Stainless Steel Fibres

Fibrex HT Stainless Steel Fibres reinforce monolithic refractory against thermal and mechanical shock by reducing cracking and spalling susceptibility. Fibrex HT is a new proprietary product research and developed by Fibre Technology as an enhanced alternative to 446 and 430 steel fibres.

Fibrex HT performs best in refractory operating in the following conditions:

- Thermal cycling to 1600^{o}C*
- Continuous soaking to 1200^{o}C
- Moderate-High mechanical shock
- Oxidising, Sulphur, Reducing, Hydrogen Atmospheres

* Dependant on the insulation properties of the refractory

Fibrex HT Plus can be used in refractory operating conditions of:

- Moderate thermal cycling
- Continuous fibre soaking temperature up to 1100oC
- Moderate mechanical shock
- High temperature corrosive atmospheres (sulphidation, chlorination etc)

Fibrex HT – Stainless Steel Fibres

These fibres can be used in refractory operating conditions of:

- Thermal cycling to 1600°C (dependent on the insulation properties of the refractory)
- Continuous soaking to 1200°C
- Moderate - High mechanical shock
- Oxidising, Sulphur, Reducing, Hydrogen Atmospheres

Chemical Composition (maximum unless stated):

C	Si	Mn	P	S	Cr	Ni	Others	Fe
0.20	3.5	2.0	0.050	0.03	17.0-21.0	0.5	2.0-6.0	balance

Melting Temperature:	1425-1510°C
Critical Oxidation Temperature:	
Cyclic Heating (in a refractory):	1600°C
Continuous Service (in a refractory):	1200°c
Cyclic Heating	1100°C
Tensile Strength:	
20°C	740 MPa
870°C	63 Mpa
Modulus of Elasticity (870°C):	90-100 Gpa
Coefficient of Thermal Expansion (870°C):	12.1 @ 10^{-6} / ^{Oc}
Thermal Conductivity (540°C):	24.6 W/m^2K

ME Fibre – Typical Dimensions & Aspect Ratios

Fibre Length [1]	Typical Equivalent Dia [2]	Typical Aspect Ratio [3]	Typical No / kg
6mm	0.18mm	33	839,000
12mm	0.34mm	35	118,000
20mm	0.47mm	43	37,000
25mm	0.50mm	50	26,000
35mm	0.64mm	56	12,000
50mm	0.83mm	60	5,000

1. Other fibre lengths can be manufactured on request
2. Other fibre diameters can be manufactured on request
3. Aspect ratio is calculated as fibre length + diameter

Fibrex HT Plus – Stainless Steel Fibres

These fibres can be used in refractory operating conditions of:

- Moderate thermal cycling
- Continuous fibre soaking temperature up to 1100°C in the refractory
- Moderate mechanical shock
- High temperature corrosive atmospheres (sulphidation, chlorination etc)

Chemical Composition (maximum unless stated):

C	Si	Mn	P	S	Cr	Ni	Others
0.50	3.5	2.0	0.050	0.10	16.0-20.0	4.0-6.0	-

Melting Temperature:	1400-1455°C
Critical Oxidation Temperature:	
Cyclic Heating:	870°C
Continuous Service:	1100°c
Tensile Strength:	
20°C	515MPa
870°C	124MPa
Modulus of Elasticity (870°C):	124GPa
Coefficient of Thermal Expansion (870°C):	20.2 @ 10^{-6} / °C
Thermal Conductivity (540°C):	21.5 W/m^{2}K

ME Fibre – Typical Dimensions & Aspect Ratios

Fibre Length [1]	Typical Equivalent Dia [2]	Typical Aspect Ratio [3]	Typical No / kg
6mm	0.18mm	33	839,000
12mm	0.34mm	35	118,000
20mm	0.47mm	43	37,000
25mm	0.50mm	50	26,000
35mm	0.64mm	56	12,000
50mm	0.83mm	60	5,000

1. Other fibre lengths can be manufactured on request
2. Other fibre diameters can be manufactured on request
3. Aspect ratio is calculated as fibre length + diameter

ME 446 – Stainless Steel Fibres

These fibres can be used in refractory operating conditions of:

- High thermal cycling or
- Continuous fibre soaking temperature up to 1100°C in refractory
- Moderate mechanical shock
- High temperature oxidation resistance

Chemical Composition (maximum unless stated):

C	Si	Mn	P	S	Cr	Ni	Others
0.40	3.5	2.0	0.050	0.10	23.0-27.0	0	-

Melting Temperature:	1425-1510°C
Critical Oxidation Temperature:	
Cyclic Heating:	1205°C
Continuous Service:	1100°c
Tensile Strength:	
870°C	53 MPa
Modulus of Elasticity (870°C):	97 GPa
Coefficient of Thermal Expansion (870°C):	13.1 @ 10^{-6} / °C
Thermal Conductivity (540°C):	24.8 W/m^{2}K

ME Fibre – Typical Dimensions & Aspect Ratios

Fibre Length [1]	Typical Equivalent Dia [2]	Typical Aspect Ratio [3]	Typical No / kg
6mm	0.18mm	33	839,000
12mm	0.34mm	35	118,000
20mm	0.47mm	43	37,000
25mm	0.50mm	50	26,000
35mm	0.64mm	56	12,000
50mm	0.83mm	60	5,000

1. Other fibre lengths can be manufactured on request
2. Other fibre diameters can be manufactured on request
3. Aspect ratio is calculated as fibre length + diameter

ME 304 – Stainless Steel Fibres

These fibres can be used in refractory operating conditions of:

- Moderate thermal cycling or
- Continuous fibre soaking temperature up to 900°C in refractory
- Moderate mechanical shock
- High temperature corrosive atmospheres (sulphidation, chlorination etc)

Chemical Composition (maximum unless stated):

C	Si	Mn	P	S	Cr	Ni	Others
0.50	3.5	2.0	0.050	0.10	18.0-20.0	8-12	-

Melting Temperature:	1400-1455°C
Critical Oxidation Temperature:	
Cyclic Heating:	870°C
Continuous Service:	900°c
Tensile Strength:	
870°C	124MPa
Modulus of Elasticity (870°C):	124GPa
Coefficient of Thermal Expansion (870°C):	20.2 @ 10^{-6} / °C
Thermal Conductivity (540°C):	20.1 W/m^{2}K

ME Fibre – Typical Dimensions & Aspect Ratios

Fibre Length [1]	Typical Equivalent Dia [2]	Typical Aspect Ratio [3]	Typical No / kg
6mm	0.18mm	33	839,000
12mm	0.34mm	35	118,000
20mm	0.47mm	43	37,000
25mm	0.50mm	50	26,000
35mm	0.64mm	56	12,000
50mm	0.83mm	60	5,000

1. Other fibre lengths can be manufactured on request
2. Other fibre diameters can be manufactured on request
3. Aspect ratio is calculated as fibre length + diameter

ME 310 – Stainless Steel Fibres

These fibres can be used in refractory operating conditions of:

- Moderate thermal cycling or
- Continuous fibre soaking temperature up to 1150°C in refractory
- Extreme mechanical shock
- Extreme high temperature corrosive atmospheres

Chemical Composition (maximum unless stated):

C	Si	Mn	P	S	Cr	Ni	Others
0.50	3.5	2.0	0.050	0.10	24.0-26.0	19.0-22.0	-

Melting Temperature:	1400-1455°C
Critical Oxidation Temperature:	
Cyclic Heating:	1040°C
Continuous Service:	1150°c
Tensile Strength:	
870°C	152MPa
Modulus of Elasticity (870°C):	125GPa
Coefficient of Thermal Expansion (870°C):	18.5 @ 10^{-6} / °C
Thermal Conductivity (540°C):	18 W/m^{2}K

ME Fibre – Typical Dimensions & Aspect Ratios

Fibre Length [1]	Typical Equivalent Dia [2]	Typical Aspect Ratio [3]	Typical No / kg
6mm	0.18mm	33	839,000
12mm	0.34mm	35	118,000
20mm	0.47mm	43	37,000
25mm	0.50mm	50	26,000
35mm	0.64mm	56	12,000
50mm	0.83mm	60	5,000

1. Other fibre lengths can be manufactured on request
2. Other fibre diameters can be manufactured on request
3. Aspect ratio is calculated as fibre length + diameter

ME 330 – Stainless Steel Fibres

These fibres can be used in refractory operating conditions of:

- Moderate thermal cycling or
- Continuous fibre soaking temperature up to 1165°C in refractory
- Extreme mechanical shock
- Extreme high temperature corrosive atmospheres

Chemical Composition (maximum unless stated):

C	Si	Mn	P	S	Cr	Ni	Others
0.50	3.5	2.0	0.050	0.10	17.0-19.0	34.0-36.0	-

Melting Temperature:	1345-1425°C
Critical Oxidation Temperature:	
Cyclic Heating:	1050°C
Continuous Service:	1165°c
Tensile Strength:	
870°C	193MPa
Modulus of Elasticity (870°C):	134GPa
Coefficient of Thermal Expansion (870°C):	17.6 @ 10^{-6} / °C
Thermal Conductivity (540°C):	21.5 W/m^{2}K

ME Fibre – Typical Dimensions & Aspect Ratios

Fibre Length [1]	Typical Equivalent Dia [2]	Typical Aspect Ratio [3]	Typical No / kg
6mm	0.18mm	33	819,000
12mm	0.34mm	35	115,000
20mm	0.47mm	43	36,000
25mm	0.50mm	50	25,500
35mm	0.64mm	56	11,000
50mm	0.83mm	60	4,500

1. Other fibre lengths can be manufactured on request
2. Other fibre diameters can be manufactured on request
3. Aspect ratio is calculated as fibre length + diameter

METALX – Stainless Steel Fibres

METALX is a proprietorial stainless steel fibre with improved oxidation resistance compared to traditional stainless steels. This steel is ideally suited to extreme high temperature and corrosive environments. METALX is manufactured using Fibretech's unique Melt Overflow Rapid Solidification (RS) technology. The chemistry has been designed to produce a highly adherent oxide coating, which extends the life of the fibres.

Chemical Composition (maximum unless stated):

C	Si	Mn	P	S	Cr	Others
0.30	3.0	2.0	0.05	0.05	23.0	Cr Vi free

Melting Temperature:	1480-1530°C
Critical Oxidation Temperature of Fibres:	
Cyclic Heating:	1250°C
Continuous Service:	1300°c
Critical Oxidation Temperature in Refractories:	
Cyclic Heating (dependent on refractory insulation properties):	1700°C
Continuous Service:	1300°C
Tensile Strength:	
20°C	>750 Mpa
870°C	>36 Mpa
Modulus of Elasticity at 20°C:	>260 Gpa
Coefficient of Thermal Expansion:	15 x 10^{-6} / ^{Oc}
Thermal Conductivity:	16 W/m^2K
Specific Heat Capacity:	0.46 Kj/kgK
Density:	7.25 g/cm^3

ME Fibre – Typical Dimensions & Aspect Ratios

Fibre Length	Typical Effective Diameter	Typical No / kg
12mm	0.43mm	78,000
20mm	0.43mm	47,000
25mm	0.43mm	37,000
35mm	0.43mm	27,000