

Environment Agency

Review of an Environmental Permit under the Environmental Permitting (England & Wales) Regulations 2010 (as amended)

Decision document recording our decision-making process following review of a permit

The Permit number is: EPR/BR8352IN
The Operator is: Unifrax Ltd
The Installation is: HTIW Factory
This Variation Notice number is: EPR/BR8352IN/V003

Consultation: No Consultation on standard variation

What this document is about

Article 21(3) of the Industrial Emissions Directive (IED) requires the Environment Agency to review conditions in permits that it has issued and to ensure that the permit delivers compliance with relevant standards, within four years of the publication of updated decisions on BAT conclusions.

We have reviewed the permit for this installation against the revised BAT Conclusions for the Glass industry sector published on 8th March 2012 and other relevant BAT Conclusions published prior to this date. This is our decision document, which explains the reasoning for the consolidated variation notice that we are issuing.

It explains how we have reviewed and considered the techniques used by the Operator in the operation and control of the plant and activities of the installation. This review has been undertaken with reference to the decision made by the European Commission establishing best available techniques (BAT) conclusions ('BAT Conclusions') for the manufacture of Glass as detailed in document reference 2012/134/EU. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position. It also provides a justification for the inclusion of any specific conditions in the permit that are in addition to those included in our generic permit template.

As well as considering the review of the operating techniques used by the Operator for the operation of the plant and activities of the installation, the consolidated variation notice takes into account and brings together in a

single document all previous variations that relate to the original permit issue. It also modernises the entire permit to reflect the conditions contained in our current generic permit template.

The introduction of new template conditions makes the Permit consistent with our current general approach and philosophy and with other permits issued to installations in this sector. Although the wording of some conditions has changed, while others have disappeared because of the new regulatory approach, it does not reduce the level of environmental protection achieved by the Permit in any way. In this document we therefore address only our determination of substantive issues relating to the new BAT Conclusions.

We try to explain our decision as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy, and we would welcome any feedback as to how we might improve our decision documents in future.

How this document is structured

1. Our proposed decision
2. How we reached our decision
3. The legal framework
4. Annex 1- Review of operating techniques within the Installation against BAT Conclusions
5. Key Issues
6. Annex 2 - Review and assessment of derogation request(s) made by the operator in relation to BAT Conclusions which include an associated emission level (AEL) value.
7. Annex 3 – Improvement Conditions
8. Annex 4: Advertising and Consultation on the draft decision

1 Our decision

We have decided to issue the Variation Notice to the Operator. This will allow it to continue to operate the Installation, subject to the conditions in the Consolidated Variation Notice.

We consider that, in reaching that decision, we have taken into account all relevant considerations and legal requirements and that the varied permit will ensure that a high level of protection is provided for the environment and human health.

The Consolidated Variation Notice contains many conditions taken from our standard Environmental Permit template including the relevant Annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the Notice, we have considered the techniques identified by the operator for the operation of their installation, and have accepted that the details are sufficient and satisfactory to make those standard condition appropriate. This document does, however, provide an explanation of our use of “tailor-made” or installation-specific conditions, or where our Permit template provides two or more options.

2 How we reached our decision

2.1 Requesting information to demonstrate compliance with BAT Conclusion techniques

We issued a Notice under Regulation 60(1) of the Environmental Permitting (England and Wales) Regulations 2010 (a Regulation 60 Notice) on 19th December 2013 requiring the Operator to provide information to demonstrate how the operation of their installation currently meets, or will subsequently meet, the revised standards described in the relevant BAT Conclusions document.

The Notice also required that where the revised standards are not currently met, the operator should provide information that

- Describes the techniques that will be implemented before 8/03/2016, which will then ensure that operations meet the revised standard, or
- justifies why standards will not be met by 8/03/2016, and confirmation of the date when the operation of those processes will cease within the installation or an explanation of why the revised BAT standard is not applicable to those processes, or
- Justifies why an alternative technique will achieve the same level of environmental protection equivalent to the revised standard described in the BAT Conclusions.

Where the Operator proposed that they were not intending to meet a BAT standard that also included a BAT Associated Emission Level (BAT AEL) described in the BAT Conclusions Document, the Regulation 60 Notice requested that the Operator make a formal request for derogation from compliance with that AEL (as provisioned by Article 15(4) of IED). In this circumstance, the Notice identified that any such request for derogation must be supported and justified by sufficient technical and commercial information that would enable us to determine acceptability of the derogation request.

The Regulation 60 Notice response from the Operator was received on 30th May 2014.

We considered that the response did not contain sufficient information for us to commence determination of the permit review. Suitable further information was provided by the Operator on 16th October 2014, 22nd October 2014 and 18th December 2014.

The Operator made no claim for commercial confidentiality. We have not received any information in relation to the Regulation 60 Notice response that appears to be confidential in relation to any party.

2.2 Review of our own information in respect to the capability of the installation to meet revised standards included in the BAT Conclusions document

Based on our records and previous experience in the regulation of the installation we consider that the operator will be able to comply with the techniques and standards described in the BAT Conclusions other than for those techniques and requirements described in BAT Conclusion 64. In relation to this/these BAT Conclusion(s), we do not fully agree with the operator in respect to their current stated capability as recorded in their Regulation 60 Notice response. We have therefore included Improvement Condition IC14 (9.14) in the Consolidated Variation Notice, which requires them to upgrade their operational techniques so that the requirements of the BAT Conclusion are delivered.

2.3 Requests for Further Information

In addition to the response to our information request, we received additional information during the determination from Unifrax on 16th October 2014, 22nd October 2014 and 18th December 2014. We made a copy of this information available to the public in the same way as the response to our information request.

3 The legal framework

The Consolidated Variation Notice will be issued, under Regulation 20 of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an *installation* as described by the IED;
- subject to aspects of other relevant legislation which also have to be addressed.

We consider that, in issuing the Consolidated Variation Notice, it will ensure that the operation of the Installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

We explain how we have addressed specific statutory requirements more fully in the rest of this document.

Annex 1: decision checklist regarding relevant BAT Conclusions

BAT Conclusions for the Manufacturing of Glass, were published by the European Commission on 8th March 2012. There are 76 BAT Conclusions. This annex provides a record of decisions made in relation to each relevant BAT Conclusion applicable to the installation. This annex should be read in conjunction with the Consolidated Variation Notice.

All BAT Conclusions arising are listed by number in order below.

BAT Conclusion No	Summary of BAT Conclusion requirement	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement	Status NA/ C / FC / NC
General BAT			
1	BAT is to implement and adhere to an environmental management system (EMS).	The EMS System is not ISO14000 accredited it is an internal system only. However the site is approved to ISO 9002 and is audited externally by CICCS. The site has been IPPC regulated for 12 years with subsequent procedures in place to accommodate the regulatory requirements therefore ensuring BAT is maintained through continuous improvements.	CC
	(i) commitment of the management, including senior management;	(ii) ENV013 Environmental Protection Act, Improvement Programme (see appendix 1.1 (ii) of the Regulation 60 response)	CC
	(ii) definition of an environmental policy that includes the continuous improvement for the installation by the management; EN 8.3.2012 Official Journal of	ENV013 Environmental Protection Act, Improvement Programme (see appendix 1.1 (ii))	CC

	the European Union L 70/9		
	iii) planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment;	(iii) Env 002 Environmental Policy and Business Objectives are instrumental in Unifrax's decision making process and form part of the budgeting requirement and continuous improvement (see appendix 1.1 (iii))	CC
	(iv) implementation of the procedures paying particular attention to:	The following demonstrate that the BAT is achieved	CC
	(a) structure and responsibility	Env 002 Environmental Policy and Business Objectives, ENV003 Environmental Objectives and Responsibilities. Organisational charts are available within the lotus notes system, the EMS is available for all to read and the environmental policy is displayed throughout the site (see appendix 1.1 (iv)(a))	CC
	(b) training, awareness and competence	ENV065 Training, examples are provided as see appendix 1.1 (iv)(b)	CC
	(c) communication	There are a wide range of communication links to ensure all employees are engaged and understand their responsibility in relation to environmental impact. ENV071 Communication to Press, 072 Communication Environmental Emergencies, 070 Communication - Environmental Complaints, Other communications to employees and staff on site Comms. Meeting	CC

		, H&S ,Rainford Matters, Unifacts, Unifrax Way (World Class Manufacturing Improvements) See Appendices 1.1(iv)(c)	
	(d) employee involvement	Training programme under HSP include env requirement Employee survey, encore meeting, see appendix 1.1(iv)(d)	CC
	(e) documentation	ENV004 Environmental Legislation Inventory - maintain BAT by having monthly updates from international environmental technology newsletter, envirowise news and links to croner ehs , which ensure that legislative requirements and documentation is up to date. The current requirement under IPPC has also ensured that Unifrax retain and maintain records and documentation to ensure continued improvements and compliance. see appendix 1.1(iv)(e)	CC
	(f) efficient process control	ENV008 Environmental Systems Management Review, System review in place - QSI has operating requirements for all aspects of the process see appendix 1.1(iv)(f)	CC
	(g) maintenance programmes	PM system and check list. In each case documents examples will be provided as an annex document if further documents are required please see appendix 1.1(iv)(g)	CC
	(h) emergency preparedness and response	An Accident Management Plan (AMP) is in place that systematically identifies hazards within the	CC

		site that may lead to an environmental impact, assesses the risks from these hazards and identifies the necessary actions or risk reduction techniques required to manage or reduce the risks. ENV062 Accident Prevention Plan see appendix 1.1(iv)(h)	
	(i) safeguarding compliance with environmental legislation.	ENV012 Emissions Notification System see appendix 1.1(iv)(i)	CC
	(v) checking performance and taking corrective action, paying particular attention to:	The following demonstrate that the BAT is achieved	CC
	(a) monitoring and measurement (see also the reference document on the General Principles of Monitoring)	ENV011 Emissions to Air Sampling and Measurement and Control,061,060, 050,030,040, 014 see appendix 1.1(v)(a)	CC
	(b) corrective and preventive action	CAR's and PA processes are included within our QSI System as a requirement under ISO9002. See appendix 1.1(v)(b)	CC
	(c) maintenance of records	PM system and checklists, Check sheets in place for Cone Build, Pot Set Up, Spinning Carriage Checks, Silo Check, etc. see appendix 1.1(v)(c)	CC
	(d) independent (where practicable) internal or external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;	Internal audits, In addition the site is approved to ISO 9002 (CICCS) and undergoes a 6 monthly audit see appendix 1.1(v)(d)	CC

	(vi) review of the EMS and its continuing suitability, adequacy and effectiveness by senior management;	ENV007 Environmental Systems Audits, ENV008 Environmental Systems Management Review In each case of ENV documents examples will be provided as an annex document if further documents are required please see appendix 1.1(vi)	CC
	(vii) following the development of cleaner technologies;	The process uses electric furnace and does not use a combustion system - There is a programme of continuous improvement in place to review energy efficiency. The melting process parameters are closely monitored and detailed in the start up and Pm systems to ensure continued efficiency. Energy efficiency also forms a critical budgeting requirement and requirement under CCL. (Further Evidence. Ref SEF3 SOP007). see appendix 1.1(vii)	CC
	(viii) consideration for the environmental impacts from the eventual decommissioning of the installation at the stage of designing a new plant, and throughout its operating life;	Under our IPPC requirement section B2.11 we have conducted a review of the requirements to be undertaken when decommissioning the plant and this will be reviewed following any changes in use of the site facilities. (see appendix 1.1(viii))	CC
	(ix) application of sectoral benchmarking on a regular basis.	The HTIW do not have bench marking across the industry as a whole as it is a relatively niche operations. Unifrax do have internal benchmarking across our sites ensure continuous improvement. The technical group meet twice	CC

		yearly to review process and to ensure best practice is used in each site. (last meeting France Spring 2014.)	
2	BAT is to reduce the specific energy consumption by using one or a combination of techniques	<p>The installation is signed up to a sectoral Climate Change Levy Agreement (CCLA). The CCLA for the Ceramics Industry as a whole is administered and organised by British Ceramic Confederation Climate Change Levy Limited. Unifrax uses electricity and gas to power its operations. These are provided via public supply. Energy consumption is generally monitored on a monthly basis, although as part of the CCLA a distributed sub-metering network has been installed. This is capable of logging half-hourly energy consumption's.</p> <p>The melting process parameters are closely monitored and detailed in the start up and PM systems to ensure continued efficiency. Energy efficiency also forms a critical budgeting requirement and requirement under CCL. The PM system controls each batch manufactured and only internal cullet is recycled when chemistry allows as contamination can have damaging effects on resultant end use.</p>	CC
3	BAT is to prevent, or where that is not practicable, to reduce diffuse dust emissions from the storage and handling of solid materials by using one or a combination techniques:	The response addresses storage of bulk materials, fine particulate material, dusty materials, and damping down techniques. It also details handling techniques including the use of	CC

		crucibles in their batch process, enclosed conveyers, particulate abatement filters, moistening batches, negative pressure within furnace (extraction as crucible not enclosed), decrepitation, filter for small lot handling, enclosed screw feeds, enclosed feed pockets. (See appendix 3.3.1.(i), 3.1.1(ii), 3.1.1(i), 3.3.11(ii), 3.3.11(vii), 1.8.1(a))	
4	BAT is to prevent, or where that is not practicable, to reduce diffuse gaseous emissions from the storage and handling of volatile raw materials by using one or a combination of techniques:	The primary raw materials used for the process lines operated at the installation consist of oxides of aluminium, calcium and silicon. Magnesium silicate for use in fibre production. The Bulk RMs are therefore inorganic in origin. Justification. The bulk of RMs used on the site does not have any potential for gaseous emissions as they are not considered as VOCs. All materials to site are pre-screened in line with the chemical acquisitions data base to ensure all aspect of health, safety and environment are considered before use within the production process. Bulk, primary raw materials are inorganic minerals. There are no tanker deliveries of binders or liquid additives etc. All additives are delivered in drums/IBC's in low quantities	CC
5	BAT is to reduce energy consumption and emissions to air by carrying out a constant monitoring of the operational parameters and a programmed maintenance of the melting furnace.	The furnace itself is rigorously tested pre-installation to ensure it is in good condition and the walls are the correct thickness. The integrity of all fixtures and fittings are tested prior to installation on to the furnace. Furnace specific	CC

		<p>critical parameters are monitored and relayed to the PLC throughout its use. A PM system ensures that all aspects of the furnace are thoroughly checked periodically throughout the furnace life cycle. There is a dedicated furnace team to review the furnace condition and design parameters.</p> <p>Energy efficiency on batch process including design of crucibles. Monitoring emissions by PLC. All Crucibles are checked pre production using a series of techniques i.e. X-ray, Dye Penetration Test, Weld Integrity, Wall and Base Thickness Tests, Post Production i.e. Maintenance Pot Turn Around Checks, Pot Rebuild Check Sheets, Cold Start Check Sheets (See Appendix 2.2 (ii) & 2.2 (i))</p>	
6	BAT is to carry out a careful selection and control of all substances and raw materials entering the melting furnace in order to reduce or prevent emissions to air by using one or a combination of techniques.	<p>The process uses an electric furnace; no oxy fuels are used as the process does not use combustion techniques. Raw material formulations and primary formulation are selected to reduce emissions - as the level of impurity (metals, chloride, and fluorides) and volatiles are analysed as part of the QC system to prevent contamination of the resultant products. The site is approved to 9002 (CICCS) (see appendix 6.6 (i) and 6.6 (ii)).</p> <p>All Raw Materials have to meet a specification before use and the results are retained on the QSI system. As all raw materials are naturally occurring, in some instances they have trace</p>	CC

		quantities of metals, no chlorides or Fluorides are present in the Raw materials used on the furnace therefore the potential to emit does not exist	
7	BAT is to carry out monitoring of emissions and/or other relevant process parameters on a regular basis.	<p>There are PLC linked systems in place to allow continuous feedback as to a series of parameters associated with the furnace performance, RMs and product quality. All silos and dust collections systems have dust probes fitted to provide early warning alarms if blockages, filter disruption or collection system has a filled bag. As part of the IPPC requirement 6 monthly monitoring is carried out by an external accredited body on all systems. Reports are maintained and issued to the EA as required. The site has increased monitoring requirement but should comply by 2016</p> <p>Particulates testing on the furnace emissions are routinely carried out, VOC on downstream ovens, NO x measurements on the dryers and ovens are routinely conducted 2/year. All will meet the BAT requirements in 2016. SOx emissions are not currently monitored as there is no potential for sulphur, sulphates in the Raw materials used or given the nature of the process. The site will include SOx in our emission monitoring schedule and would expect to fulfil BAT requirement (see appendix 1.1(v)(a))</p> <p>HCl, HF, CO and metals are not presented in the RMs. However trace contaminants are possible in naturally occurring inorganic materials. (see appendix 6.6 (i)).</p>	FC

		Monitoring for HCl, HF and SOx will be included in the monitoring regime from 2014 and will meet BAT by 2016	
8	BAT is to operate the waste gas treatment systems during normal operating conditions at optimal capacity and availability in order to prevent or reduce emissions	Unifrax operate and electric furnace (batch process) and therefore there is no combustion process undertaken in the furnace. This process utilises a submerged electrode furnace. The waste air stream from the furnace contains particulate and is extracted and filtered before release to atmosphere. Dust probes are positioned in line to ensure the filter efficiency is maintained during operational periods. A preventative maintenance system is in place to ensure the extraction systems, filtration media and dust probes are in optimal condition. These aspects are routinely inspected and recorded. The waste streams are monitored by an accredited external company on a 6 monthly basis to ensure emissions comply with the site ELV as set by the environment agency.	CC
9	BAT is to limit carbon monoxide (CO) emissions from the melting furnace, when applying primary techniques or chemical reduction by fuel, for the reduction of NO X emissions	Electric furnace and therefore no CO from combustion process. The only potential CO release is from Raw materials. The site will include monitoring for these substances in future emission monitoring campaigns and will expect to comply with BAT in 2016.	FC

10	BAT is to limit ammonia (NH ₃) emissions, when applying selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR) techniques for a high efficiency NO _x emissions reduction	No SCR or SNCR abatement so Ammonia BAT-AEL does not apply	NA
11	BAT is to reduce boron emissions from the melting furnace, when boron compounds are used in the batch formulation, by using one or a combination of techniques	<p>Not applicable as the process is a HTIW production which does not utilise Boron in the process. Analysis of the Raw materials confirm this.</p> <p>Typically in borosilicate glass there would be 10-15% boron oxide however in HTIW formulations it is only present as a trace impurity at <0.1%). The primary raw materials used for the process lines operated at the installation consist of oxides of aluminium, calcium and silicon and magnesium silicate for use in fibre production.</p> <p>As Boron is present in only in trace amounts reducing levels by wet scrubbing, dry scrubbing etc is not applicable. Waste gases are processed through bag filters.</p> <p>Improvement condition IC 16 has been included to meet the narrative BAT.</p>	FC
12	BAT is to reduce water consumption by using one or a combination of techniques	All waste water on the Wet Line is collected and then pumped through a filtration system. The filtration system separates the solids from the water reducing the discharge to foul. The clean water is then reused as make-up water, reducing the overall consumption. (See Site Water Usage , water consumption) Appendix 1.1.5 (12)	CC

		<p>Cooling of process equipment is essential to the fiberisation process and the well being of the fiberising plant. Without continuous removal of heat from plant and ancillary equipment, temperature sensitive materials and mechanical processes could not be maintained in a working condition. SEF plants employ evaporative cooling towers that are operated in the following part: 1.) Evaporative cooling towers make-up water lost through evaporation with fresh water and bleed off contaminated water to the sewer. A closed loop cooling water system circulates between the cooling tower and the equipment it serves. Loss of water occurs through bleed-off, cleaning and change of make-up. Weekly checks using dip slides are conducted to monitor conductivity and adjustments made accordingly. Monthly checks of water usage are conducted.</p>	
13	BAT is to reduce the emission load of pollutants in the waste water discharges by using one or a combination of waste water treatment systems	<p>United Utilities take several samples each month to ensure we are below permit limits (max discharge in one day not to exceed 400m³). Each plant area has an individual consent to discharge. Permit parameters checked include COD, SS, pH, (in line) and compared to the site limit values. (See Appendix 1.1.5 (13)).</p> <p>The site has no emissions to water other than at back ground concentration and therefore emission limits do not apply</p>	CC

14	BAT is to reduce the production of solid waste to be disposed of by using one or a combination of techniques	<p>All HTIW is recycled where possible - a program is in place for recycling waste from each furnace both in terms of batch mix and inferior product. In addition all by-product cullet is recycled on the crucible throughout the run (see appendix 14)</p> <p>Waste movements are tracked on a monthly basis- including trends in terms of waste type, area produced and quantities. Wherever possible waste is kept to the minimum due to recycling program. (Waste spread sheet see appendix 14(ii))</p> <p>Waste is reduced by recycling waste batches, minimising handling wastes and recycling dust formulations.</p>	CC
15	BAT is to reduce noise emissions by using one or a combination of techniques	<p>Noise is monitored in line with IPPC requirements and in cooperation with the site neighbours(residents). Any new plant has to demonstrate compliance with IPPC and this forms part of the purchase and installation contract. Perimeter noise monitoring has taken place in the past that showed the site activities were below the permitted levels. Regularly liaise with local residents meetings and or concerns logged on customer complaints database, Neighbourhood nominated spokes person with regular contact to site - if concern is raised immediate action is taken- long established working relationship with very few concerns</p> <p>Vehicles and deliveries are restricted between 0800 and 1800 in line with current permit. All new</p>	CC

		equipment has noise specification.	
BAT Conclusions for container glass manufacturing – not applicable (16-23)			
BAT Conclusions for flat glass manufacturing – not applicable (24 – 31)			
BAT Conclusions for continuous filament glass manufacturing – not applicable (32 – 37)			
BAT Conclusions for domestic glass manufacturing – not applicable (38 – 47)			
BAT Conclusions for special glass manufacturing – not applicable (48 – 55)			
BAT Conclusions for mineral wool manufacturing – not applicable (56 – 63)			
BAT Conclusions for high temperature insulation wool (HTIW) manufacturing			
64	BAT is to reduce dust emissions from the waste gases of the melting furnace by applying a filtration system by using or a combination of techniques.	Filtration system consisting of a reverse jet type collector. Present permit limits are 5mg/m ³ . Refer to appendix 1.8.1 (a) report for additional information. Also see ESG monitoring report appendix 1.8.1 (a) to regulation 60 response. Already within limits as present permit has limits of 5 & 10mg/m ³ Bag filter - reverse jet type on both furnace SEF1 & SEF3, Refer to appendix 1.8.1 (a) report for additional information.	CC
65	For downstream dusty processes, BAT is to reduce emissions using one or a combination of the following techniques	At present at the top of AEL - 5 mg/Nm ³ . Probes will be changed to meet lower level by 2016 (see ESG monitoring report appendix 1.8.1 (a)). The lower level of the range is associated with emissions of aluminium silicate glass wool/refractory ceramic fibres (ASW/RCF). All systems are filtered using HEPA dust probes. All gasses produced downstream from lubricant burn off are filtered prior to release. (HEPA) Sensitivity of probe needs to be reduced from 5mg/m ³ to 1mg/m ³ - will meet BAT by 2016 (lower	FC

		level-1 mg/Nm ³)	
66	BAT is to reduce NO X emissions from the lubricant burn-off oven by applying combustion control and/or modifications	Not emitted as not present in raw materials or process. We will add to suit of chemicals to be monitored during our routine emissions testing. Permit limit of 50mg/m ³ NOx is below BAT-AEL for emission point A10 and expect other emission points to meet BAT-AEL. Will increase monitoring frequency to twice a year. Expect compliance with the BAT by 2016	FC
67	BAT is to reduce SO X emissions from the melting furnaces and downstream processes by using one or a combination of the following techniques	Raw materials do not contain any Sulphur and all raw materials have pre analysis to confirm this prior to their use as part of the quality system (See Appendices General BATC Further Evidence) (appendix 6.6 (i) and 6.6 (ii)). Will add the requirement to monitor SOX to monitoring schedule.. Therefore Compliance with the BAT expected by 2016	FC
68	BAT is to reduce HCl and HF emissions from the melting furnace by selecting raw materials for the batch formulation with a low content of chlorine and fluorine Technique	Hydrogen Chloride, and Hydrogen Fluoride are not present in the raw materials although trace contaminants are possible in naturally occurring inorganic materials, See Appendices General BATC Further Evidence)(appendix 6.6 (i) and 6.6 (ii)) No Chlorine or Fluorine present in fuel (electric) and only trace impurities in raw materials – The monitoring schedule will include Chlorine and Fluorine testing from 2014 and it is anticipated that the results will demonstrate compliance with	FC

		BAT	
69	BAT is to reduce metal emissions from the melting furnace and/or downstream processes by using one or a combination of the following techniques	Monitoring was carried out on the SEF3 furnace to see if there were any heavy metals emitted to air from the furnace stacks. The results of the monitoring, using US EPA method 29 and analytical technique ICP-MS, indicated that the total metal concentration was 0.0091mg/m ³ . The highest individual metal was Nickel at 0.00502 mg/m ³ . It was concluded from these result that the process does not emit metals to air in any notable quantity. The raw material base on SEF1 is considerably less complex than SEF3 and less variable and would again be expected to emit negligible quantities of metals. However we will add to suit of chemicals to be monitored during our routine emissions testing. (See Appendices General BATC Further Evidence)(appendix 6.6 (i) and 6.6 (ii)) Also (See Appendices HTIW / Further Evidence) ESG report Emissions Testing appendix 1.8.1) Therefore we would expect that we would comply with the BAT by 2016	FC
70	BAT is to reduce volatile organic compound (VOC) emissions from the lubricant burn-off oven by using one or a combination of the following techniques	Supplied monitoring results (MCERTS) supplied by ESG testing house. These results show that Unifrax already meets the 20mg/m ³ limit.	CC
BAT Conclusions for Frits manufacturing – not applicable (71 – 76)			

The overall status of compliance with the BAT conclusion is indicated in the table as:

NA Not Applicable

CC Currently Compliant

FC Compliant in the future (within 4 years of publication of BAT conclusions)

NC Not Compliant

Key Issues

- Where relevant and appropriate, we have incorporated the techniques described by the Operator in their Regulation 60 Notice response as specific operating techniques required by the permit, through their inclusion in Table S1.2 of the Consolidated Variation Notice.
- Unifrax made a preference to undertake periodic rather than continuous monitoring based on their batch production process which operates using electrically heated crucibles and as such will have a much lower emission rate than the 3kg/hr identified in the BREF as the threshold used in several countries for continuous monitoring of dust.
- The Emission and Monitoring table (table S3.1 in Schedule 3) has been changed to show the new emission limits transposed from the IED BAT conclusions document which will apply from 8/3/2016.
- BAT conclusion 7 & 68 – HF and HCl – a monitoring requirement has been added to the permit. After the emission concentration of HCl and HF has been established the monitoring frequency may need to be reviewed as described in IED article 13(5)b and agreed in writing with the Agency.
- BAT conclusion 7 – NO_x emissions from A10 will be increased to twice a year in order to meet with the requirements for this narrative BAT.
- BAT Conclusion 67 – SO₂ – Sulphur dioxide is not a monitoring requirement under the existing permit however a monitoring requirement has been added to the permit together with a BAT-AEL of 50mg/m³. However after the emission concentration of Sulphur Dioxide has been established the monitoring frequency may need to be reviewed as described in IED article 13(5)b and agreed in writing with the Agency.
- BAT Conclusion 15 - The noise conditions 6.6.1, 6.6.2 and 6.6.3 in the original permit (BR8352IN) relating to reviewing the noise management plan following changes to the installation or on a bi-annual basis as well as the noise restrictions on delivery times and the use of reversing alarms are considered to be “appropriate methods” for this site and therefore will be included in the noise management plan referred to in condition 3.4.1.
- BAT Conclusion 12 - Reporting form Air1 and Energy 1 were part of the original permit however the form Water Usage 1 has also been added to the reporting requirements as the glass industry is considered to be water intensive and the reporting form is required to demonstrate compliance with the narrative BAT on Water efficiency.
- BAT Conclusion 13 - Reporting forms Air1 and Energy 1 were part of the original permit however the form Sewer 1 has also been added to the reporting requirements as glass is a high water intensive industry and the

reporting form is required to demonstrate compliance with the narrative BAT on Water waste treatments

- BAT Conclusion 65 – The dust emission limit for downstream processing has been reduced from 5mg/m³ to 1mg/m³ for SEF1. This lower limit is associated with Aluminium Silicate glass wool / refractory ceramic fibres(RCF). Unifrax are confident that they will be able to meet this limit by 8th March 2016.
- BAT Conclusion 11 – The site does not manufacture borosilicate glass and the formulation does not contain boron except as a trace contaminant. The Boron level is expected to be less than 0.1%, (calculated from raw material composition) and therefore improvement condition IC14 has been included in the permit to satisfy the narrative BAT and Boron has been added to the annual reporting forms (Performance1).
- BAT Conclusions 53 & 54 - The BREF includes BAT-AELs for a range of metals however Unifrax have provided recent analysis to show that their emissions are lower than these limits, the BAT-AELs have been included in the Emission and Monitoring requirements and a 12 monthly monitoring frequency has been set.
- BAT Conclusions 70 – The emission point A15 will have an emission limit of 20mg/m³ introduced into the permit to comply with the narrative BAT. The monitoring frequency which has been set as half yearly may need to be reviewed as described in IED article 13(5)b and agreed in writing with the Agency.
- The local Inspector has confirmed that the site has completed all the improvement conditions (IC1 – IC13). The improvement conditions have been transposed from the previous permit variations however the numbering system has been changed to new template nomenclature and the previous number system included as a reference.

Annex 2: Assessment, determination and decision where an application(s) for Derogation from BAT Conclusions with associated emission levels (AEL) has been requested.

The IED enables a competent authority to allow derogations from BAT AEL's stated in BAT Conclusions under specific circumstances as detailed under Article 15(4):

By way of derogation from paragraph 3, and without prejudice to Article 18, the competent authority may, in specific cases, set less strict emission limit values. Such a derogation may apply only where an assessment shows that the achievement of emission levels associated with the best available techniques as described in BAT conclusions would lead to disproportionately higher costs compared to the environmental benefits due to:

(a) the geographical location or the local environmental conditions of the installation concerned; or

(b) the technical characteristics of the installation concerned.

The Operator did not request derogation from compliance with any AEL included within the BAT Conclusions as part of their Regulation 60 Notice response.

Annex 3: Improvement Conditions

Based in the information in the Operators Regulation 60 Notice response and our own records of the capability and performance of the installation at this site, we consider that we need to set improvement conditions so that the outcome of the techniques detailed in the BAT Conclusions are achieved by the installation. These additional improvement conditions are set out below - justifications for them are provided at the relevant section of the decision document (Annex 1 or Annex 2).

Reference	Improvement measure	Completion date
IC1 (9.1)	A report shall be sent to the Agency on establishing an Environmental Management System having regard to section 2.3 of the relevant IPPC Technical Guidance. The report shall include any proposals to implement such a programme.	Completed
IC2 (9.2)	The operator shall carry out an appraisal of the availability of recycled or recovered batch raw materials including cullet having regard to BAT. The appraisal shall consider, but not be limited to, the availability of potential sources in the current and future marketplace, the potential impact upon production, and the potential impact upon the environment. A summary of the appraisal shall be submitted to the Agency.	Completed
IC3 (9.3)	The operator shall provide a report on the waste minimisation audit and associated action plan as proposed in Section 2.1 of the Application and the water efficiency audit and associated action plan as proposed in Section 2.2.3 of the Application.	Completed
IC4 (9.4)	The operator shall carry out a review of techniques, with regard to BAT, for identifying bypassing or failure of bag filter systems which discharge to air. This review shall include, but shall not be limited to, continuous monitors and alarms. The report shall include justification of, and proposals for implementing, the technique(s) which are considered to be BAT for the installation.	Completed
IC5 (9.5)	The operator shall carry out a review of potential for contamination of the surface water drainage system from the installation. The review shall include, but shall not be limited to, an assessment of the likely benefits of installing oil interceptors on discharges to controlled water and shall review Pollution Prevention Guideline Note PPG26 (available from the Agency) with regard to possible improvements in drum and IBC storage. A report on the review shall be submitted to the Agency, with associated action plan and timescales.	Completed
IC6 (9.6)	The operator shall review the potential for fugitive emissions from SEF1 furnace pot stripping activity and SEF3 Downstream Process extraction	Completed

	(reference p 36 of Sect B2.3 of the Application) and propose methods or techniques for improving control of these emissions. A report describing the above shall be submitted to the Agency, to include timescales for improvements proposed	
IC7 (9.7)	The operator shall provide a report on the Accident Management Plan review as proposed in Section 2.8.1 of the Application.	Completed
IC8 (9.8)	The operator shall produce a noise management plan for the installation having regard to section 2.9 of the relevant IPPC Technical Guidance and the IPPC Horizontal Guidance for Noise. The plan shall include proposals to carry out noise assessments to the appropriate standard, to identify sources of tonal noises; to review all noise sources with a view to reducing the overall noise level with regards to BAT; and to consider liaison with local residents and neighbours in order to minimise the likelihood of noise-related annoyance at sensitive receptors.	Completed
IC9 (9.9)	The operator shall develop a site closure plan for the installation having regard to section 2.11 of the relevant IPPC Technical Guidance. A report including the plan shall be provided to the Agency.	Completed
IC10 (9.10)	The operator shall carry out further investigations to reduce the uncertainty in the air dispersion modelling for PM ₁₀ emissions as discussed in Section B4 of the Application. These investigations shall include, but not be limited to, measurement of levels of PM ₁₀ in particulate emissions; a review of the assumptions made; a review of the emissions data used; and remodelling or calculation as required. A report shall be submitted regarding the above to the Agency with justifications for any changes as appropriate.	Completed
IC11 (9.11)	The operator shall carry out an analysis of the emissions from the SEF1 and SEF3 furnaces in order to determine the release levels in mg/Nm ³ of the following groups of metals: Group 1: As, Co, Ni, Se and Cr(VI) Group 2: Sb, Pb, Cu, Mn, V, Sn and Cr(III) A report regarding the above shall be provided to the Agency.	Completed
IC12 (9.12)	The operator shall provide a report on the feasibility of measuring refractory ceramic fibre emissions to air from the installation and of assessing the environmental impact of such emissions.	Completed
IC13 (9.13)	The operator shall determine the typical levels in mg/Nm ³ of total volatile organic compounds (expressed as carbon) emitted to air via point A7 from the SEF3 Blanket Line Oven. A report regarding the above shall be submitted to the Agency.	Completed
IC 14	The operator shall submit a report on the techniques Unifrax propose to use to reduce Boron emissions from the furnace. As a minimum these	8 th March 2016

	<p>should include:-</p> <ul style="list-style-type: none">• Reduction of volatile components by raw material selection• Operation of a filter system at a suitable temperature to enhance the separation of boron compounds in the solid state• Use of dry or semi-dry scrubbing• Use of wet scrubbing <p>The report shall identify any improvements together with a proposed timetable for their implementation.</p>	
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Annex 4: Advertising and Consultation on the draft decision

The permit and decision document will be published on the Agency website for 28 days after they have been issued.