



# PUREFRAX®

## Hot Gas Filters

### Technical Data Sheet





**Product Name :** PUREFRAX®

**Description :** Purefrax® Filter elements are vacuum formed using either Unifrax's refractory ceramic fibres (Fiberfrax) or Alkaline Earth Silicate fibres (Insulfrax and Isofrax) made into slurry, together with organic and inorganic binders. The unique binding system means that low levels of organic binder are present so that the PUREFRAX® filters retain strength and integrity when exposed to heat. The manufacturing process ensures that the outer surface of the filter is denser to promote cake filtration. The filters are a rigid, tube, having one end closed and one end used as the clamping flange.

The Purefrax® elements are fully machined on all exterior faces, to ensure dimensional accuracy and narrow tolerance windows. The machining process also ensures a uniform wall throughout the filter to allow uniformity of dust deposition, excellent cleaning characteristics and controlled porosity.

Our elements are manufactured to be tapered down the length of the piece (both ID and OD equally) which promotes easier installation into application, aerodynamic flow between elements and easier cake cleaning.

High temperature filtration of gases using filter elements made of high temperature wool (HTW) can offer significant key economic and environmental benefits when compared to other types of industrial air pollution control technologies.

**Chemical Analysis :**

	<b>Fiberfrax</b>	<b>Insulfrax</b>	<b>Isofrax</b>
<b>Al<sub>2</sub>O<sub>3</sub></b>	30%	-	-
<b>SiO<sub>2</sub></b>	70%	79%	85%
<b>CaO</b>	-	18%	-
<b>MgO</b>	-	3%	15%

**Physical Properties :**

Colour	White/ Cream
Density	370 Kgs/ m <sup>3</sup> typical
Porosity	>80%
Pressure Drop	Typically 30-35mm Wg per 10mm wall thickness @ 3.0 cm/s face velocity, ambient temp.
Maximum Temp	1,100°C continuous application
Filtration Velocity	Up to 5cm/s (application dependant)
Typical Particulate Emission	< 1 mg/m <sup>3</sup> in filtered gas
Element Length	Up to 3,000mm
Element Outer Diameter	Up to 200mm (as elements are machined on OD this can be altered)
Filtration Area/ Element	1.5m <sup>2</sup> (see comment above)



**Efficiency :**

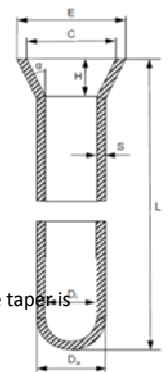
The Filtration efficiency was determined using the BS3928 Sodium Flame Test, which challenges the media with an aerosol of NaCl particles with a mass medium size of 0.6 micron.  
 The table below shows our results gained from an independent laboratory, based on 12 tests of unused filter media at 3 different face velocities  
 The Filter elements were fitted in a section of duct with a flame photometer sampling the test aerosol before and after the filter.  
 Measurements were recorded from which the % penetration and % efficiency were calculated.

Tests	Efficiency at 2cm/s (%) - 1.2m/min	Efficiency at 3cm/s (%) - 1.8m/min	Efficiency at 4cm/s (%) - 2.4m/min	Efficiency at 5cm/s (%) - 3.0m/min
1	97.37	96.332	95.32	94.326
2	96.585	95.095	93.703	92.367
3	96.875	95.353	93.825	92.577
4	95.37	93.231	91.528	90.2
5	97.522	95.633	94.317	93.248
6	96.7	94.573	92.892	91.388
7	96.123	94.489	92.359	92.28
8	96.412	94.153	92.659	91.537
9	98.094	96.771	95.547	94.717
10	96.796	95.353	95.009	94.717
11	97.985	96.893	95.943	95.088
12	96.817	94.927	93.592	92.435
<b>Average</b>	<b>96.887</b>	<b>95.234</b>	<b>93.891</b>	<b>92.907</b>

**Dimensions :**

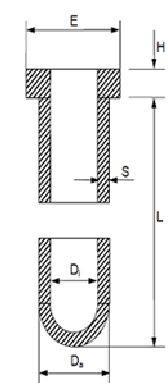
PUREFRAX® Elements can be formed to any length and diameter required. As they are machined to shape, the existing product range shown below can be tailored to suit individual needs. High levels of control are in place to ensure dimensional accuracy on all key dimensions

Description	Area (m2)	L - Length (mm)	C - Flange Dia (mm)	H - Flange Height (mm)	D1 - Inner Diameter (mm)*	D2 - Outer Diameter (mm) *	S - Wall Th (mm)
150 x 1350 CF		1,350	165	65	110	150	20
150 x 1600 CF		1,600	160	65	110	150	20
150 x 1800 CF		1,800	160	65	110	150	20
150 x 2000 CF		2,000	160	65	110	150	20
150 x 2200 CF		2,200	160	65	110	150	20



\* Note : All of our PUREFRAX® Elements are manufactured with an internal and external diameter taper down the length of the piece. The taper is consistent 5mm per 1000mm  
 Specific drawings for each of our PUREFRAX® Elements are available on request, with full tolerances listed

Description	Area (m2)	L - Length (mm)	E - Flange Dia (mm)	H - Flange Th. (mm)	D1 - ID at top (mm)*	D2 - OD under Flange (mm)*	S - Wall Th (mm)
60 x 1000	0.17	1,000	80	20	40	60	10
60 x 1250	0.21	1,250	80	20	40	60	10
60 x 1500	0.28	1,500	80	20	40	60	10
125 x 1500	0.55	1,500	160	15	105	125	10
155 x 1500	0.69	1,500	160	30	135	155	10
125 x 2000	0.74	2,000	160	30	105	125	10
130 x 2000	0.77	2,000	160	30	110	130	10
150 x 2000		2,000	195	30	110	150	20
150 x 3000	1.35	3,000	195	30	100	150	20



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**Gaskets :** T Flange

Manufactured from the same fiber chemistry as the PUREFRAX® filters but using a latex binding system to allow flexibility and good sealing characteristics, gaskets are available as pre-cut shapes up to 20mm thick and supplied alongside the elements to be fitted at installation. Standard is usually 10mm thick paper, compressed 50% in application

Conical Flange

Manufactured from the same fiber chemistry as the PUREFRAX® filters, the gaskets are supplied in either blanket or felt material ranging from 6mm – 25mm thickness . The gasket is attached to the flange using a high temperature glue for easier installation. Standard material is usually 13mm thickness x 128Kgs/m3 density

**General Properties/ Benefits :**

- Self-supporting;
- Temperature resistant up to 1,100°C;
- Insensitive to sparks and non-flammable;
- Removes the fire risk from using conventional filter media at high temperatures;
- Outstanding temperature fluctuation resistance;
- High efficiency of filters not just limited to high temperatures;
- High temperature filtration can prevent de-novo synthesis of Dioxins/Furans and increase efficiency of sorbents;
- Final filter systems do not require cyclones, dilution air, spark arrestment or other ancillary abatement equipment - enabling lower power consumption and simpler operation;
- Usable in corrosive atmospheres;
- High porosity and air permeability;
- Successful utilization with sorbent injection to control full range of emissions;
- Reduction of emissions by almost 100%;
- Minimal pressure drop;
- Consistent wall thickness for more even filtration;
- Long established manufacturer of hot gas filters;
- 100s of applications worldwide.

**Typical Applications :**

- Dedusting of melting furnaces and fluidized bed processes
- Power station : gasification of coal, gasification of waste
- Gasification of biomass e.g. wood, sewage sludge etc.
- Cement industry
- Glass Industry
- Waste incineration plants
- Chemical manufacture
- Catalyst/Precious Metals Recovery