



RISK & HAZARD MANAGEMENT

004 - Non-Technical Summary

Saffil Ltd (also known as Unifrax/Alkegen)
Line 4 Permit Variation



Safety Risk



Business Risk



Environment Risk

Document History

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1 Introduction

This document provides the information required on Form C2 Section 5c.

Please note that this document refers to the site as Unifrax Widnes and to the owning company as Unifrax. Unifrax was the name of the American company that owns Widnes site. A further complexity is added because due to a recent merger, Unifrax has changed its name to Alkegen. So, it is possible in correspondence or discussions that the site may be referred to as Alkegen.

The legal entity that owns the site at Widnes is however called Saffil Ltd and remains so despite the name changes to Unifrax and now Alkegen – and it is in this name that the EPR application is made on the accompanying forms.

1.1 Site History and Scope of Variation

The 'Saffil' fibre production lines at Widnes site are the last operating assets on an Imperial Chemical Industries (ICI) site called Pilkington Sullivan site that operated for decades. All other assets are demolished. In common with other large sites in the area, legacy ground contamination issues remain.

Line 1 was started up in 1978 and has not operated since it was shut down at the end of 2018. It is proposed that this will be removed from the EPR permit following EA approval of this application.

Line 2 was started up in June 2004. Line 2 includes BAT gaseous abatement plant for destruction of VOCs and dioxins generated during the heat treatment of raw fibre.

Line 3 was started up in April 2013 and is housed in a building to the south of the site. Line 3 also includes BAT gaseous abatement plant for destruction of VOCs and dioxins generated during the heat treatment of raw fibre.

This permit variation application covers the following changes on the site:

- Formal removal of Line 1 from the permit as a fibre manufacturing unit, although some fibre packing and baling equipment will be retained for processing fibre made on the other lines.
- A new fibre production line (Line 4) with capability to make silica fibre in addition to Saffil and M-Fil fibre, located next to the current Line 3 in an extended building.
- Upgrade of infrastructure, including additional steam raising boilers and compressed air capacity to service the new line.

Line 4 will be capable of making all the existing grades of alumina (aluminium oxide) fibre currently made on Lines 2 and 3. Line 4 will also be capable of making a new, predominantly silica (silicon dioxide, same chemical formula as sand) fibre (henceforward referred to as silica fibre).

1.2 Purpose of Project

Current production from Widnes serves a wide range of customers in industrial and automotive applications. Most customers are overseas. The site therefore serves as a major exporter and significant local employer.

Typical industrial applications include furnace linings and modules, specialist refractory boards and shapes and filtration applications. This together with other specialist markets.

Automotive applications form a larger part of the overall volume particularly gaskets in catalytic converters (autowraps). Other automotive applications include heat protection, battery separators, metal matrix reinforcement and diesel particulate filters.

Line 4 is being built to service demand for SiFAB™, a new silicon fibre product developed for use as an anode material in Lithium ion rechargeable batteries. SiFAB™ offers significant advantages in charge density and physical size due to its chemistry and is a significant opportunity to improve, for example, portable battery life, electric vehicle range and reduce weight in hand-held devices.

SiFAB™ is a pure silicon fibre made by converting the silica fibre made at Widnes into the required silicon fibre. The first commercial production line for SiFAB™ is currently in construction in Indiana, USA. Silica fibre will be exported from Line 4 to this facility for conversion into SiFAB™.

This project will also be subject to an Environmental Impact Assessment (EIA) as a requirement of the Town Planning Application that will be made to Halton Borough Council.

1.3 Techniques

Line 4 will use the same technology as lines 2 and 3. It is likely that the heat treatment section of Line 4 will be gas-fired compared with the electrically fired heat treatment on Lines 2 and 3. Raw materials are generally of low or no hazard.

Alumina (or aluminium oxide) and silica (or silicon dioxide, same chemical formula as sand) fibres are prepared in the same way. The process is extrusion of a jelly-like spinning solution including organic additives through multiple small nozzles. The extruded fibres are progressively layered on to a conveyor to form a mat. The fibre mat is then heat treated in ovens and furnaces at progressively higher temperatures.

Line 4 will be capable of making both silica and alumina fibres. Lines 2 and 3 will be capable of making alumina fibres as previously. The alumina fibres are known in the marketplace by their trade names 'Saffil' or 'M-Fil'.

Finished Saffil and M-Fil product on all three lines is reeled into roll form for the final product. Material is also transferred to the Line 1 fibre processing area for further processing into bales/bags or reprocessing. Particulate dust generated during these processes is contained and treated in dust extraction and filtration units.

The silica fibre made on Line 4 will be shredded and milled to give a final bagged/baled product. Particulate dust generated during this process will be contained and treated in dust extraction and filtration units.

1.3.1 In Process Controls

Raw materials are imported and stored either in bulk tanks (protected with concrete surrounds to contain liquid in case of spillage) or in the covered warehouse. The preparation of the spinning solution is carried out in a series of mixing vessels inside contained buildings. There is no chemical reaction at this stage.

There will be a new solution preparation building feeding Line 4 which will contain more tanks. All tanks contain low hazard substances and will be contained to avoid materials being spilled to the land or watercourse in the event of an accident.

1.3.2 Emissions And Their Control

The heat treatment of the fibre leads to decomposition of the aluminium chlorohydrate or silica solution and the additives. The decomposition products include hydrogen chloride, carbon dioxide, carbon monoxide and volatile organic compounds, including very small quantities of dioxin and furans.

1.3.3 Abatement Of Point Source Emissions to Air

The emissions from production lines 2 and 3 that contain much of the volatile organic compounds are treated by thermal oxidation to convert organic compounds to carbon dioxide and are also washed with water in scrubbers to remove hydrogen chloride. The emissions abatement for the proposed line 4 will be essentially the same as line 3.

Dust suspended in air from the processing and finishing of the silica and alumina fibre is collected by a dust extraction system and treated in bag filters before the air is discharged. Additional dust treatment will be needed for the silica fibre processing and packing on Line 4.

The abatement techniques for the proposed line 4 will be essentially the same as those currently used successfully on Lines 2 and 3.

1.3.4 Abatement Of Point Source Emissions to Surface Water and Sewer

The dilute hydrochloric acid from the scrubbers on all the production lines is neutralised with sodium hydroxide to give a dilute solution of sodium chloride (common salt). This solution is discharged to industrial sewer under a consent to discharge agreed with the sewerage provider.

Rainwater and various sources of un-contaminated water are discharged to a storm drain system that runs into the Mersey Estuary.

1.3.5 Abatement Of Point Source Emissions to Groundwater

There are no discharges to groundwater.

1.3.6 Control Of Fugitive Emissions to Air

There are no significant fugitive emissions to air.

1.3.7 Control Of Fugitive Emissions to Surface Water, Sewer and Groundwater

There are no known significant fugitive emissions to controlled waters or sewers.

1.3.8 Odour

There have been no complaints of odour in connection with the production of this aluminium oxide fibre.

1.4 Management

Safety, health and environmental performance are the top priorities on Widnes site. Daily, weekly and monthly management processes are in place to ensure continued good performance.

These processes are underpinned by an annual improvement plan (operational tactical plan) covering all aspects of operational performance, with safety, health and environment considered first priorities locally and corporately.

A full-time safety, health and environmental manager is in post at the site, supported by a local and corporate team. He/she is responsible for managing the requirements of the EPR permit in liaison with representatives of the Environment Agency and the industrial sewerage provider.

The process equipment is operated in accordance with the company environmental policy and comprehensive operational procedures to ensure that the process is run in accordance with environmental permit conditions and limits. Operating procedures are accredited to a global quality standard (ISO9001) and improvement plans are in place to improve performance where practical.

The management and plant operating team is highly experienced in operating processes regulated under environmental permits. The site has operated under statutory environmental permits since 1995.

1.4.1 Materials Inputs

The main process materials are aluminium chlorohydrate, a low toxicity substance commonly used in deodorants for application to human skin or silica solution, a non-hazardous material consisting of colloidal silica suspended in water.

1.4.2 Raw Materials Selection

All raw materials are subject to quality control to ensure the product meets customer requirements.

1.4.3 Waste Minimisation (Minimising the Use of Raw Materials)

Apart from liquid wastes (treated prior to release to sewer) and plastic, steel and cardboard packaging, the main waste is out of specification product. For commercial reasons every effort is made to reduce total waste quantities.

1.4.4 Water Use

Water is imported from the mains supply and is primarily used to provide steam for heating and process use. Water is also used for scrubbing hydrogen chloride from the off gases from the heat treatment. Minor amounts are used in the preparation of the raw material solution and for washing down.

1.4.5 Waste Handling

There is no on-site disposal of waste. All wastes are handled and stored in designated areas over hard standing. Alumina and silica fibre wastes are classed as hazardous and are securely bagged before being sent to licensed landfill.

1.4.6 Waste Recovery or Disposal

The company follows the hierarchy of waste minimisation whereby prevention of waste at source is the main focus. We recycle a high proportion of their packaging waste (wood, cardboard, paper) through an arrangement with local recycling companies and material suppliers.

1.4.7 Energy

The facility is covered by a statutory Climate Change Agreement. Data is collected and reported to confirm that specific energy reductions have been made in line with targets.

1.4.8 Accidents And Their Environmental Consequences

No chemical accident has occurred that could cause a significant adverse effect to the off-site environment. Hazard studies and accident risk assessments are in place to identify possible accident or abnormal operating scenarios and ensure relevant measures are in place to significantly minimise risk of occurrence and impact.

The site suffered a major fire incident in April 2017, resulting in the Line 3 building being destroyed and significant Line 3 equipment damage. The quantities of materials spilled on the site as a result of the incident was relatively small and their toxicity very low. The site teams worked closely with the Environment Agency and expert contractor teams to ensure that site clean up was completed to a high standard.

The building and production line were re-built and restarted in February 2018.

1.4.9 Noise And Vibration

Slight noise can be detected at the site boundary. This noise will not be appreciable at any residential premises. A noise assessment has been carried out as part of the planning application for the project.

1.4.10 Monitoring

The site regularly monitors emissions to air and water at frequencies agreed in the environmental permit and sewer consent to discharge to ensure they remain within set limits. The amount of each type of waste sent off site is recorded.

1.4.11 De-Commissioning

None of the substances handled on site pose significant decommissioning problems. Standard procedures for decontaminating equipment prior to normal maintenance are anticipated to be appropriate if the process ends its useful life and requires to be decommissioned.

A site closure plan has been updated and will be submitted to the Environment Agency to support this application. This closure plan details what would have to be done if the site was closed. There are however, no plans at all for closure of the site – indeed this project helps secure the long-term future of the site.

1.5 Emissions

1.5.1 Emissions Inventory and Limits Comparison

The process has prepared an inventory of emissions. The fibre product is unique and therefore there are no directly transferable benchmarks available for comparison.

However, limits have been proposed based on the existing Emission Limit Values and after consideration of data contained in a range of Technical Guidance Notes and Environment Agency Recommended Technology Conclusions.

1.5.2 Impact Assessment

The impact of emissions is insignificant as judged by the Environment Agency Methodology. Detailed modelling of emissions to air from substances not screened out within the preliminary H1 assessment demonstrates that emissions will not cause exceedance of any air quality standards, for both human and environmental receptors including European designated habitats such as the Mersey Estuary.

1.5.3 Waste Management Licensing

The site does not dispose of waste on site and so has no Waste Management Licence.