



SiC filter technology available for licensing

Improved friability, mechanical properties, and surface appearance

Lawrence Berkeley National Laboratory

Invention #WIB-2866: Ceramic Coatings and Glass Additives for Improved SiC-Based Filters for Molten Iron Filtration

Problem overcome:

- Small pieces of filter can break during shipping, handling, and foundry use
 - Filter pieces can be entrained into cast metal part, causing low quality
- SiC is minimally sintered during fabrication, resulting in weak, friable filter
 - SiC filters are fired at only 1150-1225°C for good furnace lifetime
 - Too low for good SiC sintering



Technical solutions:

1. Filter coated with thin layer of high-sintering ceramic

- Coating sinters more than bulk SiC filter
- Coating is stronger than bulk filter

Benefits:

- Stronger filter – less crumbling
- Refractory filter surface
- Unique appearance

2. SiC filter modified by addition of glass

- Glass bonds SiC particles together
 - Modified filter is stronger at room temperature without sacrificing high-temperature properties

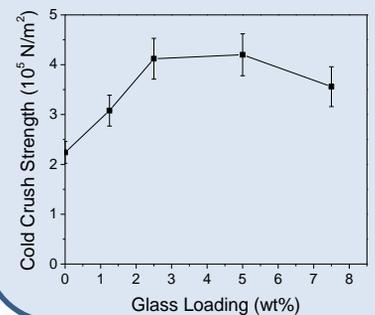
Benefits:

- Stronger filter – less crumbling
- Same appearance as standard SiC filter
- Mechanism of improvement difficult to reverse-engineer

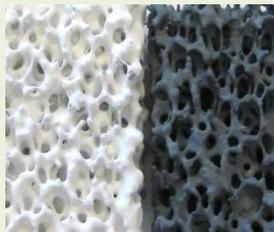
Filters tumbled to determine crumbling strength

Filter Type	Weight of removed pieces (g)
Standard	1.62
Ceramic Coated	1.21
Glass Modified	0.94

Cold crush strength of filters with glass addition



Ceramic coated



Glass modified

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Information on licensing technology from LBNL is available at:

<http://www.lbl.gov/Tech-Transfer/industry/index.html>