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
- Lamination (Inc. stand up Pouches)
- Industrial Film
- Heavy duty shipping sacks
- Exclusive Carrier/ Boutique bags
- Shrink Film
- Frozen Food
- FFS packaging Film

KEY FEATURES

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

PHYSICAL PROPERTIES

Property	Typical Value*	Test Method
Density	935 kg/m3	ASTM D 792
Melt Flow Rate (190°C/2.16kg)	0.15 g/10min	ASTM D1238
Melt Flow Rate (190°C/5.0kg)	0.60 g/10min	ASTM D1238
Melt Flow Rate (190°C/21.6kg)	15 g/10min	ASTM D1238
Melting Temperature	128 °C	ISO 11357/03
Vicat Softening Point A50 (10 N)	110 °C	ISO 306
ESCR – 10% Igepal – F 50%	>5000 Hours	ASTM D1693

* Typical properties and data should not be used for specification work

FILM PROPERTIES[1]

Property**	Typical Value*	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 (1 % Secant) (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 Strength (MD/TD)	1/7 N	ASTM D 1922
Puncture Resistance, force	50 N	ASTM D 5748
Puncture Resistance, energy	2 J	ASTM D 5748

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

* Typical properties and data should not be used for specification work

** The film properties are dependent on extrusion conditions.

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PROCESSING CONDITIONS

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

This product should be stored in dry conditions at temperature bellow 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 physical properties of this product.
More information on storage can be found in Safety Information Sheet (SIS) 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.

Please see our Safety Information Sheet (SIS) for details on various aspects of safety, recovery and disposal of the product, for more information contact your Borouge representative.

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

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

Safety Information Sheet
Statement on chemicals, regulations and standards
Statement on compliance to regulations for drinking water pipes

DISCLAIMER

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's 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.

Borstar® is a trademark of the Borealis group.

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