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## 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.

CAS-No. 25087-34-7

#### 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/m <sup>3</sup> | 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-B |

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

#### FILM PROPERTIES<sup>1</sup>

| 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   |



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|                                      |             |               |
|--------------------------------------|-------------|---------------|
| 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          | 2J          | ASTM D 5748   |

<sup>1</sup> 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.

### 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 Chemicals Plus 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.



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#### **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

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#### **DISCLAIMER**

To the best of our knowledge, the information contained in this document is accurate and reliable as of the date of publication; However, we assume no responsibility for the accuracy and completeness of such information.

Chemicals Plus makes no warranties that extend beyond the description contained herein. Nothing contained herein shall constitute a warranty of merchantability or fitness for a particular purpose.

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