BRUSS

G. BRUSS GmbH | Dichtungstechnik | Sligo | Ireland

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Office of Climate, Licensing & Resource Use
PO Box 3000
Johnstown Castle Estate
County Wexford

24 July 2017

IPC Reg. No: PO465-02
Re: Letter of 29 June 2016 Request for Information according to Reg. 10(2)(b)(ii) of EPA(IPC) (Licensing) Regulations 2013

Dear Mr. Clabby,

Further to the letter of request from the Agency , please find enclosed the response to the 12 requested items and an updated non technical summary.

Since the application was submitted in 2014 the site boundary has been revised to incorporate the former leased parking area adjacent to the site as the area was purchased by the company in 2016. An updated site boundary MAP is included.

We declare that the content of the electronic files on the accompanying CD-ROM is a true copy of the original form.

Please find enclosed the following documents for review:

- Request for information and attachments Hardcopy: 1 signed original, I copy
- 2 electronic copies of all files on CD-ROM

Please do not hesitate to contact us with any queries you may have,

Yours sincerely,

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Environmental Manager
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Table of Contents

Dated: 17.07.2017

Non-Technical Summary

G.BRUSS GmbH DICHTUNGSTECHNIK Sligo is a German owned manufacturing facility, producing synthetic rubber seals for the automotive industry. BRUSS Group has headquarters in Hamburg Germany with manufacturing location in Europe, Asia and North America. The company has been in operation at its Sligo site since 1982 and currently employs 300 people. G.BRUSS Sligo produces exclusively for the export market, supplying OEM Automotive clients in Europe, North America and Asia.

G.BRUSS holds an existing Integrated Pollution Control Licence (PO465-01). The BRUSS site activities relate to class 5.7, Chemical Sector, of the first schedule of the Environmental protection Agency Act 1992 to 2013. Activities licensed are as follows:

"The manufacture of elastomers where production capacity exceeds 1,000 litres per week"

The site is located within 1 km of its nearest sensitive receptors, SAC 000627 Cummeen Strand, Sligo Bay and Garavogue Estuary, SPA 004035 Cummeen Strand.

Since the application for review of a licence was submitted in 2014, the site boundary has been revised to incorporate the purchase of a formerly leased car parking area adjacent to the site. The updated MAP1 Site Boundary is included in this summary.

BRUSS has 4 off major emission points to air, A2-01 – A2-04 Rubber Fume stacks. . The possibility of fugitive emissions to air from roof mounted fans formerly in place for ventilation purposes have been removed in 2016 and replaced with air intake fans and an air purifying system for internal ambient air.

One end of pipe emission point to sewer, SE1, services the site. Water is utilised in modest quantities in BRUSS process activities. It dose not form part of the production of parts. Sediment control is increasingly a customer driven requirement. Clear water is used to wash finished parts before packing and dispatch for a percentage of parts produced on site. This is to remove any dust particles amassed on the parts from the ambient air in process. Investment in clean technology wash machines was made in 2015. All main wash machines on site recycle wash water for multiple wash cycles before discharge to sewer.

The production process at BRUSS involves rubber conversion, through a vulcanization process involving moulding and tempering, of pre-manufactured elastomer or rubber compound into precision engine seals of various dimensions and geometry.
Raw elastomer is compounded at the BRUSS Headquarters plant in Hamburg Germany from pre-manufactured base elastomer sourced from known manufacturers in Europe and Asia. BRUSS bespoke material compounds are shipped to BRUSS manufacturing sites globally.

There are a number of finishing processes after moulding which give the product its final properties.
(1) Cryogenic Shotblasting / Deflashing – parts are frozen in Nitrogen and blasted with plastic shot media to produce a refined finish
(2) Tempering – post cure – parts receive a number of hours in tempering ovens to complete vulcanization and give final properties

The primary raw materials and bulk storage items are rubber compound and liquid Nitrogen used in manufacturing. Hydraulic oils are required on site for the operation of production machinery. During manufacturing water based mould release agents are used to facilitate optimum manufacturing. Cleaning of moulding equipment is achieved using a Potassium Hydroxide based cleaning fluid, storage of which is in 3 off dipping tanks in a controlled maintenance area.

Energy source utilised at BRUSS is currently solely electricity. Over the past 5 years the use of fuel oil for space heating and power generator backup has been eliminated.

BRUSS is actively involved in programmes to reduce energy consumption and employ clean and more efficient technology were it is feasible to do so. In 2014 a heat exchange system was installed from a clean technology Air Compressor replacement unit. The heat exchange has replaced fuel oil heating system for space heating. An energy reduction project was first initiated at BRUSS in 2012 and culminated in an SEAI Energy Audit in 2016.
A saving in electricity consumption of 20.4 % of has been achieved between 2012 and 2014. Activities which contributed to this change included retrofit of invertor motors on all moulding machines, change out of 800 lighting units with energy saving units . Smaller incremental activities are being incorporated to continually monitor consumption.

BRUSS processes include a number of finishing wet / dry lube coatings applied to fully processed parts. These processes do not give rise to an emission to air or a discharge to water or sewer and are only associated with a waste stream.
The subject of this licence review is a new solvent based coating process that necessitates a stack emission to atmosphere from its exhaust stream. The process is a low volume bespoke application for an automotive OEM manufacturer. The quantity of coating fluid required annually is less than 100 litres. However this is an significant operation in the supply of a suite of products to the customer. The licence review is necessary as the emission is outside of the scope of the existing licence.

A comprehensive list of raw and ancillary materials used on site is included in **Table G.1 (I)**

North

Schools

School

Chy

UND

FW

CW

H

Mh

Mhs

LB

CR

Carpark

Admin.

BU1

BU2

BU3

Material Store

Dispatch

Maintenence & Tool Repair

FINISKLIN

ROAD

RATHEDMOND

Rathedmond

54

61

38

37

36

29

30

1

2

336400mN

336300mN

336200mN

168200mE

168300mE

168400mE

168500mE

168600mE

G. BRUSS GmbH Sligo Finisklin Road. Co. Sligo.	
Rev: 02	Project No: IIPC Licence Review Application
Scale: 1:1000	Application No:
Date: June 2017	Drawing : Site Boundary / Site Plan
By :	Drawing No: Application Form Map 1

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Tel: (071) 9156300 Fax: (071) 9169352

Dated: 17.07.2017

Regulation 10(2)(b)(ii) of EPA (Integrated Pollution Control)(Licencing) Regulations 2013
Request for supporting Information under Regulation 9 0f the regulations.

Item 1 - Emissions from Existing Operations

To satisfy the Agency's request to fully characterise the emission stream from the four existing air emission points at BRUSS, consisting of 4 off rubber fume stacks A2-01 – A2-04, monitoring was carried out as follows:

- with regard to parameters listed in Table 6.1 of the Agency's 'BAT Guidance Note for the Manufacture of Organic Chemicals'.
- Monitoring for Total Particulate at each emission point and subsequent analysis to determine rubber fume composition of the total particulate.
- Monitoring of speciated Volatile Organic Compounds (VOC's) and Total Organic Carbon as Carbon (TOC as C).

Monitoring was undertaken by TMS Environment Ltd, Tallagh, Dublin in August of 2016. Due to an equipment failure identified subsequently , monitoring was repeated on site on January 11 – 12, 2017.

Prior to the site visit , product material data sheet information was provided to TMS Ltd for all materials present at each emission point in order to identify which substances would be present in the emission stream. The Report of the Air Emissions Monitoring undertaken by TMS Environment Ltd is included in **Attachment 1.0**

All compounds identified, where applicable, were classified into a category based on the 'BAT Guidance Note for the Manufacture of Organic Chemicals' and have been compared to emission limits specified in Table 6.1 BAT Associated Levels of Emissions to Air. In addition, all Volatile Organic Compounds identified have been compared to TA Luft (Technical Instructions on Air Quality Control) in accordance with BAT guidelines for an existing facility.

Monitoring was undertaken under normal working conditions and analysis of the emission steam pre and post abatement is provided in the report.

Tables E (ii) (iii) for existing emission points A2-01 – A2-04, and additionally,for proposed emission point A2-05 have been completed and are included in **Attachemnt 1.0**

Summary - Air Emission Monitoring

A review of the results reported on the requested Air Emissions monitoring concludes:

(1) Rubber fume and particulate emissions are in compliance with conditions of the existing IPC licence at BRUSS PO-465-01

(2) emission results for compounds classified according to 'BAT Guidance Note for the Manufacture of Organic Chemicals' are within the emission limits specified in Table 6.1 Associated Levels of Emissions to Air of the guidance.

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Item 2 - Ovens and Vents

Details of the tempering ovens located at each emission point and the associated Electrostatic Precipitator (ESP) Abatement Unit are listed in **Table 1** below:

Emission Pt	Associated Abatement Unit (ESP)	Associated Tempering Ovens	Synthetic Rubber Compound present in Ovens at time of test * (Jan 11-12, 2017)
A2-01	ESP 08	Ovens 5,6,7	14617 HNBR, 14615 HNBR 05640 ACM 05532 ACM
A2-02	ESP 02	Ovens 8,9,10	05730 ACM 11721 AEM 05532 ACM 11827 AEM
A2-03	ESP 04	Ovens 11,12,13	W1150 AEM 11888 AEM 11825 AEM
A2-04	ESP 03	Ovens 101, 102, 103,	07781 FKM 05730 ACM 07770 FKM 11827 AEM

Table 1 Tempering Ovens associated with Emission Pts A2-1 tot A24

* Note 1: Rubber compound, while usually present at emission points / oven groups as shown, may vary according to business needs.

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Item 3 - Abnormal Operation / Overtime

During 2014 and 2015 internal remodelling of the production area was undertaken to optimise shop floor layout and improve process efficiencies . This operation entailed significant downtime in moulding as machine moves occurred during the working week. The overtime hours were necessary to compensate for losses in production during normal working hours. During this period, there was no increase in the number of parts produced on site.
Production Overtime and turnover in parts produced over the last 3 years is listed in **Table2.**

Year	No. of Weeks with Overtime hrs occurring	Total No. of Overtime Hours	Annual Turnover in Parts Produced (Million)
2014	44	704	123.44
2015	47	752	117.43
2016	30	480	117.01

Table 2 3 Year Cycle Overtime occurring

Note 1 Friday night shift overtime hours r - 10.00pm until 6.00 am, total of 8 hours. Saturday shift overtime hours - 6.00am to 2.00pm, total of 8 hours., occurring each week of overtime.

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Item 4 - Proposed Emissions from Gleitmo Coating Process Operation

(a) The Extent to which the Process has been Operational to Date

The Gleitmo process has been operational at various trial stages at BRUSS since it was first trialled in 2010. The process is a low volume bespoke coating process for OEM customer Daimler AG.

Since the first prototype fit up of the process, with its associated air emission stack , the Agency has been informed of operations through communication with the local Office of Environmental Enforcement in Castlebar. Initially communication with OEE was a fact finding correspondence in order to establish the significance of the process and to investigate whether a technical amendment to existing emissions to atmosphere conditions or a review of Licence was necessary.
A temporary generic waiver to use and test the process at the current low volume was received from OEE Castlebar on condition of submission of the Licence review Application, submitted in October 2014.

The operational hours of the process over the last 3 years is outlined in **Table 3**

Year	Maximum Run Time Hours per wk.	Total No. Wks.
2015	6	50
2016	6	50
2017 YTD	10	30

Table 3 3 Year Operations Gleitmo Coating Process

Upgrade to Process Equipment Design 2017

In Q1 2017 BRUSS upgraded its coating system equipment to best available design for the coating of small mass produced parts. The system is a hot air process involving tumble coating of parts in a closed spraying chamber. The system is totally encapsulated. Pre-filtered air from the existing compressed air system at BRUSS is heated to optimum temperature in the coating drum. Coating material dries quickly on the heated parts during the coating process. The additional 4 hours run time per week in 2017 is accounted for by the slightly longer cycle time, approx. 15 mins per batch, of the ROTAMAT unit compared to 5 mins coating time with the original equipment. However the 1 hour drying time for each batch has been eliminated.

There are a number of process efficiencies and environmental protection advantage inherent in the encapsulated system. **Table 4** provides a comparison between the ROTAMAT system and the original equipment design:

WaltherTrowel ROTAMAT R90	Original Coating Equipment (Gleitmo)
●Totally encapsulated coating drum ●Slight negative pressure to prevent fugitive emission of hazardous gasses	●Open drum ●Fugitive emission from coating drum in process
●Hot air system - Coating dries as it is applied ●Final Drying Process eliminated	●1 hour drying time required in separate drying oven
●Process parameters - air quantity, air temperature, spray quantity automatically controlled by an integral electrical control panel.	●Control limited to quantity of coating fluid per weight injected to drum / to generic spray gun
●HVLP automatic spray nozzles – low spraying mist application with very little overspray	●Spray gun contents applied into open drum ●Coating loss to extraction unit possible
●Controlled air intake ●Controlled discharge of exhaust stream and any volatile matter produced during drying process	●Air intake from surrounding room ●Large volume flow on exhaust stream
●In process measuring device to monitor organic solvent concentration in the exhaust stream available on request	●No monitoring device available

Table 4 Comparison of WT ROTAMAT with Original process Equipment (Gleitmo)

The ROTAMAT equipment exhaust flue is routed to the proposed A2-05 emission stack and discharge is post abatement with activated carbon unit as described in the Licence Review Application.

A full description of the process equipment and how the operation is carried out is included in **Attachment 4.0**

(b) Emission levels from proposed A2-05, Tables E(ii) (iii)

In August 2016, monitoring of emissions from the proposed A2-05 Gleitmo Coating was carried out on both pre and post abatement air streams. The results of this analysis is included in **Attachment 4.0**

The 2016 Monitoring represents a worst case process run using the original process equipment to full capacity, with significantly more spraying time and a large volume flow during the 30 mins of monitoring than was recorded in the monitoring analysis of 2014 included in the Licence Review Application.

In 2016, BRUSS had several difficulties is achieving a good quality of coating using this equipment. Using the equipment to full capacity signifies spraying (coating) batches consecutively during 1 hour and adding coated parts to drying oven sequentially instead of spraying 1 batch only and drying singly for 1 hour as represented by the 2014 analysis report. Therefore the 2016 analysis can be said to represent a fully operating process and consequently worst case emission levels.

Characterisation of the exhaust stream was based on all compounds identified in the Material Safety Data sheets provided by the coating manufacturer. The test Laboratory was provided with all safety data information.

Monitoring pre and post abatement of emissions from the ROTAMAT process equipment is scheduled for August 2017. Analysis is available approximately 2 - 3 week post test.

Tables E(ii) and E(iii) for Proposed A2-05 are included in **Attachment 1.0**

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Request for supporting Information under Regulation 9 0f the regulations.

Date: 17.07.2017

Item 5 - BAT Assessment

A review of *EU BREFF Production of Polymers* was conducted by BRUSS Sligo facility in conjunction with its parent company BRUSS Sealing Systems GmbH, (Hoisdorf) Hamburg, Germany.

(a) (b) Applicability of *EU BREF Best Available Techniques in the Production of Polymers*

An assessment of EU BREF BAT Production of Polymers indicates that existing activities at BRUSS Sligo site , the processing of pre-manufactured BRUSS rubber (elastomer) compound into finished parts, do not fall within the scope of activities outlined in the document.

BRUSS Corporate Headquarters have provided a statement of clarification on the production of BRUSS rubber compound, located centrally in BRUSS Germany, and activities carried out at BRUSS production sites globally. This statement is included in **Attachment 5.0**

The proposed activities, subject of the Licence review application, refer to the application of a coating to finished moulded rubber parts. This activity is not involved in the processing of the rubber compound.

The following **Table 5** provides a summary of the EU BREF review:

Section Title: EU BREFF BAT Production of Polymers	**Commentary : Applicability to Activities carried out at BRUSS Site**
Scope – **4.1** Chemical Installations for the production of basic organic chemicals such as: (b) synthetic rubbers	BRUSS Sligo processes do not involve the production of synthetic rubbers.
Para. 2 "The further processing of polymers to produce final products is not included in the scope of this document."	BRUSS Sligo processes are involved in the further processing of pre-manufactured polymer compound to produce finished parts for the automotive industry.
Para. 3 "Process techniques such as ..compounding, are included when they are technically connected to the production of the polymer and carried out on the same site."	BRUSS Sealing Systems Germany site is involved in the compounding of bought- in base polymer in the manufacture of BRUSS bespoke compounds delivered to BRUSS sites worldwide. BRUSS Sealing Systems Germany site is not involved in the production of base

	polymer.
Para. 4 " The treatment of waste gas and waste water.."	BRUSS suggests that **BREF CWW** Chemical Sector is more applicable to processes and activities on site.
Review Chapter 1 – General Information on the Production of Polymers	**1.5 Main products** **1.5.1 Polymers based on crude oil** Engineering Polymers – NBR EPDM High Performance polymers –Fluorinated rubbers These polymers are a component of BRUSS compounds used in the production of finished parts at BRUSS Sligo site. A complete list of BRUSS compounds is provided in **Attachment 10.0**
Review Chapter 2 – General Processes and Techniques Applied in the Production of Polymers	**Fig. 2.1 general production scheme** The processes listed on the schematic are not relevant to BRUSS production
Review of Chapters 3 – 11 Polymer Types	Chapters 3-7 and chapters 9-11 refer to materials not relevant to BRUSS production.
Chapter 8 - Solution Polymerised Rubber containing Butadiene: Processes: ☐purification of monomers and solvent ☐polymerisation ☐hydrogenation (if applicable) ☐blending section ☐solvent removal and product isolation ☐packaging	•**NBR and EPDM** identified among rubber types processed in BRUSS production; further processing of pre-manufactured rubber to finished parts. The processes listed in the manufacture of the polymer are not applicable to the BRUSS process.
Chapter. 12 – General Techniques in the determination of BAT for Production of Polymers **Chapter 13 – BAT**	BRUSS Sligo site activities do not fall within the scope of the document. **12.1 As applicable to all IPPC installations**, Environmental Management System – An externally accredited Management System to ISO 14001:2009 is in operation at BRUSS Sligo site. It is to be noted that production consumption volumes of rubber(Elastomer) compound at BRUSS Sligo do not exceed 1,000tonnes annually. Consumption in 2016 was 748tonnes.

Table 5 Review summary BREF Production of Polymers

(c) BAT Guidance Manufacture of Organic Chemicals.

An assessment of the scope and applicability of the BAT Guidance Manufacture of Organic Chemicals to the activities at BRUSS Sligo site is addressed in the following **Table 6**:

Section Title: BAT Manufacture of Organic Chemicals	**Commentary : Applicability to Activities carried out at BRUSS Site**
3. Sectors Covered by this Guidance Note	Sector 5.7 BRUSS site currently assigned to category 5.7 Licence PO465-01
4.**1 Description of Processes in the Sector (organic chemicals)**	BRUSS Sligo site processes and activities are not relevant to any of the stated unit processes or unit operations listed in the guidance section 4.1
4.2 Risk to the Environment (of the Sector) 4.2.1 Emission to Air 4.2.2 Emission to Water 4.2.3 Waste 4.2.4 Water Consumption 4.2.5 Energy Use	Although BRUSS process and activities are not relevant to the unit process and operations in the guidance, the company incorporates control and monitoring of the risks to the environment listed in section **4.2** through Licence compliance and the implementation of its EMS ISO14001:2009
4.3 Control Techniques - 5.4 Management and Treatment of Residues	These Sections of the Guidance are not relevant to BRUSS processes and activities.
5.3.3 Minimisation of VOC emissions	**Ref: Proposed Gleitmo coating process -** Although not directly applicable, BRUSS intends to operate in line with the recommended minimisation of VOC emission techniques: 5.3.3 ●Advanced equipment design ●Fully enclosed coating and drying operation ●Enclosed system minimising volume flow Discussion of Process Equipment upgrade is included in response to **Item 4.**
5.4.3 Treatment of Gaseous Residues 5.4.2 Re-use of Solvents 5.4.3.1 Selection of VOC Recovery / Abatement Techniques	BRUSS is currently reassessing production processing techniques for solvent based coatings used on site. Full discussion of feasibility review of existing operations relating to solvent use on site is included in response to **Item No. 11(b)**

	Proposed Gleitmo Coating - (A2-5 Em Pt) Although this coating is solvent based, the quantity of coating components involved, 77 litres per annum, solvent recovery may not be a feasible option.
5.5 Environmental Management	BRUSS has an accredited and implemented EMS, certified to the environmental standard ISO14001:2009
5.6 Process Specific BAT for Other Processes	BRUSS suggests that **BREF CWW** Chemical Sector is more applicable to processes and activities on site
6.0 BAT Associated Emission Levels 6.1 Emission Levels for Discharges to Air 7.1 Monitoring of Emissions to Air	As part of the request for additional information BRUSS has performed analysis on its existing A2-01 – A2-04 rubber fume air emission points to characterise the emissions with regard to Table 6.1 of the Guidance. The report of this analysis is included in **Attachment 2.0** of the Item 1 response.
7.2 Compliance Monitoring of Aqueous Emissions **7.4 Monitoring of Solid Waste**	Monitoring of Aqueous and Solid Waste emissions on BRUSS Site is carried out in compliance with existing IPC Licence.

Table 6 Review of BAT Guidance Manufacture of organic Chemicals

A review of BAT guidance documents, as considered appropriate to existing operations at BRUSS and including BREF 2003 Waste Water & Waste Gas Chemical Sector, was in included in the Licence review Application and is provided in Attachment I.8 of the application.

The existing licence for the BRUSS site PO465-01 stipulates the following parameter and emission limit Values for emissions to atmosphere from existing operations:

Parameter	**Emission Limit Value (from 01/01/2001)**
Rubber Fume	150mg/m3 if emission is <0.5kg/hr 50mg/m3 if emission is >0.5kg/hr

Table 7 Licence No. PO465-01 Schedule 1(i) Emission to Atmosphere . EPA 1999.

Since grant of licence, BRUSS Sligo has monitored concentrations of rubber fume and particulate matter at each stack.

The abatement system in place at emission points A2-1 – A2-4, Rubber Fume Stacks, is Electrostatic Precipitation. This technique is in accordance with BREF CWW for the abatement of particulate matter in gaseous streams.

Condition 5.11 of existing licence refers to the feasibility of abatement of particulate matter in the production air space. Abatement using electrostatic precipitation is in place in the internal air space since 2015. The object of the ambient air abatement is to reduce occupational hazard and to address any possibility of fugitive emissions from the production area.

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Regulation 10(2)(b)(ii) of EPA (Integrated Pollution Control)(Licencing) Regulations 2013

Item 6 - Applicable Class of Activity

With reference to the first Schedule of the Environmental Protection Agency Act 1992 – 2013 Activities to which Part IV applies, the BRUSS site is defined by the scope of activities Licensed in its existing Licence PO465-01 as :

" The manufacture of elastomers where production capacity exceeds 1,000 litres per week "

This text is consistent with category 5.7 of the First Schedule. In the years since grant of Licence BRUSS has received confirmation of this category in documents received from the Agency such as the annual PRTR reporting system.

In 2014, and in advance of submitting the Application for Review of Licence, BRUSS received the following correspondence from the Agency:

- Confirmation of status as Integrated Pollution Control Licence as opposed to Industrial Emissions Licence - dated 04.03.2014 Licensing Staff Ms Ann Kehoe
- Letter of correspondence re procedure for Licence Application – dated 20.02.2014 Licensing Staff Ms Marie O' Connor

Category 5.12 of the First Schedule of the Act
This category refers to :
" The production of organic chemicals, such as: (i) Synthetic Rubbers"

A review of process activities at the BRUSS site with regard to *EU BREF BAT Production of Polymers* and *BAT Manufacture of Organic Chemicals* has identified the following:

- Base synthetic rubber (elastomer) is supplied to BRUSS Sealing Systems, Germany, from a number of know manufacturers
- Pre-manufactured base elastomer is a raw material component in the development and production of BRUSS bespoke synthetic rubber compounds.
- Compounds are manufactured by blending of component elements such as fillers, plasticizers and additional chemicals together with the base elastomer
- Compounding of BRUSS bespoke synthetic rubber takes place in BRUSS Sealing Systems, Germany and is shipped to BRUSS manufacturing sites globally, including BRUSS Sligo site.

Processess at BRUSS Sligo site are involved in rubber conversion, through a vulcanisation process , that is, the further processesing of synthetic rubber into finished parts. It is therefore conlcuded that category 5.12 – Manufacture of base elastomer (synthetic rubber) is not applicable to BRUSS Sligo site activities.

Documentation to support this response is included in **Attachment 6.0**

Dated: 17.07.2017

Licence Application No: PO465-02 G. BRUSS GmbH, DICHTUNGSTECHNIK, Finisklin Road, Sligo
Regulation 10(2)(b)(ii) of EPA (Integrated Pollution Control)(Licencing) Regulations 2013

Item 7 - Planning and Environmental Impact Assessment

(a) Application for Planning Permission

The Gleitmo coating process setup necessitated the erection of a small galvanised unit to house the coating equipment and an exhaust stack. The unit is located within the footprint of the existing buildings. An application for Planning Exemption for the erection of this unit and associated exhaust stack was submitted to Sligo County Council on 19th June 2014. Planning exemption was granted by Sligo County Council on 10th July 2014, planning reference No. ED 182.

A copy of the planning exemption was included in the original licence application attachments and is included here for review in **Attachment 7.0**

(b) Capacity threshold Schedule 5 of the Planning and Development Acts 2001, as amended

The gross consumption of elastomer(Rubber Compound) in the manufacturing of product at the BRUSS site was 748 tonnes in 2016 and is consistently within 10% of this figure each year . The proposed Gleitmo coating process is a finishing process only, applied to 1.5% of finished product produced on site.

We can therefore confirm that manufacturing activities at BRUSS fall below the capacity threshold of 10,000 tonnes for the Rubber industry as detailed in Schedule 5 of the Planning and Development Act 2001, as amended.

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Item 8 - Applicability of Chapter V of the Industrial Emissions Directive
Part 1, Part 2 of Annex VII

(a) (b) Existing and Proposed Operations Annex VII Part 1

The principal manufacturing operation at BRUSS can be classified according to Annex VII Part 1 as the following:

No.	Annex VII Part 1	Description
10	Rubber Conversion	Vulcanisation of synthetic rubber and ancillary operations for the conversion of synthetic rubber into finished product

Vulcanisation takes place at moulding and is completed at the tempering finishing process.
The tempering process gives rise to the emission to atmosphere and is associated with emission points A2-01 – A2-04.

There is no additional solvent consumption at BRUSS Sligo site associated with the vulcanisation (moulding) process or vulcanisation (tempering) process apart from the solvent inherent in the rubber compound being consumed at moulding.

BRUSS Sligo moulding processes consume ready made rubber compound, imported from its parent plant in Hamburg Germany, to convert to finished parts.

The coating processes at BRUSS, including the proposed Gleitmo coating process, involve the application of a surface wet or dry film coating onto fully vulcanised finished parts. BRUSS coating processes are not involved in the vulcanisation process. BRUSS coating processes are not identified in the processes specified in Annex VII of the Directive.

(a) (b) Existing and Proposed Operations Annex VII Part 2

The vulcanisation process does not involve consumption of solvent, therefore the consumption thresholds specified in AnnexVII Part 2 of the Directive are not applicable to BRUSS processes.

The thresholds for gaseous emissions from rubber conversion are listed as follows:

Activity	Emission limit values in waste gases (mg C/Nm3)
Rubber conversion	20

BRUSS has undertaken analysis of its rubber fume waste gas stream from all existing emission points for a suite of tests according to BAT Manufacture of Organic Chemicals at the request of the Agency.

The results of this analysis area included in **Attachment 1.0**
A summary of the Total Organic Carbon analysis per emission point are provided in **Table 8 :**

EM Pt.	Pre Abatement	Post Abatement	Unit	Annex VII Part 2 Emission Limit
A2-01	20.3	11.4	mgC/Nm3	20
A2-02	34.6	28.7	mgC/Nm3	20
A2-03	7.0	10.2	mgC/Nm3	20
A2-04	3.09	2.60	mgC/Nm3	20

Table 8 Summary of Emissions mgC/Nm3 A2-01 – A2-04

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Item 9 - Article 58 of IED(2010/75/EU)

(a) (b) Substitution of Hazardous substances Article 58 IED (2010/75/EU)

Material/Substance	CAS No.	Nature of Use	Annual Tonnage	Haz Phrase	R Phrase
FKM Flourocarbon Rubber Type: 07781		Production Moulding	28.39		
Lead-monoxide	1317-36-8	Constituent of Rubber compound	(2%) 0.567	H360D	R61
Phenolpathlein Solution (1%)	77-09-8	Titration	0.005	H350	R45
Korro 60-90 Boric Acid in solution (<1%)	10043-35-3	Corrosion Inhibitor	0.400	H360FD	R61, 62
Gleitmo Coating Fluids K3 Dibutyltin	77-58-7	Surface Coating of Parts	0.002	H360FD	R60, 61

Table 9 Hazardous substance BRUSS Site Article 58 IED(2010/75/EU)

Table 9 represents a list of substances used at BRUSS site containing hazard statements as identified in Article 58 58 IED (2010/75/EU) .

In each case, the name of the substance / compound in use is identified in bold. The constituent of the substance giving rise to the hazard is listed with concentration levels where appropriate.

Lead-monoxide - FKM 07781 Rubber Compound Technical Change

BRUSS Sealing Systems GmbH, Germany, has raised a formal 'Technical Change' request with its OEM customers (Daimler AG, MAN) to develop a Lead-Free alternative version of its 07781 compound. This project has been in operation since 2016 and will conclude in 2017.
BRUSS Sligo site will have fully completed its changeover to the new compound by end 2017.

(c) Substitution of Dibutyltin in Gleitmo Coating

BRUSS received a trial quantity of an alternative K3 constituent for its Gleitmo coating from the product manufacturer FUCHS Lubritech in 2014. However this trial did not succeed due the viscous nature of the alternative substance. FUCHS has continued to develop the substance and the current version of this alternative is outlined in **Table 10** below. As can be seen the alternative is just marginally improved in Hazard classification. BRUSS has not yet commenced with the trial of **K3 Gleitmo SLF TF,** however trials are planned in Q 3 2017. FUCHS is continuing with the development of this product.

Material Substance	**CAS No.**	**Hazard Phrase**	**R Phrase**
K3 Gleitmo SFL **Current Substance** Dibutylzinndilaurat	 **77-58-7**	 H360FD	T; R 22-38-48/25-51/53-68 **60-61**
K3 Gleitmo SLF TF **Alternative Substance** Hydrocarbons of low viscosity Zn-octoat	 EC: 927-241-2 EINECS: 286-272-3	 H226 H304. H336 H412: H361	 **R62**

Table 10 Gleitmo K3 Original / Alternative Comparison

The current version of the SDS information for K3 Gleitmo SFL TF is included in **Attachment 9.0**

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Regulation 10(2)(b)(ii) of EPA (Integrated Pollution Control)(Licencing) Regulations 2013

Item 10 - Section D.1 List of Elastomers (Synthetic Rubber) in Use at BRUSS Sligo Site

The following **Table 11** is a list of the synthetic rubber compounds currently used and foreseen to be used as the principle raw material of our compression and injection moulded products:

Elastomer Rubber Homogenous Type Abbreviation (ASTM 1418)	**Chemical Description**	**BRUSS Bespoke Compound -** Variants of type	**Quantities consumed as raw material in BRUSS Moulding - Production of Finished Parts** 2016 (tonnes)
NBR	Acrylonitrile-butadiene Rubber	01736	2.77
		01722	1.59
		01723	2.55
HNBR	Hydrogenated Acrylonitrile -butadiene Rubber	14750	20.69
		14615	0.55
		14617	3.21
EPDM	Ethylene Propylene Diene Rubber	09611	84.56
		09617	2.88
		09716	1.62
		09613	0.50
FKM	Flourocarbon Rubber	07770	13.79
		07730	13.34
		07795	15.00
		07781	28.39
		07694	0.14
		07709	0.14
		07712	13.98
ACM	Polyacrylate Rubber	05501	24.97
		05730	46.95
		05532	65.81
		05740	12.02
		05640	43.03
AEM	Ethylene Acrylic Rubber	W1150	115.86
		11888	50.10
		11721	28.10

		11727	19.52
		11827	20.00
		11825	65.00
		11621	37.96
		11622	11.45

Table 11 List of Synthetic Elastomer Rubber Compounds used in BRUSS Sligo Production

Further description of the compounds and their constituent substances is provided in Table G.1(i) and is included in **Attachment 11.0**

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Dated: 17.07.2017

Regulation 10(2)(b)(ii) of EPA (Integrated Pollution Control)(Licencing) Regulations 2013
Request for supporting Information under Regulation 9 0f the regulations.

Item 11 - Process Related Raw Materials, Intermediates, Products

(a)List of Materials

A list of existing raw materials and process ancillary materials, including a full breakdown of BRUSS Elastomers, is provided in Table G.1(i). The list includes the proposed coating material Gleitmo SFL 9680. Table G.1(i) is attached in **Appendix 11.0**

(b) Solvent Usage

The following **Table 12** is a list of solvent materials consumed in existing production processes at BRUSS and the proposed process Gleitmo Coating:

Product Name / Chemical Name	CAS No.	CAS. No.	Annual Qty (tonne)	Associated Emission Pnt.
Name: CoolElf (Orange) Monoethyleneglycol Sodium 2-ethylhexanoate	 107-21-1 19766-89-3	Closed Cooling Tower system	2.00	None
North Sea Anti-Freeze (Blue) Ethylene Glycol Glycerol Sodium 2-ethylhexanoate	 107-21-1 56-81-5 19766-89-3	Manufacturing Machinery	2.20	None
Name: OXISO OS 05 (Mixture) ** Perfluoroalkylether Methylnonafluorobutylether Methylperflourobutlyether	 60164-51-4 163702-07-6 163702-08-7	Surface Coating of Product	5.28	None
Proposed Solvent Usage in Gleitmo Coating Process Gletimo SFL 9680 3 -Constituent Mixture				
Name: K1 – ethylbenzene Mixture of Hydrocarbons, de-aromatized xylene	 100-41-4 64742-48-9 1330-20-7	Surface Coating of Product	0.065	Proposed A2-5
Name: K2- Propan -2 -ol	 200-661-7		0.022	
Name: K3- Dibutylzinndilaurat	 77-58-7		0.002	

Table 12 BRUSS Existing and Proposed Solvent usage on site

Oxiso OS 05 Coating Process **

The Coating OXISO OS 05 has been in use at BRUSS historically, since approximately 2003. It consists of a mixture of a grease/lubricant and a solvent component as described in **Table 13** below:

Chemical Name	CAS No	Description
Perfluoroalkylether	60164-51-4	(DuPont - KRYTOX) a low VOC, insoluble grease/lubricant
Methylnonafluorobutylether	163702-07-6	Dispersing Agent
Methylperflouroisobutylether	163702-08-7	

Table 13 OXISO OS 05 constituents

The combined solvent component above is an established industrial engineering fluid intended to replace ozone-depleting substances (ODS) and compounds with high global warming potential(GWP). It is approved under the significant New Alternatives Policy (SNAP) by USA EPA. **Appendix 11.0** includes the safety Data sheet for the OXISO OS 05 mixture. The coating is not classified as hazardous under Directive 1999/45/EC and GHS Regulation (EC) No. 1272/2008.

The coating is applied mechanically by tumbling of parts with the auto-dispensed liquid coating in an open fronted tumbling apparatus. The tumbling takes place in an open spaced production area. After coating, parts are transported in boxes for inspection, packing and shipping within the production area. There is no venting of fume through a stack for this process. The operation is performed in a well ventilated area on the production shop floor. All production halls are ventilated through low level air intake fans. Electrostatic precipitator units are installed throughout the roof space area, acting to purify the circulated ambient air.
The system of roof-mounted fans formerly in use have been removed, reducing any potential risk of fugitive emissions to atmosphere from the BRUSS site.

BRUSS has undertaken regular occupational exposure limit testing for operators working in the coating area. The most recent results obtained are outlined in **Table 14** below:

Analysis	Unit: mg/m^3 (Exposure over 8hr period)
OXISO OS 05 Coating Op.	50.91

Table 14 OEL analysis OXISO OS 05 OHSS

It should be noted that although this result reflects the process, it is representative of a sample obtained when the coating process was housed at a different location on site. The location to which these results pertain was located in a small internal coating room in the production area which has now been dismantled. The process has moved to open space at key locations for process flow efficiencies. Analysis of occupational exposure in the new location will be carried out in Q3 2017.

PROCESS Improvement Project - A process improvement project is planned for OXISO OS 05 Coating in Q4 2017. Process design, including potential coating equipment, potential for solvent recovery, options in the purchase of coating components are to be considered in a feasibility activity for this project. This project has not been commenced at this point.

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Item 12 - Fire-Water Retention Facilities

The company is currently in the process of conducting an Environmental Liabilities Risk Assessment and Site Closure Plan. BRUSS has contracted an independent and qualified consultancy, TMS Environment Ltd, to carry out the assessment in anticipation that a revised Licence will require an assessment of environmental liabilities and risks. In conjunction with this activity the company has also requested that TMS Env. Ltd conduct a review of Fire-Water Retention facilities on site. Due to space limitations facilities currently on site are confined to bunding and containment. TMS Env. Ltd, will review all facilities based on the risks identified. The company expects to have this review and report completed by August 2017, and subsequently submitted to the Agency.

The ELRA, Site Closure assessments are being carried out in accordance with the current Guidance documents provided by the Agency. The Firewater Retention facilities are being assessed with reference to the requirements of *The Environmental Protection Agency Draft Guidance Note to Industry on the Requirements for Fire-Water Retention Facilities.*