

Product Data Sheet

Polyethylene Borstar® FB1350

ENHANCED POLYETHYLENE FOR HIGH PERFORMANCE FLEXIBLE PACKAGING

DESCRIPTION

Borstar®FB1350 is produced using the proprietary **Borstar®** bimodal technology resulting in easy extrusion with superior mechanical properties. Film made from the product exhibits high dart impact strength combined with excellent yield, tensile strength, stiffness and bubble stability resulting in improved output on blown extrusion machines. Toughness is retained at low temperature. The film has high seal strength and superior ESCR properties.

Borstar®FB1350 contains antioxidant.

APPLICATIONS

| | |
|-------------------------------------|---------------------------------|
| Mono layer & co-extrusion films | Shrink Film |
| Lamination (incl. Stand up Pouches) | FFS packaging film |
| Heavy duty shipping sacks | Exclusive Carrier/Boutique bags |
| Industrial Film | Frozen Food |

SPECIAL FEATURES

| | |
|---|------------------------------|
| Easy process ability | Excellent draw down |
| Excellent impact strength – stiffness balance | Toughness at low temperature |
| Good seal properties | Superior ESCR |
| Bubble stability | Excellent printability |

PHYSICAL PROPERTIES

| Property | Typical Value | Unit | Test Method |
|--|---------------|-------------------|--------------|
| Density | 935 | Kg/m ³ | ASTM D792 |
| Melt Flow Rate MFR (190 °C/2.16 kg) | 0.15 | g/10min | ASTM D1238 |
| Melt Flow Rate MFR (190 °C/5.0 kg) | 0.60 | g/10min | ASTM D1238 |
| Melt Flow Rate MFR (190 °C/21 kg) | 15 | g/10min | ASTM D1238 |
| Melting Temperature | 128 | °C | ISO 11357/03 |
| Vicat Softening Temperature A50 (10 N) | 110 | °C | ISO 306 |
| ESCR – 10% Igepal / F50 | >5000 | Hours | ASTM D 1693 |

*Data should not be used for specification work

FILM PROPERTIES

| Property | | Typical Value | Unit | Test Method |
|-----------------------------|-------|---------------|------|---------------|
| Tensile Strength at Break | MD/TD | 65/50 | MPa | ISO 527-3 |
| Elongation at Break | MD/TD | 400/650 | % | ISO 527-3 |
| Tensile Strength at Yield | TD | 18 | MPa | ISO 527-3 |
| Tensile Modulus | MD/TD | 500/650 | MPa | ASTM D 882 |
| Coefficient of Friction | | 0.35 | - | ASTM D 1894 |
| Dart Drop | | 400 | g | ASTM D 1709/A |
| Tear resistance | MD/TD | 1/7 | N | ASTM D 1922 |
| Puncture Resistance, force | | 50 | N | ASTM D 5748 |
| Puncture Resistance, energy | | 2 | J | ASTM D 5748 |

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**The film properties are dependent on extrusion conditions.

Film properties: 40µm, BUR=3:1, FLH=4DD, Die gap 1.2mm

PROCESSING GUIDELINES

Borstar®FB1350 can be processed in most types of blown film equipment such as LDPE, LLDPE or HDPE extruders. The balance of draw down properties and bubble stability is superior to conventional LLDPE and LDPE. Thickness of 15µm to >2500µm can be processed with good bubble stability. The product is well suited for co-extrusion.

Recommended extrusion temperature is 190 - 210°C. A die gap of 1.0 - 1.8 mm will give the best balance between extruder pressure and physical properties in the film. Wider die gap gives higher machine direction orientation.

Borstar®FB1350 provides excellent mechanical properties balance by optimizing film processing parameters like Blow up ratio (BUR) and Frost Line Height (FLH). Higher impact strength can be achieved by raising the FLH. High BUR (>2) also results in improved mechanical properties.

Recommended processing conditions:

| | |
|------------------|--------------|
| Melt temperature | 190 –210°C |
| Die gap | 1.0 – 1.8 mm |
| FLH: | 2 - 4 DD |
| BUR: | >2:1 |

FOOD CONTACT REGULATIONS

Borstar®FB1350 fulfils the food contact regulations in most countries. If required, contact your Borouge representative for a certificate.

STORAGE

The product should be stored in dry conditions at temperatures below 50°C and protected from UV-light. Improper storage can initiate degradation, which results in odour generation and colour changes and can have negative effects on the physical properties of this product.

More information on storage can be found in Safety Information Sheet for this product.

SAFETY

The product is not classified as a hazardous mixture.

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.

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.

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.

RELATED DOCUMENTS

Most datasheets and statements are available on Borouge website www.borouge.com. If more information is required, please contact a Borouge representative for information.

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.

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