ALUMINIUM INSIGHT
Improving Performance in Production
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RFM® CONTINUOUS ROD CASTING SPOUTS FOR LONGER CASTS

RFM®, an acronym for reinforced fiberglass material, is a composite material from Pyrotek, either calcium silicate based (RFM CS) or fused silica based (RFM FS). Material selected for use is dependent on the product application and desired properties.

RFM can be shaped during manufacture into complex shapes with thin walls. It exhibits exceptional non-wetting properties against molten aluminium alloys.

Because it is a composite, RFM has a high resistance to fracture and it can be used in conjunction with low density, highly insulating backup linings that greatly lower the thermal conductivity.

Continuous rod casting spouts are the final refractory to deliver the molten aluminium to the copper casting wheel. The tip must accurately fit into a groove on the edge of the copper wheel with minimal clearance, to prevent the molten aluminium from leaking.

The tip must also clear the stainless steel belt that traps and holds the aluminium in the copper wheel. RFM continuous rod casting spouts / tips are mounted to the level control tundish as a cantilevered trough. Spouts are now available with a closed top on the wheel end for improved surface finish on the belt side of the cast rod.

PROCESS ADVANTAGES

- Better surface finish on top of bar with closed tip design
- Long life compared to ceramic paper-lined steel troughs
- No contamination from ceramic paper fragments breaking off; less prone to inclusions
- Longer casting runs without breaks
- Dimensionally stable with substantially lower thermal expansion
- Low thermal conductivity to ensure heat is retained in the aluminium
- Minimal preheating to remove surface moisture
- Non-wetting to molten aluminium
- Increased tolerance to thermal shock and temperature cycling compared with cast refractories
- Can be custom built to varying dimensions
- Less sensitive to misalignment
- Lower risk of catastrophic failure in normal operation

SERVICE LIFE

RFM has been shown in process tests to perform at up to 3.5 times the service life of lined steel. Based on experience with an operator in Canada, steel spouts need to be replaced twice a day, or 42 times per month for ceramic lined steel. On the other hand, RFM usage is typically only 10–12 spouts per month. Results may vary based on maintenance, handling, and casting practice.

Open top casting spout in copper wheel

RFM casting spout closely clears the continuous steel belt

Closed top casting spout in wheel

Closed top casting spout mounted to tundish

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