

## Polyethylene

**Borstar® HE6069****Laser Printable Black High Density Polyethylene Compound for Cable Jacketing****Description**

Borstar HE6069 is a black laser-printable, low-shrinkage, UV-stabilized bimodal high density (HD) jacketing compound, which is produced with the Borealis proprietary Borstar bimodal process technology.

Borstar technology allows the manufacturing of polymers outside the traditional MFR and density range making it possible to optimize processability, reduce shrinkage and yet provide excellent physical toughness and environmental stress crack resistance (ESCR).

Borstar HE6069 contains a well dispersed UV-stabilizer in sufficient amount providing a measure of weathering resistance.

**Typical characteristics**

Borstar HE6069 can be described with following typical characteristics:

Superior processability	Very good UV resistance
Excellent abrasion & scratch resistance	Very low shrinkage
Low water permeability	Excellent surface hardness
Good petroleum-jelly resistance	

**Applications**

Borstar® HE6069 is intended for following applications:

Fiber Optical Cables that need to be printed with laser printing technique.

Borstar® HE6069 offers substantially reduced shrinkage which helps to maintain low signal attenuation for fiber optic communication cables and low jacket retraction for energy cables in combination with excellent mechanical and barrier properties. Borstar® HE6069 offers a balance of properties giving advantages in manufacturing, installation and lifetime performance of communication and energy cables.

**Specifications**

Borstar® HE6069 is 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.

ASTM D1248 Type III, Class A, Category 3, Grade E8, E9, J4	HD 620 S2 Part 1, table 4B, DMP 5, 13, 16, 18
DIN VDE 0818	IEC 60502 Part 2, Type ST7
EN 50290-2-24	IEC 60840 Type ST7
HD 603 S1 DMP 6	IEC 60794-1-22

**Physical properties**

Property	Typical value *	Unit	Test method
Density	944	kg/m <sup>3</sup>	ISO 1183-1
Melt flow rate ( 190 °C/2.16 kg)	1.7	g/10min	ISO 1133-1
Flexural modulus	850	MPa	ISO 178
Low temperature brittleness <sup>1</sup>	0	pieces	ASTM D746
Environmental stress crack resistance ( 50°C, Igepal 10%, F0)	> 5000	h	IEC 60811-406
Shore-D 1s	61	-	ISO 868
Pressure test at high temperature ( 115 °C, 6h)	< 10	%	IEC 60811-508

<sup>1</sup> F0 at -76°C

\* Data should not be used for specification work

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### Electrical properties

Property	Typical value *	Unit	Test method
DC volume resistivity	> 10	PΩcm	IEC 62631-3
Dielectrical strength	> 20	kV/mm	IEC 60243

\* Data should not be used for specification work

### Processing techniques

Borstar HE6069 provides excellent surface finish and allows a broad processing window. For extrusion standard PE-screws are recommended, but also screws designed for PVC can be used with good result.

To minimize shrink back gradient cooling with hot water, typically 50 °C in the first part of the cooling trough may be found beneficial.

#### Tooling

Tube-on tooling is normally used. Typically a draw down ratio of 3-4 has been found satisfactory.

Processing setting	Typical value/range
Barrel	140 - 180 °C
Die head temperature	180 °C
Melt temperature	180 - 200 °C

Please contact your local Borealis representative for specific assistance.

### Packaging and storage

Package: Bulk, Octabins, Bags

Borstar HE6069 has a shelf life of 24 months from production date if stored in unopened original packages, under dry and clean conditions at temperatures between 10 - 30 °C (50 - 85 °F). Material shelf life is affected by the storage conditions and extreme conditions influence the general material quality and performance. It is also recommended to ensure proper stock rotation by First In – First Out principle.

### Product compliance documents

Latest versions of product safety information sheets (PSIS), product safety data sheets (SDS) and other product liability documents are available in our website [www.borealisgroup.com](http://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](http://www.borealisgroup.com) and [www.borealiseverminds.com](http://www.borealiseverminds.com).

### 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.