

# PRODUCT DATA SHEET

# POLYETHYLENE Borstar® FB2230

#### ENHANCED POLYETHYLENE FOR HIGH PERFORMANCE FLEXIBLE PACKAGING

# **DESCRIPTION**

**Borstar**<sup>®</sup>**FB2230** is produced using the proprietary **Borstar**<sup>®</sup> bimodal technology resulting in easy extrusion with superior mechanical properties. Film made from the product exhibits excellent mechanical strength at normal as well as low temperature, good sealing properties and superior ESCR.

Borstar®FB2230 contains antioxidant.

CAS-No. 25087-34-7

#### **APPLICATIONS**

Mono layer & co-extrusion films

Lamination (incl. Stand up Pouches)

Compression Packaging

Heavy duty shipping sacks

Industrial Film

Frozen Food

Form Fill Seal (FFS) Packaging

Agriculture Film (incl. Greenhouse Film)

Shrink film

Geomembrane

Exclusive Carrier/Boutique bags

Frozen Food

Impact modifier

## **KEY FEATURES**

Easy process ability

Excellent draw down

Excellent impact strength – stiffness balance

Good seal properties

Bubble stability

Excellent draw down

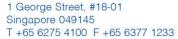
Toughness at low temperature

Superior ESCR

Excellent printability

# **PHYSICAL PROPERTIES**

Typical Value\* **Property Test Method** Density 923 kg/m3 **ASTM D 792 ASTM D1238** Melt Flow Rate (190°C/2.16kg) 0.25 g/10min 1.0 g/10min Melt Flow Rate (190°C/5.0kg) **ASTM D1238** Melt Flow Rate (190°C/21.6kg) 22 g/10min **ASTM D1238** 124°C Melting Temperature ISO 11357/03 101 °C Vicat Softening Point A50 (10 N) **ISO 306** ESCR - 10% Igepal - F 50% >5000 Hours **ASTM D1693-B** 



Borouge Pte Ltd

<sup>\*</sup> Typical properties and data should not be used for specification work



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

Typical Value*	Test Method
50/40 MPa	ISO 527-3
550/750 %	ISO 527-3
12 MPa	ISO 527-3
250/300 MPa	ASTM D 882
0.4	ASTM D 1894
10	ASTM D 2457
600 g	ASTM D 1709/A
4/8 N	ASTM D 1922
50 N	ASTM D 5748
3 J	ASTM D 5748
	50/40 MPa 550/750 % 12 MPa 250/300 MPa 0.4 10 600 g 4/8 N 50 N

<sup>&</sup>lt;sup>1</sup> Film properties: 40µm, BUR=3:1, FLH=4DD, Die gap 1.2mm

#### **PROCESSING CONDITIONS**

**Borstar®FB2230** 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 10 to  $>2000\mu m$  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**<sup>®</sup>**FB2230** 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:

 $\begin{array}{lll} \mbox{Melt temperature} & 190 - \! 210 \mbox{°C} \\ \mbox{Die gap} & 1.0 - 1.8 \mbox{ mm} \\ \mbox{FLH} & 2 - 4 \mbox{ DD} \\ \mbox{BUR} & >2:1 \end{array}$ 

#### **FOOD CONTACT REGULATIONS**

Borstar®FB2230 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.



<sup>\*</sup> Typical properties and data should not be used for specification work

<sup>\*\*</sup> The film properties are dependent on extrusion conditions.



#### **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

#### **STANDARDS**

Borouge is certified to various ISO standards, please refer to Borouge.com for more information.

## **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.

Jan 2018

