Successful foundries and metalcasting producers know that the key to competing and winning in today’s hyper-competitive global marketplace lies in their ability to produce high quality end-castings through the use of the most advanced and cost-efficient production methods available. While this may sound easy on paper, any metallurgist will tell you that it’s a never ending challenge...AMETEK Foundry Products is the solutions partner of choice for many of the world’s best-practice foundries and is committed to helping them meet this challenge through cutting edge technology, unmatched product quality, and top tier metallurgical and technical support.

**Improved Safety**
**Higher Casting Quality** +
**Lower Operational Costs**

Flexsil® and CerraFlex® molten metal filters serve a dual role in their unique ability to filter out harmful slag, dross and other inclusions from molten metal and provide a safer, more efficient, cost effective method of riser knock-off and degating.

Flexsil silica mesh filter cloth traps impurities using a method uniquely different than that of competing ceramic foam or cellular filters. When molten ferrous metals contact the cloth surface, special surface coatings decompose to instantly form a continuous film of Fayalite (Fe₂SiO₄). This Fayalite coating becomes soft and viscous at high temperatures to entrap even micron-sized inclusions as they pass through the filter. For magnesium treated ductile iron, the Fayalite coating absorbs magnesium reaction products (inclusions) contained in the molten metal, and forms lower melting solid solutions on the surface of the silica fibers. This helps to trap inclusions on the filter surface, especially the magnesium dross, sulfides and silicates that are formed by the MgFeSi nodularizing treatment.

Significantly lower casting operational costs can be readily achieved with Flexsil or CerraFlex through a drastic reduction of time and effort usually required in finishing room activities. By strategically placing either filter cloth material at riser contacts, along runners and directly at end casting ingates, the traditional reliance on manual cut-off, torch or grinding methods can be minimized. Filter created cleavage planes often come apart on their own during the shakeout process, or with the simple impact of a shop hammer. This additional benefit readily translates into significant improvements in safety as well as operational time and cost savings, with the typical casting line reducing its finishing room labor-related expenditure by as much as 50%.

**Tailored Formulations for Unique Applications**

Because the range of metalcasting applications that can benefit from using these technologies is quite wide, we’ve developed a variety of filter cloth formulations designed to meet the unique environmental and performance requirements that each demands. Having invented the original high temperature silica mesh molten metal filter cloth technology, and first introducing it to the foundry industry more than thirty years ago, our depth of technical capabilities and focus on customer satisfaction only grows larger with each new customer.
Flexsil®
Processed using proprietary ingredients at AMETEK Foundry Products manufacturing facilities in the USA, you will not find another silica mesh filter supplier with our depth of technical excellence and attention to detail in regards to consistently meeting customer expectations. Each and every stage of our manufacturing process is monitored, tracked and maintained to minimize variables and maximize quality. Flexsil fabric is woven from high strength silica fibers, then coated with a unique, proprietary resin. Flexsil fabric is available in two different stages, “B” or “C”. The “B” stage cloth is semi-soft, slightly tacky, and is the base material for thermally cured end products such as investment casting filter cups and pre-stiffened cut pieces. The “C” stage cloth is cured to a full dry stiff condition ideal for cut piece applications used industry-wide for riser knock-off and general degating.

CerraFlex®
CerraFlex molten metal filter material is the strongest screen-technology based filter available worldwide and was developed for use in metal casting applications where pouring temperatures meet or exceed the maximum limit of silica mesh fabric, such as super-alloy steel or when pouring large volume end-castings that standard ceramic filters cannot accommodate due to extended exposure time or high ferrostatic head pressure. The extreme rigidity of CerraFlex, even at higher temperatures, helps limit directional deflection of the filter screen from the pressure of the flowing metal. A more rigid filter screen permits closer placement at the ingate or the riser contact area, which in turn after degating, reduces the amount of residual contact area to be ground off in the finishing process later on. As no other molten metal filter material offers this level of performance, it’s no surprise that some of the leading manganese steel casting foundries rely on CerraFlex RiserBreakers® to safely and efficiently remove large contact area risers.

Investment Casting
High performance filter cups that accurately fit the wide variety of ceramic pouring cones used in investment casting, riser sleeves for direct-pour applications, or for direct-placement in the downsprue of sand casting operation are readily available in both Flexsil and CerraFlex materials. Our uniquely designed filter cup support flange is flat and extends beyond the outer rim of the pour cone, which gives a single filter cup size the flexibility of being used with more than one pour cone size.
the bottom of the pouring cone after the metal is poured, Flexsil and CerraFlex filter cups can be easily removed intact, along with the slag, dross and other inclusions the filter cups have captured. The removal of the filter cup (and captured slag) makes the optional addition of exothermic hot-top significantly more efficient as the filter is no longer slowing the feed-flow of metal from the pour cone into the casting tree.

**Riser Knock-Off and De-Gating**

The reliance on manual cutoff techniques for the removal of risers by many foundries has long been an activity area with considerable potential for improvements in worker safety, production time and overall cost. AMETEK Foundry Products has long had foundry customers utilizing Flexsil filter cloth placed at the base contact area of risers (often including a breaker core) to act as both a filter and a highly efficient riser knock-off aid. With the development and drastically enhanced strength of CerraFlex filter material, these riser knock-off features can now be extended to remove even the most challenging risers such as manganese steel. Foundries utilizing RiserBreakers (Flexsil or CerraFlex) will often see their casting risers fall off on their own during shakeout, or the riser will break off easily with the slight impact of a shop hammer, revealing a flat and uniform cleavage plane. The savings achieved by reducing or eliminating the manual cutoff of risers can be significant.

Similar cost and time savings are attainable by using flat filter units of Flexsil or CerraFlex at key sections within the gating of a mold pattern or directly at the end casting ingate. AMETEK Foundry Products provides direct and timely technical product support to customers to ensure our filter product performance meets their expectations.

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**Choice by Application Need**

<table>
<thead>
<tr>
<th>Application Performance Considerations</th>
<th>B - Stage Flexsil</th>
<th>C - Stage Flexsil</th>
<th>CerraFlex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal Pouring Temperature</td>
<td>PT &lt; 3000°F / 1649°C</td>
<td>PT &lt; 3000°F / 1649°C</td>
<td>PT &lt; 3400°F / 1871°C</td>
</tr>
<tr>
<td>Fayalite Coating</td>
<td>Yes</td>
<td>Yes</td>
<td>No*</td>
</tr>
<tr>
<td>Fabric Rigidity</td>
<td>Flexible</td>
<td>High Rigidity</td>
<td>Completely Rigid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(may experience slight deflection near temperature maximum when coupled with a slow pour)</td>
<td>(no deflection)</td>
</tr>
</tbody>
</table>

* CerraFlex filter material does not have a Fayalite coating, which makes it ideal for aluminum casting applications.
**World Class Support**

Flexsil and CerraFlex customers can receive top tier technical support at no additional cost.

AMETEK Foundry Products pioneered the original development of silica mesh filter technology more than 30 years ago. Being the first to introduce the Flexsil silica mesh products to the worldwide foundry industry, AMETEK quickly set the highest standards for material quality, performance and customer service that endures to this day. We are proud to offer expert technical support to our customers at no cost to assist in eliminating defects, improving yields and maximizing efficiencies. We look forward to assisting you in selecting the AMETEK filter product that best meets your needs.
Scanning Electron Microscopy

Above, deep-etched micrographs showing three-dimensional views of the microstructure for each of the three major types of cast iron.