



FOUNDRY INSIGHT

Improving Performance in Production

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ask the expert...

THE A-Z OF RFM[®] MATERIALS



Lee Nilson,
Global Product
Manager – RFM,
Coatings, Pyrotek
Inc., Spokane Valley,
Washington, USA

Reinforced Fibreglass Material (RFM) from Pyrotek is a special high-performance composite finding a variety of crucial applications in the metals industry, particularly for molten aluminium contact applications. It can be formed into complex shapes with thin walls and exhibits a range of first-class properties to provide an array of ideal process solutions. Pyrotek's Lee Nilson* explores the nature and uses of this exceptional material and responds to some typical customer application questions and specific production benefits.

Q: What is Pyrotek's premium RFM refractory?

A: RFM is a patented composite refractory made of fibreglass fabric embedded in either a calcium silicate slurry, RFM CS, a fused silica slurry, RFM FS, or a combination. CS or FS is selected depending on product application and desired properties. Calcium silicate is the standard variant.

Q: Where is RFM typically used?

A: Many products are available for molten metal applications, including autoupour ladles, hand ladles, sampling spoons, small cross-section troughs, dosing launders, shot funnels, and thermocouple protection tubes. Autoupour

ladles have found widespread acceptance in foundries seeking to use the superior thermal insulating properties of RFM over cast iron ladles, allowing lower holding furnace temperatures. In addition to the obvious energy savings provided, the melt quality also improves with less oxides and entrapped hydrogen. The excellent non-wetting properties allow for ease of oxide release with air blast cleaning stations, keeping the scull out of the process. Consistent ladle volume is also provided from one shot to the next without the need for machine recalibration due to scull buildup.

Q: Why is RFM available in more than one type?

A: RFM can be custom-designed for the end user's specific application. RFM CS is typically used for most applications due to its better insulating properties and ability to be easily finished to its final shape. RFM FS is used where erosion is the primary concern, or where improved resistance to thermal shock or low thermal expansion is needed. Both versions of RFM are considered good thermal insulating refractories with excellent strength and crack resistance. Selective use of silicon carbide (SiC) erosion-resistant material can be built into high wear areas of RFM parts as well.

Q: What are the main advantages of RFM?

A: Structural strength, thermal insulating properties, crack resistance, and non-wetting properties come together to make RFM a unique refractory for success in some of the most demanding field conditions. The strength and layered crack-stopping ability of RFM,



RFM thin-wall series ladles



RFM feeder box with
ZYP Boron Nitride
Lubricoat Blue[®] ZS



along with its non-wetting properties, provide refractory life that typically outlasts other ladle solutions—without the melt contamination seen with cast iron or steel. Thermal insulation is also a primary benefit. Many RFM AutoPour ladle users have been able to lower their holding furnace temperatures by as much as 20°C (68°F) compared with cast iron and dense ceramic ladles.

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Ask the Expert - The A-Z of RFM® Materials*Continued from page 1***Q: Will RFM shatter if a collision occurs, like other ceramic products?**

A: An RFM ladle with its tough internal fiberglass layers will not shatter like conventional ceramic ladles. As with any ladle, if an autoladler collision occurs, damage can result. RFM ladles have many layers of high temperature fiberglass reinforcement to provide structural support, even when exterior damage is experienced.

Q: How does RFM perform against metal adhesion?

A: RFM is a premium performance material with a good non-wetting surface to most aluminium and metal alloys. RFM is shipped standard with ZYP's Boron Nitride Lubricoat Blue® ZS to enhance the effectiveness of its non-

wetting performance and provide additional refractory protection. Most ladles are easily cleared of scull by simply inverting over an air blast station. Coating maintenance, as needed, will also increase the life of the RFM.

Q: Are there other advantages to RFM?

A: Since RFM is a custom product, it can be moulded to the customer's desired shape, solving many of the problems with existing refractory solutions. Ladles can be designed to fit into tight clearances with extended pour spouts, two pour spouts, skimming fill window and with shapes to fit the end user's application. Only minimal preheating of RFM is necessary to remove surface moisture and water from the coatings.

Maintenance of RFM is easy to perform and definitely enhances its service life. The material should be cleaned with soft, non-steel tools to avoid unnecessary surface damage.

Q: Where is RFM produced?

A: RFM is manufactured by Pyrotek in Europe, Asia, and North America. The company provides local support with a network of sales engineers skilled in providing high-temperature solutions for foundries and other metal processing plants.

www.pyrotek.info/RFM

**Lee Nilson, Global Product Manager – RFM, Coatings, Pyrotek Inc., Spokane Valley, Washington, USA.*