

3M™ Suspension Cast-M Release Agent and Protective Coating for the Aluminium Industry

3M™ Suspension Cast-M is a ceramic coating with unrivalled release and protection properties for use on metal substrates.

Properties

Molten aluminum is processed at temperatures between 680 °C and 850 °C. During transport, the molten aluminum is in contact with metal ladles, sprues and other parts. Gray cast iron and steel alloys are attacked by the melt and oxide skin that forms, and must therefore be protected against the molten metal. At the same time, iron must be prevented from dissolving and contaminating the melt. The best way to do this is by applying a protective coating to the metal. This protective coating must not be wetted by liquid aluminum and its oxide skin, so that there is no adhesion.

There are various ceramic compounds suitable for this purpose, though they do not adhere to metal substrates on their own. However, they can be made to bond by adding binder systems.

Therefore, unlike most available coatings, 3M™ Suspension Cast-M can achieve multiple castings with a single coating.

Specification

Typical material properties	3M™ Suspension Cast-M
Color	gray before first use, later white or yellowish
Solid content	35 – 40%
Solvent	water
pH	neutral
Binder	inorganic
Density	1.4 – 1.5 g/cm ³
Application temperature	1,400 °C vacuum, 1,400 °C air

Advantages

- Water-based coating
- Environmentally friendly
- No toxic fumes decomposition products when heated
- Dries easily thanks to the low water content
- The pasty consistency prevents separation and sedimentation of the solid particles during storage
- Free choice of application technology (e.g. brushing, spraying, dipping)
- No preheating of the casting ladle required
- Coating thicknesses up to 1.5 mm are possible
- Uneven coating thicknesses are not a problem
- No cracking of the coating due to frequent temperature cycles
- Good thermal insulation
- Binder permits long lifetime and increases productivity

Applications

The coating thickness directly influences the lifetime of 3M™ Suspension Cast-M. The coating thickness should therefore be up to 1.5 mm at the most heavily stressed areas. An even coating film thickness is not necessary for optimum protection.

The coating can generally be applied by spraying, brushing rolling or dipping. Ensure the surfaces to be coated are free of any residues, particularly rust. That can be done by sandblasting, or cleaning with a steel brush or chemical baths.

During application, the coating surface should be as even as possible so that casting skin cannot adhere to rough patches. 3M™ Suspension Cast-M must be dried before first use, otherwise it will ignite when used. This does not affect the properties of 3M™ Suspension Cast-M but can reduce its lifetime.

Note

If 3M™ Suspension Cast-M is not dried before use, the water remaining in suspension may shock evaporate when it meets molten aluminum and splash molten metal. That applies particularly to casting ladles and molds.

Storage

Keep the containers tightly closed and protect against freezing.

Application examples:

- Casting ladles
- Casting molds
- Scrapers
- Samplers
- Launderers
- Thermocouples

Product is manufactured and sold by 3M Technical Ceramics, Zweigniederlassung der 3M Deutschland GmbH.

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