PRODUCT DATA SHEET

04.06.2024 Ed.2

Polyethylene

Borcoat™ HE3450

Polyethylene Compound for Steel Pipe Coating

Description

Borcoat HE3450 is a bimodal, high density polyethylene (PE) compound. The product is black coloured and available in pellet form for processing via extrusion.
Borcoat HE3450 contains stabilizers and finely dispersed carbon black to ensure long-term stability against thermal and UV ageing.

Applications

Steel pipe coating

Borcoat HE3450 is intended to be used as top-coat material in three-layer-PE based anti-corrosion coatings for steel pipes covering a design temperature range from -40°C to +80°C.
Borcoat HE3450 is intended to fulfill below mentioned national and international standards and specifications, when appropriate industrial manufacturing standard procedures are applied, a continuous quality system is implemented and when used in combination with a compatible Fusion Bonded Epoxy （FBE） and adhesive materials such as Borcoat ME0420 or Borcoat ME0433.

Specifications

Borcoat™ HE3450 and/or articles produced from it, are expected to meet the applicable requirements included in the below mentioned standards provided it is processed using sound material handling and processing practices as well as appropriate testing procedures.

CAN/CSA-Z245.21
DIN 30670
DNVGL-RP-F106
EN ISO 21809-1
NF A49-710

Physical properties

Property	Typical value *	Unit	Test method
Density	958	kg/m³	ISO 1183-1/Method A
Melt flow rate （190 °C/2.16 kg)	0.5	g/10min	ISO 1133-1
Melt flow rate （190 °C/5 kg)	2.0	g/10min	ISO 1133-1
Base resin density	947	kg/m3	ISO 1183-1
Moisture content [1]	≤ 500	ppm	ISO 15512
Carbon black content	2.2	%	ISO 6964
Carbon black dispersion	≤ 3	-	ISO 18553
Melting temperature [2]	129	°C	ISO 11357-3
Oxidation induction time （210 °C)	≥ 30	min	ISO 11357-6
Tensile stress at yield （50 mm/min) （23°C)	≥ 20	MPa	ISO 527-2
Tensile strain at break （50mm/min) （23°C)	≥ 600	%	ISO 527-2
Hardness, Shore D [3]	≥ 60	-	ISO 868
Vicat softening temperature A50 （10 N)	≥ 120	°C	ISO 306
Brittleness temperature	≤ -80	°C	ASTM D746
Environmental stress crack resistance （50°C, Igepal 10%, F0)	≥ 1000	h	ASTM D1693

* Data should not be used for specification work

[1] *Karl Fischer-titration*
[2] *DSC*
[3] *Measured at 1 s*

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Other properties

Property	Typical value *	Unit	Test method
UV and thermal ageing (ΔMFR) [4]	≤ 35	%	ISO 21809-1
Coating resistivity	≥ 1x10¹⁰	Ωm²	DIN 30670 / NFA 49-710

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[4] *Annex G*

Processing techniques

Due to hygroscopic behaviour of carbon black, compound containing carbon black will be sensitive to moisture absorption. Even a moisture content as low as 0.04% can give the coating a poor surface. Despite the fact that the type of the carbon black used in Borcoat HE3450 is of less sensitive type, storage for a long time or under unfavourable conditions can increase the moisture content. We therefore recommend drying before extrusion. Borcoat HE3450 can be applied by flat die or crosshead extrusion. The actual extrusion conditions will depend on the type of equipment used. The following conditions may be used as a guide when starting up the extruder.

Processing setting	Typical value/range
Cylinder temperature	190 - 210 °C
Head temperature	190 - 210 °C
Die temperature	190 - 210 °C
Melt temperature	220 - 240 °C
Maximum melt temperature	< 260 °C

The actual conditions will depend on the type of equipment used. Specific recommendations for processing conditions can be determined only when the application and type of equipment are known. Please contact your local Borealis representative for such particulars.

Packaging and storage

Borcoat HE3450 is supplied in 25 kg bags on 1375 kg pallets or in bulk.

Borcoat HE3450 shall be stored indoors below 50°C in unopened original packaging in clean and dry environment. It is recommended to ensure proper stock rotation by using first in – first out principle. Following afore-mentioned conditions the material can be stored for a period of up to 24 months after production. However, caution shall be taken regarding the moisture level. It is recommended to measure the moisture after longer storage periods prior to processing.
The shelf-life of the product can be extended after Borealis has re-tested selected material properties and verified that the test results are still within the product specification.

Product compliance documents

Latest versions of product safety information sheets (PSIS), product safety data sheets (SDS) and other product liability documents are available on our website www.borealisgroup.com.

Sustainability aspects

Borealis is ever mindful of the impact of our products on the planet. We promote Design for Circularity (DfC) and Design for Recycling (DfR) to conserve natural resources and to reduce the environmental impact of products over their entire lifetime (including production, use phase and after phase). DfR helps ensure that material can be effectively recycled while maximizing the material performance efficiency.

Further information on sustainability and Design for Recycling (DfR) can be found from our websites www.borealisgroup.com and www.borealiseverminds.com.

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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.
Borealis 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 any Borealis product in conjunction with any other products and/or materials. The information contained herein relates exclusively to our products when not used in conjunction with any other material unless as specifically provided for in the test methods stated above.

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