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.

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.

Specification

<table>
<thead>
<tr>
<th>Typical material properties</th>
<th>3M™ Suspension Cast-M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>gray before first use, later white or yellowish</td>
</tr>
<tr>
<td>Solid content</td>
<td>35 – 40 %</td>
</tr>
<tr>
<td>Solvent</td>
<td>water</td>
</tr>
<tr>
<td>pH</td>
<td>neutral</td>
</tr>
<tr>
<td>Binder</td>
<td>inorganic</td>
</tr>
<tr>
<td>Density</td>
<td>1.4 – 1.5 g/cm³</td>
</tr>
<tr>
<td>Application temperature</td>
<td>1,400 °C vacuum, 1,400 °C air</td>
</tr>
</tbody>
</table>
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.

Application examples:

- Casting ladles
- Casting molds
- Scrapers
- Samplers
- Launder
- Thermocouples

Storage

Keep the containers tightly closed and protect against freezing.

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

Warranty and Limitation of Liability: Many factors beyond our control and uniquely within user’s knowledge and control can affect the use and performance of the product in a particular application. User is solely responsible for evaluating the product and determining whether it is fit for a particular purpose and suitable for user’s method of application. User is solely responsible for evaluating third party intellectual property rights and for ensuring that user’s use of the product does not violate any third party intellectual property rights. Unless a different warranty is specifically stated in the applicable product literature or packaging insert, we warrant that each product meets the applicable product specification at the time we ship the product.

WE MAKE NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OF NON-INFRINGEMENT OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE.

The quality of our products is warranted under our General Terms and Conditions of Sale as now are or hereafter may be in force.

Limitation of Liability: Except where prohibited by law, we will not be liable for any loss or damages arising from the product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability. We accept liability for intent and gross negligence. We are also liable for any culpable breach of major contractual obligations; however, if a breach of major contractual obligations is due to negligence, our liability is limited to the foreseeable damage associated with this type of contract. This does not affect our liability for culpable fatal or bodily injury or damage to health; this also applies to liability under the Product Liability Act (Produkthaftungsgesetz). Other claims for compensation are excluded.

Technical Information: Technical information, recommendations, and other statements contained in this document or provided by us are based on tests or experience that we believe are reliable, but the accuracy or completeness of such information is not guaranteed. Such information is intended for persons with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any of our or third party intellectual property rights is granted or implied with this information.