

Insulfrax® Fiber

Introduction

Insulfrax® Fiber from Unifrax was developed from a calcium, magnesium, silicate chemistry to provide thermal insulation at operating temperatures up to 2012°F (1100°C). Insulfrax Fiber also meets European regulatory requirements (Directive 97/69/EC). The Insulfrax Fiber chemistry has been combined with Unifrax's proprietary fiber spinning technology to create a specialty high-temperature fiber with superior thermal and mechanical properties.

The Insulfrax Fiber calcium, magnesium, silicate chemistry provides superior wetting resistance to molten aluminum alloys. Testing with corrosive aluminum alloys at elevated temperatures has proven that Insulfrax fibers are superior to traditional alumina/silica refractory ceramic fibers.

Product Forms

Insulfrax Fiber is a man-made vitreous fiber based on a calcium, magnesium, silicate composition. A high fiber index (low percentage of unfiberized particles) provides the excellent thermal performance associated with traditional fibrous insulating materials.

Insulfrax Fiber is available in both chopped (3011) and unchopped (3010) grades. This fiber is the feedstock used to manufacture the Insulfrax product line, and it is ideally suited for conversion to boards, coatings and vacuum cast shapes.

Insulfrax Fiber was developed for the temperature range extending from cryogenic levels through 1100°C (2012°F). The wide operating temperature range combined with superior wetting resistance to molten aluminum alloys makes this product ideal for conversion to vacuum cast shapes for metal transfer in the aluminum industry.



Applications

A partial list of typical applications for Insulfrax Fiber is provided below:

- Expansion joint packing – refractory construction
- Conversion to vacuum cast tap out cones, precast molten metal distribution shapes, high-temperature boards, fireplace logs
- Tube seal packing
- Manufacture of cements, moldables and coatings
- High-temperature papers and felts
- Specialized vacuum cast shapes

Typical Product Parameters

Chemical Analysis (%)

SiO ₂	61 to 67
CaO	27 to 33
MgO	2 to 7
Other	<1

Average Fiber Diameter (microns)	3 to 5
Fiber Index (%) ¹	55 to 60

¹ Fiber Index is measured using the conical elutriation method.

Typical Product Properties

Insulfrax Product Form	Color	Temperature Grade ⁽¹⁾	Recommended Operating Temperature ⁽²⁾	Settle Volume ⁽³⁾	Melting Point	Specific Heat	Specific Gravity
Insulfrax Fiber 3010	White	1260°C 2300°F	1100°C 2012°F	N/A	1310°C 2390°F	1000j/kgk (1000°C)	2.67 (g/cm ³)
Insulfrax Fiber 3011 – Medium Chop (M-5)	White	1260°C 2300°F	1100°C 2012°F	125	1310°C 2390°F	1000j/kgk (1000°C)	2.67 (g/cm ³)
– Fine Chop (F-5)	White	1260°C 2300°F	1100°C 2012°F	250	1310°C 2390°F	1000j/kgk (1000°C)	2.67 (g/cm ³)

⁽¹⁾Temperature Grade based on European Norm 1094 (EN1094).

⁽²⁾The recommended operating temperature of Insulfrax products is determined by irreversible linear change criteria, not melting point.

⁽³⁾Settle Volume is a measurement used to indicate the physical dimensions (i.e., diameter and/or length) of a fiber. A larger number indicates the fiber has larger physical dimensions, such as diameter and/or length.

Health and Safety Information

Insulfrax Thermal Insulation from Unifrax, according to Directive 97/69/EC, possesses a fiber chemistry within the regulatory definition of a “man-made vitreous (silicate) fiber with random orientation with alkaline oxide and alkaline earth oxide content greater than 18% by weight.” Insulfrax fibers have been tested pursuant to EU protocol ECB/TM/26, Revision 7, Nota Q, Directive 97/69/EC, with results that are below regulatory thresholds. As a result, Insulfrax Thermal Insulation does not require additional labeling or further testing. Refer to the product Material Safety Data Sheet (MSDS) for recommended work practices and other product safety information.

For additional information about product performance or to identify the recommended product for your application, please contact the Unifrax Application Engineering Group at 716-278-3888.

Data are average results of tests conducted under standard procedures and are subject to variation. Results should not be used for specification purposes.



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