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High Silica Fiberglass Mesh Filter Use Guide

Fiberglass mesh filters are weaved using a high silica fiberglass yarn and coated with a special phenolic resin. They can effectively remove slag, refractory particles and non-metallic inclusions from molten metals. Made from specialty treated silica yarns, silica mesh filters are capable of withstanding pouring temperatures up to 1620°C. Silica mesh filters are ideal for in-mold filtration of gray, malleable, white, compacted graphite, ductile cast irons, as well as, non-ferrous aluminum and copper based alloys and small scale steel castings.

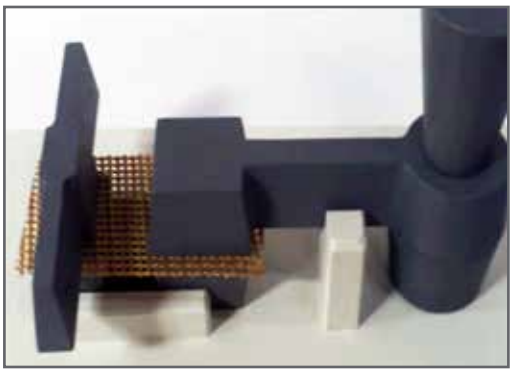
General Use & Guidelines:

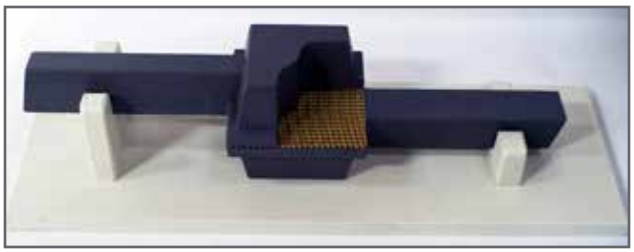
The fiberglass mesh filter is generally used in gating system and should be used in conjunction with other metal filtration processes/mediums for optimal results.

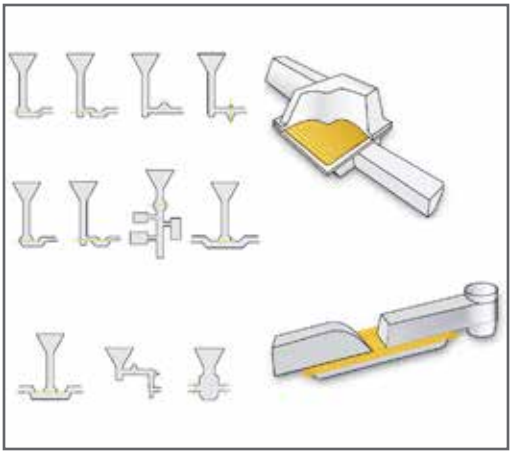
1) To use the fiberglass mesh filter according to the pouring weight, pouring temperature and pouring time etc.
2) To use the fiberglass mesh filter considering the effective area and fixing area. Choose the suitable mesh (1.5 x 1.5mm and 2.0 x 2.0mm are most common for iron filtration and 1.0 x 1.0mm and 1.5 x 1.5mm are commonly used for non-ferrous casting filtration).
3) Since the fiberglass mesh will become soft when contact with molten metal, so the fixing or holding is very necessary.

Placement:

The mesh filter is best to be placed in the mold cavity or as close as possible to the castings. Filter may be placed at the intersection between the pouring cup and runner. Historically, the best filtration results have been achieved by placing the filter as close to the ingate as possible. Fiberglass filter can be located anywhere within the pouring system. The best results are obtained when the filter is placed as close as practical to the ingate.







Sectional Area:

Sectional Area of filter = Sectional Area without filter / (a x b)

a) Filter open area: 50-60%

b) Filtration efficiency: 60-80%

So the sectional area with the filter is normally about 2-3 times that without a filter.

Attention:

Avoid direct molten metal impingement to the mesh filter.

Beware of oblique pull, abrasion and fracture of the mesh. The filter size should be greater than the gating section of about 20-30mm.

Take care of handling the mesh during placement into the mold to prevent compressing, stretching and oblique pulling of the mesh.

Flow Rates For Silica Mesh Filters:

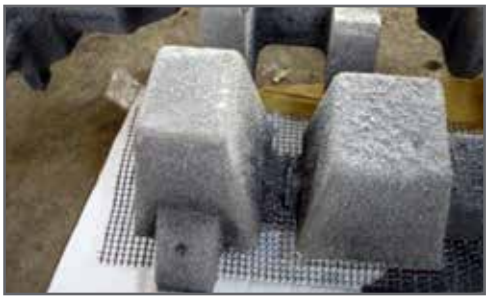
The following molten metal flow rates were calculated using a 10 inch (255 mm) metal head and all resin coated silica.

Type of Metal	Flow Rate with 1.0mm Mesh	Flow Rate with 1.5mm Mesh	Flow Rate with 2.0mm Mesh
White Iron	0.105 kg/sec/cm²	0.116 kg/sec/cm²	0.254 kg/sec/cm²
Gray Iron	0.105 kg/sec/cm²	0.116 kg/sec/cm²	0.254 kg/sec/cm²
Malleable Iron	0.105 kg/sec/cm²	0.116 kg/sec/cm²	0.254 kg/sec/cm²
Compacted Graphite Iron	0.101 kg/sec/cm²	0.11 kg/sec/cm²	0.238 kg/sec/cm²
Ductile Iron	0.105 kg/sec/cm²	0.105 kg/sec/cm²	0.246 kg/sec/cm²
Carbon Steel	0.116 kg/sec/cm²	0.158 kg/sec/cm²	0.256 kg/sec/cm²
Stainless Steel	0.116 kg/sec/cm²	0.161 kg/sec/cm²	0.256 kg/sec/cm²
Brass	0.116 kg/sec/cm²	0.193 kg/sec/cm²	0.224 kg/sec/cm²
Bronze	0.102 kg/sec/cm²	0.098 kg/sec/cm²	0.11 kg/sec/cm²
Aluminum	0.113 kg/sec/cm²	0.016 kg/sec/cm²	0.024 kg/sec/cm²

Note: the above flow rate figures are for reference only. Metal type and gating system will dictate the final values for each size of filter.

General Mesh Size recommendations for the most common Alloys

Alloy	Recommended Mesh Size
White Iron	2.0mm & 1.5mm
Gray Iron	2.0mm (above 100kg)& 1.5mm (below100kg)
Malleable Iron	2.0mm & 1.5mm
Compacted Graphite Iron	2.0mm
Ductile Iron	2.0mm (below100kg) & 2.5mm(above 100kg)
Carbon Steel	2.0mm & 1.5mm
Stainless Steel	2.0mm & 1.5mm
Brass	2.0mm & 1.5mm
Bronze	1.5mm & 2.0mm
Aluminum	1.0mm & 1.5mm & 2.0mm



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