture of substance**
Processes and activities covered by the exposure scenario	:	Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging; including equipment clean-downs and disposal.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substance

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 9.6 Fraction of Regional tonnage used locally: 0.0019 Annual site tonnage (tonnes/year): 0.019 Maximum daily site tonnage (kg/day): 0.053
Frequency and duration of use	:	Continuous release. Emission Days (days/year): 365
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.9 Release fraction to wastewater from wide dispersive use: 0.01 Release fraction to soil from wide dispersive use (regional only): 0.09
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%): N/A Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%):93.7 Assumed domestic sewage treatment plant flow (m3/d):2000 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 63
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Manufacture of substance

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented. **Contributing scenarios - Operational conditions and risk management measures** Transfer from/pouring from containers No other specific measures identified. Mixing in containers No other specific measures identified. Spraying/fogging by manual application Wear a respirator conforming to EN140 with Type A/P2 filter or better. - Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 (professional use) Ad hoc manual application via trigger sprays, dipping etc. No other specific measures identified. Clean-down and maintenance of equipment No other specific measures identified. Disposal. waste No other specific measures identified. Material storage No other specific measures identified.
Area of use:	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently).
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Engineering controls	:	Drain down system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: Manufacture of substance

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Manufacture of substance

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use as a Fuel - Industrial
List of use descriptors	:	**Identified use name:** Use as a fuel - Industrial **Process Category:** PROC01, PROC02, PROC03, PROC08a, PROC08b, PROC16 **Substance supplied to that use in form of:** As such **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC07, ESVOC SpERC 7.12a.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Use in Lubricants.**
Health Contributing scenarios	:	**Use in Lubricants.**
Processes and activities covered by the exposure scenario	:	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Use in Lubricants.

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 10 Fraction of Regional tonnage used locally: 1 Annual site tonnage (tonnes/year): 100 Maximum daily site tonnage (kg/day): 5000
Frequency and duration of use	:	Continuous release. - Emission Days (days/year): 20
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from process (initial release prior to RMM): 0.005 Release fraction to wastewater from process (initial release prior to RMM): 0.00001 Release fraction to soil from process (initial release prior to RMM): 0
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater sediment. No wastewater treatment required. Prevent discharge of undissolved substance to or recover from onsite wastewater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%): 95 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0

Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. - Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 1900000 Assumed domestic sewage treatment plant flow (m3/d): 2000
Conditions and measures related to external treatment of waste for disposal	:	Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations. - This substance is consumed during use and no waste from the substance is generated.

Contributing exposure scenario controlling worker exposure for 0: Use in Lubricants.

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). - Assumes a good basic standard of occupational hygiene is implemented.

Contributing scenarios - Operational conditions and risk management measures

General exposures (closed systems)
No other specific measures identified.

Bulk transfers
No other specific measures identified.

Material storage
No other specific measures identified.

Drum/batch transfers
No other specific measures identified.

Use as a fuel - Closed system
No other specific measures identified.

Equipment cleaning and maintenance
No other specific measures identified.

Vessel and container cleaning
No other specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: Use in Lubricants.

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Use in Lubricants.

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use as a Fuel - Professional
List of use descriptors	:	**Identified use name:** Use as a fuel - Professional **Process Category:** PROC01, PROC02, PROC03, PROC08a, PROC08b, PROC16 **Substance supplied to that use in form of:** As such **Sector of end use:** SU03, SU22 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC09a, ERC09b, ESVOC SpERC 9.12b.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Use in Lubricants.**
Health Contributing scenarios	:	**Use in Lubricants.**
Processes and activities covered by the exposure scenario	:	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Use in Lubricants.

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 0.0005 Annual site tonnage (tonnes/year): 0.05 Maximum daily site tonnage (kg/day): 0.14
Frequency and duration of use	:	Continuous release. - Emission Days (days/year): 365
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from process (initial release prior to RMM): 0.0001 Release fraction to wastewater from process (initial release prior to RMM): 0.00001 Release fraction to soil from process (initial release prior to RMM): 0.00001
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%): N/A Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. - Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 170 Assumed domestic sewage treatment plant flow (m3/d): 2000
Conditions and measures related to external treatment of waste for disposal	:	Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	This substance is consumed during use and no waste from the substance is generated.

Contributing exposure scenario controlling worker exposure for 0: Use in Lubricants.

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). - Assumes a good basic standard of occupational hygiene is implemented.

Contributing scenarios - Operational conditions and risk management measures

General exposures (closed systems)
No other specific measures identified.

Bulk transfers
No other specific measures identified.

Material storage
No other specific measures identified.

Drum/batch transfers
No other specific measures identified.

Use as a fuel - Closed system
No other specific measures identified.

Equipment cleaning and maintenance
No other specific measures identified.

Vessel and container cleaning
No other specific measures identified.

General exposures
No other specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: Use in Lubricants.

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Use in Lubricants.

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use as Functional Fluids - Industrial
List of use descriptors	:	**Identified use name:** Use as functional fluids. - Industrial **Process Category:** PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC09 **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC07, ESVOC SpERC 7.13a.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Manufacture of substance**
Health Contributing scenarios	:	**Manufacture of substance**
Processes and activities covered by the exposure scenario	:	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in closed industrial equipment including incidental exposures during maintenance and related material transfers

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substance

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 1 Annual site tonnage (tonnes/year): 10 Maximum daily site tonnage (kg/day): 500
Frequency and duration of use	:	Continuous release. Emission Days (days/year): 20
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from process (initial release prior to RMM): 0.000003 Release fraction to wastewater from process (initial release prior to RMM): 0.005 Release fraction to soil from process (initial release prior to RMM): 0.001
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required. Treat air emission to provide the required removal efficiency of (%): 0 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Assumed domestic sewage treatment plant flow (m3/d): 2000 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 570000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Manufacture of substance

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). - Assumes a good basic standard of occupational hygiene is implemented. **Contributing scenarios - Operational conditions and risk management measures** General exposures (closed systems) No other specific measures identified. General exposures (open systems) No other specific measures identified. Bulk transfers (Closed system) No other specific measures identified. Filling/preparation of equipment from drums or containers No other specific measures identified. Material storage No other specific measures identified. Remanufacture of reject articles No other specific measures identified. Equipment maintenance No other specific measures identified. Drum/batch transfers No other specific measures identified. Filling of articles/equipment (Closed system) No other specific measures identified.
Area of use:	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently).
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Engineering controls	:	Drain down system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: Manufacture of substance

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Manufacture of substance

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Distribución de la Sustancia - Industrial
List of use descriptors	:	**Identified use name:** Distribution of substance - Industrial **Process Category:** PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC09, PROC15 **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC01, ERC02, ESVOC SpERC 1.1b.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Distribution of substance**
Health Contributing scenarios	:	**Distribution of substance**
Processes and activities covered by the exposure scenario	:	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Distribution of substance

Product Characteristics	:	Substance is complex UVCB Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region:0.1 Regional use tonnage (tonnes/year):1700 Fraction of Regional tonnage used locally:0.002 Annual site tonnage (tonnes/year):3.4 Maximum daily site tonnage (kg/day):170
Frequency and duration of use	:	Continuous release. Emission Days (days/year):20
Environmental factors not influenced by risk management	:	Local freshwater dilution factor:10 Local marine water dilution factor:100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from process (initial release prior to RMM):0.001 Release fraction to wastewater from process (initial release prior to RMM):0.00001 Release fraction to soil from process (initial release prior to RMM):0.00001
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%):90 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%):0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%):93.7 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%):93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d):210000 Assumed domestic sewage treatment plant flow (m3/d):2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Distribution of substance

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP
Amounts used	:	Not applicable.
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.

Contributing scenarios-Operational conditions and risk management measures

General exposures (closed systems)
No other specific measures identified.

General exposures (open systems)
No other specific measures identified.

Process sampling
No other specific measures identified.

Laboratory activities
No other specific measures identified.

Bulk transfers (closed systems)
No other specific measures identified.

Bulk transfers (open systems)
No other specific measures identified.

Drum and small package filling
No other specific measures identified.

Equipment cleaning and maintenance
No other specific measures identified.

Storage
No other specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: Distribution of substance

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Distribution of substance

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Fabricación de la Sustancia - Industrial
List of use descriptors	:	**Identified use name:** Manufacture of substance -Industrial **Process Category:** PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC15 **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC01, ERC04, ESVOC SpERC 1.1.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Manufacture of substance**
Health Contributing scenarios	:	**Manufacture of substance**
Industry Association	:	ESIG
Processes and activities covered by the exposure scenario	:	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substance

Product Characteristics	:	Substance is complex UVCB Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region:0.1 Regional use tonnage (tonnes/year):17000 Fraction of Regional tonnage used locally:1 Annual site tonnage (tonnes/year):17000 Maximum daily site tonnage (kg/day):56000
Frequency and duration of use	:	Continuous release. Emission Days (days/year):300
Environmental factors not influenced by risk management	:	Local freshwater dilution factor:10 Local marine water dilution factor:100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from process (initial release prior to RMM):1.0e-2 Release fraction to wastewater from process (initial release prior to RMM):3.0e-4 Release fraction to soil from process (initial release prior to RMM):0.0001
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%):90 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%):0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):0

Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%):93.7 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%):93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d):3200000 Assumed domestic sewage treatment plant flow (m3/d):10000
Conditions and measures related to external treatment of waste for disposal	:	During manufacturing, no waste of the substance is generated. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	During manufacturing, no waste of the substance is generated. External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Manufacture of substance

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP
Amounts used	:	Not applicable.
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented. Contributing scenarios Operational conditions and risk management measures General exposures (closed systems) No other specific measures identified. General exposures (open systems) No other specific measures identified. Process sampling No other specific measures identified. Laboratory activities No other specific measures identified. General exposures (open systems) No other specific measures identified. Bulk transfers No other specific measures identified. Equipment cleaning and maintenance No other specific measures identified. Storage No other specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website:	:	Further information on the assumptions contained in this Exposure Scenario can be found at: http://www.esig.org/

Exposure estimation and reference to its source - Environment: 1: Manufacture of substance

Exposure assessment (environment):	:	Not available.
Exposure estimation	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Manufacture of substance

Exposure assessment (human):	:	Not available.
Exposure estimation	:	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file - "Site-Specific Production" worksheet.
Health	:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Formulación y (re)empaquetado de la sustancia y mezclas - Industrial
List of use descriptors	:	**Identified use name:** Formulation and (re)packing of substances and mixtures - Industrial **Process Category:** PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC14, PROC15 **Sector of end use:** SU03, SU10 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC02, ESVOC SpERC 2.2.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Formulation and (re)packing of substances and mixtures**
Health Contributing scenarios	:	**Formulation and (re)packing of substances and mixtures**
Industry Association	:	ESIG
Processes and activities covered by the exposure scenario	:	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Formulation and (re)packing of substances and mixtures

Product Characteristics	:	Substance is complex UVCB Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region:0.1 Regional use tonnage (tonnes/year):2400 Fraction of Regional tonnage used locally:1 Annual site tonnage (tonnes/year):2400 Maximum daily site tonnage (kg/day):7800
Frequency and duration of use	:	Continuous release. Emission Days (days/year):300
Environmental factors not influenced by risk management	:	Local freshwater dilution factor:10 Local marine water dilution factor:100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements):1.0e-2 Release fraction to wastewater from process (initial release prior to RMM):0.002 Release fraction to soil from process (initial release prior to RMM):0.0001
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%):0 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%):0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%):93.7 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%):93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d):950000 Assumed domestic sewage treatment plant flow (m3/d):2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Formulation and (re)packing of substances and mixtures

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP
Amounts used	:	Not applicable.
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented. Contributing scenarios-Operational conditions and risk management measures General exposures (closed systems) No other specific measures identified. General exposures (open systems) No other specific measures identified. Batch process, elevated temperature Operation is carried out at elevated temperature (> 20°C above ambient temperature). No other specific measures identified. Process sampling No other specific measures identified. Laboratory activities No other specific measures identified. Bulk transfers No other specific measures identified. Mixing operations (open systems) No other specific measures identified. Manual-Transfer from/pouring from containers No other specific measures identified.

Drum/batch transfers
No other specific measures identified.

Production of preparation or articles by tabletting, compression, extrusion or pelletisation
No other specific measures identified.

Drum and small package filling
No other specific measures identified.

Equipment cleaning and maintenance
No other specific measures identified.

Storage
No other specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website:	:	Not applicable.

Exposure estimation and reference to its source - Environment: 1: Formulation and (re)packing of substances and mixtures

Exposure assessment (environment):	:	Not available.
Exposure estimation	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Formulation and (re)packing of substances and mixtures

Exposure assessment (human):	:	Not available.
Exposure estimation	:	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health	:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Uso como combustible - Industrial
List of use descriptors	:	**Identified use name:** Manufacture of substance -Industrial **Process Category:** PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC15 **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC01, ERC04, ESVOC SpERC 1.1.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Manufacture of substance**
Health Contributing scenarios	:	**Manufacture of substance**
Industry Association	:	ESIG
Processes and activities covered by the exposure scenario	:	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substance

Product Characteristics	:	Substance is complex UVCB Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region:0.1 Regional use tonnage (tonnes/year):17000 Fraction of Regional tonnage used locally:1 Annual site tonnage (tonnes/year):17000 Maximum daily site tonnage (kg/day):56000
Frequency and duration of use	:	Continuous release. Emission Days (days/year):300
Environmental factors not influenced by risk management	:	Local freshwater dilution factor:10 Local marine water dilution factor:100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from process (initial release prior to RMM):1.0e-2 Release fraction to wastewater from process (initial release prior to RMM):3.0e-4 Release fraction to soil from process (initial release prior to RMM):0.0001
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%):90 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%):0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):0

Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%):93.7 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%):93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d):3200000 Assumed domestic sewage treatment plant flow (m3/d):10000
Conditions and measures related to external treatment of waste for disposal	:	During manufacturing, no waste of the substance is generated. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	During manufacturing, no waste of the substance is generated. External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Manufacture of substance

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP
Amounts used	:	Not applicable.
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented. Contributing scenarios Operational conditions and risk management measures General exposures (closed systems) No other specific measures identified. General exposures (open systems) No other specific measures identified. Process sampling No other specific measures identified. Laboratory activities No other specific measures identified. General exposures (open systems) No other specific measures identified. Bulk transfers No other specific measures identified. Equipment cleaning and maintenance No other specific measures identified. Storage No other specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website:	:	Further information on the assumptions contained in this Exposure Scenario can be found at: http://www.esig.org/

Exposure estimation and reference to its source - Environment: 1: Manufacture of substance

Exposure assessment (environment):	:	Not available.
Exposure estimation	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Manufacture of substance

Exposure assessment (human):	:	Not available.
Exposure estimation	:	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file - "Site-Specific Production" worksheet.
Health	:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Usos en Recubrimientos - Industrial
List of use descriptors	:	**Identified use name:** Uses in Coatings - Industrial **Process Category:** PROC01, PROC02, PROC03, PROC04, PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC15 **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC04, ESVOC SpERC 4.3a.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Uses in Coatings**
Health Contributing scenarios	:	**Uses in Coatings**
Processes and activities covered by the exposure scenario	:	Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Uses in Coatings

Product Characteristics	:	Substance is complex UVCB Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region:0.1 Regional use tonnage (tonnes/year):4300 Fraction of Regional tonnage used locally:1 Annual site tonnage (tonnes/year):4300 Maximum daily site tonnage (kg/day):43000
Frequency and duration of use	:	Continuous release. Emission Days (days/year):100
Environmental factors not influenced by risk management	:	Local freshwater dilution factor:10 Local marine water dilution factor:100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from process (initial release prior to RMM):0.98 Release fraction to wastewater from process (initial release prior to RMM):0.007 Release fraction to soil from process (initial release prior to RMM):0
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%):90 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%):59.8 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):0

Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%):93.7 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%):93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d):270000 Assumed domestic sewage treatment plant flow (m3/d):2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Uses in Coatings

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP
Amounts used	:	Not applicable.
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented. Contributing scenarios-Operational conditions and risk management measures General exposures (closed systems) No other specific measures identified. General exposures (closed systems) with sample collection No other specific measures identified. Film formation - force drying (50 - 100°C). Stoving (>100°C). UV/EB radiation curing No other specific measures identified. Mixing operations (closed systems) No other specific measures identified. Film formation - air drying No other specific measures identified. Preparation of material for application Mixing operations (open systems) No other specific measures identified. Spraying (automatic/robotic) Carry out in a vented booth or extracted enclosure. Spraying/fogging by manual application Provide enhanced general ventilation by mechanical means. Material transfers No other specific measures identified. Roller, spreader, flow application No other specific measures identified. Dipping, immersion and pouring No other specific measures identified.

Laboratory activities
No other specific measures identified.

Material transfers Drum/batch transfers Transfer from/pouring from containers
No other specific measures identified.

Production of preparation or articles by tabletting, compression, extrusion or pelletisation
No other specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: Uses in Coatings

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Uses in Coatings

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use as Functional Fluids - Professional
List of use descriptors	:	**Identified use name:** Use as functional fluids. - Professional **Process Category:** PROC01, PROC02, PROC03, PROC08a, PROC09, PROC20 **Sector of end use:** SU22 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC09a, ERC09b, ESVOC SpERC 9.13b **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Manufacture of substance**
Health Contributing scenarios	:	**Manufacture of substance**
Processes and activities covered by the exposure scenario	:	Use as functional fluids e.g. cable oils, transfer oils, insulators, refrigerants, hydraulic fluids in closed professional equipment including incidental exposures during maintenance and related material transfers.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substance

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 0.0005 Annual site tonnage (tonnes/year): 0.05 Maximum daily site tonnage (kg/day): 0.14
Frequency and duration of use	:	Continuous release. Emission Days (days/year): 365
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.05 Release fraction to wastewater from wide dispersive use: 0.025 Release fraction to soil from wide dispersive use (regional only): 0.025
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%): N/A Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Assumed domestic sewage treatment plant flow (m3/d): 2000 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 140
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Manufacture of substance

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). - Assumes a good basic standard of occupational hygiene is implemented. **Contributing scenarios - Operational conditions and risk management measures** General exposures (closed systems) No other specific measures identified. General exposures (open systems) No other specific measures identified. General exposures (open systems) Operation is carried out at elevated temperature (> 20°C above ambient temperature). No other specific measures identified. Filling/preparation of equipment from drums or containers No other specific measures identified. Transfer from/pouring from containers No other specific measures identified. Material storage No other specific measures identified. Equipment maintenance No other specific measures identified. Remanufacture of reject articles No other specific measures identified. Drum/batch transfers No other specific measures identified.
Area of use:	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently).
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Engineering controls	:	Drain down system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: Manufacture of substance

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Manufacture of substance

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Laboratories - Professional
List of use descriptors	:	**Identified use name:** Use in laboratories - Professional **Process Category:** PROC10, PROC15 **Substance supplied to that use in form of:** As such **Sector of end use:** SU22 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC08a, SVOC SpERC 8.17 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Use in Lubricants.**
Health Contributing scenarios	:	**Use in Lubricants.**
Processes and activities covered by the exposure scenario	:	Use of the substance within laboratory settings, including material transfers and equipment cleaning.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Use in Lubricants.

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 0.01 Fraction of Regional tonnage used locally: 0.0005 Annual site tonnage (tonnes/year): 0.000005 Maximum daily site tonnage (kg/day): 0.000014
Frequency and duration of use	:	Continuous release. - Emission Days (days/year): 365
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.5 Release fraction to wastewater from wide dispersive use: 0.5 Release fraction to soil from wide dispersive use (regional only): 0
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%): 0 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. - Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 0.017 Assumed domestic sewage treatment plant flow (m3/d): 2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Use in Lubricants.

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). - Assumes a good basic standard of occupational hygiene is implemented. **Contributing scenarios - Operational conditions and risk management measures** Laboratory activities No other specific measures identified. Cleaning No other specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website:	:	Not applicable.

Exposure estimation and reference to its source - Environment: 1: Use in Lubricants.

Exposure assessment (environment):	:	Not available.
Exposure estimation	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Use in Lubricants.

Exposure assessment (human):	:	Not available.
Exposure estimation	:	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health	:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Road and Construction Applications - Professional
List of use descriptors	:	**Identified use name:** Uses Road and construction applications - Professional **Process Category:** PROC08a, PROC08b, PROC11, PROC13, PROC10 **Sector of end use:** SU22 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC08d, ERC08f, ESVOC SpERC 8.15.v1 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Manufacture of substance**
Health Contributing scenarios	:	**Manufacture of substance**
Processes and activities covered by the exposure scenario	:	Application of surface coatings and binders in road and construction activities, including paving uses, manual mastic and in the application of roofing and water-proofing membranes.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substance

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 190 Fraction of Regional tonnage used locally: 0.0005 Annual site tonnage (tonnes/year): 0.093 Maximum daily site tonnage (kg/day): 0.25
Frequency and duration of use	:	Continuous release. Emission Days (days/year): 365
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 0.95 Release fraction to wastewater from wide dispersive use: 0.01 Release fraction to soil from wide dispersive use (regional only): 0.04
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%): N/A Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Assumed domestic sewage treatment plant flow (m3/d): 2000 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 270
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Manufacture of substance

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented. **Contributing scenarios - Operational conditions and risk management measures** Drum/batch transfers - Non-dedicated facility No other specific measures identified. Drum/batch transfers - Dedicated facility No other specific measures identified. Spraying/fogging by machine application - Operation is carried out at elevated temperature (> 20°C above ambient temperature). Wear a respirator conforming to EN140 with Type A/P2 filter or better. Manual applications e.g. brushing, rolling No other specific measures identified. Drum/batch transfers - Dedicated facility - Operation is carried out at elevated temperature (> 20°C above ambient temperature). No other specific measures identified. Spraying/fogging by machine application Wear a respirator conforming to EN140 with Type A/P2 filter or better. Dipping, immersion and pouring No other specific measures identified. Equipment cleaning and maintenance No other specific measures identified.
Area of use:	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently).
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Engineering controls	:	Drain down system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: Manufacture of substance

Exposure assessment (environment): : Not available.

Exposure estimation : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Manufacture of substance

Exposure assessment (human): : Not available.

Exposure estimation : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Health : Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition	:	UVCB Content in Benzene < 0.1% w/w.
Code	:	32549UK
Product name	:	PETROSOL 15A 15/20

Section 1 - Title

Short title of the exposure scenario	:	[919-446-0] Use in Laboratories - Industrial
List of use descriptors	:	**Identified use name:** Use in laboratories - Industrial **Process Category:** PROC10, PROC15 **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC02, ERC04 **Market sector by type of chemical product:** Not applicable. **Article category related to subsequent service life:** Not applicable.
Environmental contributing scenarios	:	**Manufacture of substance**
Health Contributing scenarios	:	**Manufacture of substance**
Processes and activities covered by the exposure scenario	:	Use of the substance within laboratory settings, including material transfers and equipment cleaning.

Section 2 - Exposure controls

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substance

Product Characteristics	:	Substance is complex UVCB - Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage (tonnes/year): 0.01 Fraction of Regional tonnage used locally: 1 Annual site tonnage (tonnes/year): 0.01 Maximum daily site tonnage (kg/day): 0.5
Frequency and duration of use	:	Continuous release. Emission Days (days/year): 20
Environmental factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from process (initial release prior to RMM): 0.025 Release fraction to wastewater from process (initial release prior to RMM): 0.02 Release fraction to soil from process (initial release prior to RMM): 0.0001
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required. Treat air emission to provide the required removal efficiency of (%): 0 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0
Organisational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7 Assumed domestic sewage treatment plant flow (m3/d): 2000 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs (%): 93.7 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 390
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario controlling worker exposure for 0: Manufacture of substance

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure < 0.5 kPa at STP.
Amounts used	:	No Limit
Frequency and duration of use	:	Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management	:	Not applicable.
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). - Assumes a good basic standard of occupational hygiene is implemented. **Contributing scenarios - Operational conditions and risk management measures** Laboratory activities No other specific measures identified. Cleaning No other specific measures identified.
Area of use:	:	Assumes use at not more than 20°C above ambient temperature (unless stated differently).
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Engineering controls	:	Drain down system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluation

Section 3 - Exposure estimation and reference to its source

Website:	:	Not applicable.

Exposure estimation and reference to its source - Environment: 1: Manufacture of substance

Exposure assessment (environment):	:	Not available.
Exposure estimation	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers: 0: Manufacture of substance

Exposure assessment (human):	:	Not available.
Exposure estimation	:	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES

Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health	:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.