

## PRODUCT DATA SHEET

# POLYETHYLENE

## Borcoat™ HE3450

### HIGH DENSITY POLYETHYLENE FOR STEEL PIPE COATING

#### DESCRIPTION

**Borcoat™ HE3450** is a bimodal, high density polyethylene compound produced using the advanced Borstar® Technology, providing the material with excellent melt strength, extrudability, thermal stability, mechanical properties and very good ESCR. The product contains finely dispersed carbon black particles that ensures excellent weathering properties.

**Borcoat™ HE3450** fulfils the requirements of ISO 21809-1, NF A 49710, DIN 30670 and CAN/CSA-Z245.21 when used in combination with the grafted adhesives ME0410, ME0420 or ME0433 and a compatible powder epoxy that is applied under sound processing conditions.

#### APPLICATIONS

**Borcoat™ HE3450** is recommended for top-coat in 3 layer PE coating of steel pipes and is suitable for severe laying conditions even at elevated ambient temperatures. With this material, high running speeds and relatively thin layers are obtained without problems. **Borcoat™ HE3450** can be used from -40 to +80°C design temperature of the pipeline when combined with the grafted adhesives ME0410, ME0420 or ME0433.

#### PHYSICAL PROPERTIES

Property	Typical Value*	Test Method
Density	952kg/m <sup>3</sup>	ISO 1183-1 / ASTM D792
Melt Flow Rate (190°C/2.16kg)	0.5g/10min	ISO 1133
Tensile Stress at Yield (50mm/min)	>20MPa	ISO 527-2 / ASTM D638
Tensile Stress at Break (50mm/min)	>26MPa	ISO 527-2 / ASTM D638
Tensile Strain at Break (50mm/min)	>600%	ISO 527-2 / ASTM D638
Carbon Black Content	≥2%	ISO 6964 / ASTM D1603
Carbon Black Dispersion	≤3	ISO 18553
Water Content	<300ppm	ISO 15512
Oxidation Induction Time (210°C Al pan)	≥30mins	ISO 11357-6
Melting Temperature (DSC)	128°C	ISO 11357-3
Hardness, Shore D (1s)	60	ISO 868 / ASTM D2240
Vicat Softening Temperature	115°C	ISO 306
ESCR (Igepal 10%, F20)	>5000hrs	ASTM D1693-A
Brittleness Temperature	<-80°C	ASTM D746
DC Volume Resistivity	>10 <sup>16</sup> Ω.cm	ASTM D257
Coating Resistivity at 23±2°C	>10 <sup>9</sup> Ω.m <sup>2</sup>	DIN 30670
Dielectric Strength	>30 kV/mm	ASTM D149 / IEC 243
Heat and Light Ageing	<35%ΔMFR	ISO 21809-1 / DIN 30670

\* Data should not be used for specification work

## PROCESSING GUIDELINES

### Pre-drying

Due to the hygroscopic nature of carbon black, this compound is sensitive to moisture. Storage for a long time or under unfavorable conditions can increase the moisture content. For normal conditions and applications we suggest preheating and drying in a dehumidifying drier for a minimum of 90 minutes with a preheat temperature of 90°C. More specific recommendations can be made when the application and type of equipment are known.

### Extrusion

**Borcoat™ HE3450** can be applied using a flat die or a crosshead technique and provides good surface finish over a broad range of conditions. The actual extrusion conditions will depend on the type of equipment used and the size of the pipe. The following conditions may be used as a guideline when starting up the extruder:

Cylinder	190 – 230°C
Head	210 – 230°C
Die	210 – 230°C
Melt temperature	220 – 240°C
Max recommended melt temperature	<250°C

Specific recommendations for processing conditions can be made when the application and type of equipment are known. Please contact your local Borouge representative for such particulars.

## STORAGE AND HANDLING

**Borcoat™ HE3450** should be stored in dry conditions at temperatures below 50°C and protected from UV-light. Improper storage can initiate degradation, which results in odor generation and color changes and can have negative effects on the physical properties of the product.

Shelf life at proper storage conditions is at least 2 years from production date, but in case of a long storage time potential moisture pick-up needs to be eliminated by drying before extrusion.

## SAFETY

**Borcoat™ HE3450** is not classified as dangerous preparation.

Dust and fines from the product carry a risk of dust explosion. All equipment should be properly earthed. Inhalation of dust should be avoided as it may cause irritation of the respiratory system. Small amounts of fumes are generated during processing of the product. Proper ventilation is therefore required.

## RECYCLING

The product is suitable for recycling using modern methods of shredding and cleaning. In-house production waste should be kept clean to facilitate direct recycling.

A Safety Information Sheet is available on request. Please contact your Borouge representative for more details on various aspects of safety, recovery and disposal of the product.

## RELATED DOCUMENTS

The following related documents are available on request, and represent various aspects on the usability, safety, recovery and disposal of the product:

- Recovery and disposal of Polyolefins
- Information on Emissions from Processing and Fires
- Safety Information Sheet, SIS

## STANDARDS

Borouge is certified to various ISO standards, please refer to Borouge.com for more information.

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**DISCLAIMER**

**The product(s) mentioned herein are not intended to be used for medical, pharmaceutical or healthcare applications and we do not support their use for such applications.**

To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication, however we do not assume any liability whatsoever for the accuracy and completeness of such information.

**Borouge makes no warranties which extend beyond the description contained herein. Nothing herein shall constitute any warranty of merchantability or fitness for a particular purpose.**

**It is the customer's responsibility to inspect and test our products in order to satisfy itself as to the suitability of the products for the customer's particular purpose.**

**The customer is responsible for the appropriate, safe and legal use, processing and handling of our products.**

No liability can be accepted in respect of the use of Borouge products in conjunction with other materials. The information contained herein relates exclusively to our products when not used in conjunction with any third party materials.

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