Mechanism of Filtration with Refractory Filter Cloth Flexsil®

Chemically Active and Mechanically Filtration

The SiO₂ - fibers used for manufacturing of resin coated filter cloth will be modified on their surface, when molten ferrous metall contacts the Flexsil® filter. Surface coatings decompose to form a low melting composition - fayalite (2FeO·SiO₂). This fayalite film is soft and sticky and entraps non-metallic, even micron-sized, inclusions.

In case of Mg - treated ductile iron filtration, the fayalite coated silica fibers absorb magnesium reaction products - especially forsterit, 2MgO·SiO₂. The formed low - melting solid solutions entrance removal of inclusions.

Placement of Flexsil® filters for inmold filtration

The handling of Flexsil® filter cloth is simple by using of chipboard reinforced rigid SiO₂ - filter cloth (see fig. above).

On the other hand, if shell cores are manufactured, it is possible to embedd Flexsil® filter cloth (see fig. close by).

Flexsil® filters can also be easily incorporated into wax patterns for investment casting. After melting - out of wax the filter is held rigidly in place by the ceramic shell.

Result: Placement of filters - no problem!

Flexsil® - Refractory Filter Cloth can be used versatilely in founding.
**Flexsil** — the destined using of advantages of amorphous silica glass for ferrous and non-ferrous metallurgy

**Refractory Flexsil** - Filter Cloth — effective because of its chemically active filter surface

![Rigid and semi-rigid Flexsil cloth](image)

**Refractory Flexsil** - Filter Cloth

**Technical Data:**
- Chemical Composition: $> 96\% \text{ SiO}_2$
- Application Temperature: up to 1620°C

<table>
<thead>
<tr>
<th>Actual size</th>
<th>Live (Filtration) Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>55 x 55 x 3,9 mm</td>
<td>42 x 42 = 1764 mm²</td>
</tr>
<tr>
<td>66 x 66 x 3,9 mm</td>
<td>53 x 53 = 2809 mm²</td>
</tr>
<tr>
<td>81 x 81 x 3,0 mm</td>
<td>68 x 68 = 4624 mm²</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mesh Size</th>
<th>Percent Open</th>
<th>Color Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,0 x 2,0 mm</td>
<td>28</td>
<td>red</td>
</tr>
<tr>
<td>1,5 x 1,5 mm</td>
<td>18</td>
<td>white</td>
</tr>
<tr>
<td>1,9 x 1,0 mm</td>
<td>10</td>
<td>blue</td>
</tr>
</tbody>
</table>

**Flow rates:** The typical flow rate for the 1,5 x 1,5 mm mesh is approximately 703,07 Kg/m²s for ductile iron (0,045 % magnesium residual at 1460°C)
Flexsil® - Refractory Filter Cloth

Additional Advantages in Application

Multiple Filtration - By placement of several filters in the mould.
Because the mass of filter cloth is low, the filters consume themself only a little heat. The risk of filter blockage because high cooling of the melt doesn’t practically exist.

Metallurgical Treatment of the Melt
- Inoculants can be placed directly onto the active surface of Flexsil® filters.
- No premature melting and other losses.

Multiple Filtration

Investment Casting

Improve Knock - off

Flexsil® filter can be placed at casting in-gates and across risers. The cleaning of castings will be facilitated.

Flexsil® - Refractory Filter Cloth - cost efficiently

Flexsi® - registered Trade Mark of Ametek, Inc., Haveg Division., USA