PRODUCT DATA SHEET

Polyethylene

Borstar® FB2230

Linear Low Density Polyethylene for Film Extrusion

Description

Borstar® FB2230 is a high molecular weight linear low density polyethylene film grade combining excellent extrusion behavior, excellent draw down and superior mechanical properties

For films made of Borstar® FB2230, the high toughness remains in cold conditions.

Cas No. 25087-34-7

Borstar® FB2230 contains:

Antioxidant

Typical characteristics

Borstar® FB2230 can be described with following typical characteristics:

Bubble stability

Good stiffness/toughness balance

Excellent ESCR and flex crack resistance

High recyclate incorporation enabler

Applications

Borstar® FB2230 is intended for following applications:

Agricultural film

Food packaging

Frozen food packaging

Heavy-duty sacks

Lamination film

General packaging film

Physical properties

Property	Typical value *	Unit	Test method
Density	923	kg/m³	ISO 1183-1
Melt flow rate (190 °C/5 kg)	0.95	g/10min	ISO 1133-1
Melt flow rate (190 °C/21.6 kg)	22	g/10min	ISO 1133-1
Melting temperature	124	°C	ISO 11357-3

* Data should not be used for specification work

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Film properties

Property	Typical value *	Unit	Test method
Tensile Modulus MD[1]	280	MPa	ISO 527-3
Tensile Modulus TD[1]	370	MPa	ISO 527-3
Tensile strength MD[1]	55	MPa	ISO 527-3
Tensile strength TD[1]	45	MPa	ISO 527-3
Tensile strain at break MD[1]	510	%	ISO 527-3
Tensile strain at break TD[1]	750	%	ISO 527-3
Dart drop [1]	250	g	ISO 7765-1
Instrumented puncture test, Total penetration energy[1]	20	J	ISO 7765-2
Tear resistance (Elmendorf) MD[1]	46	N/mm	ISO 6383/2
Tear resistance (Elmendorf) TD[1]	220	N/mm	ISO 6383/2
Haze [1]	80	%	ASTM D1003
Gloss 45° [1]	5	GU	ASTM D2457
Coefficient of friction (Dynamic)[1]	0.40	-	ISO 8295

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[1] *Film properties measured on 40 µm blown film on 60 mm Windmöller & Hölscher extruder L/D = 30, die diameter 200 mm, die gap 1.4 mm, BUR =3:1, FLH = 3,5DD*

Processing techniques

Borstar® FB2230 is easily processed on conventional extruders.
Borstar® FB2230 can be processed in most types of blown film equipment, incl. LDPE, LLDPE or even HDPE extruders.
The balance of draw down properties and bubble stability is superior to conventional LLDPE and LDPE.
Thicknesses of 10 to >200µm can be processed with good bubble stability. Borstar FB2230 is well suited for co-extrusion.
Recommended extrusion temperature is 190-210ºC. Conventional die gaps can be used without shark skin or draw down problems. A gap of 1.0 - 1.5 mm will give the best balance between extruder pressure and physical properties in the film. Wider die gap gives higher machine direction orientation and narrow die gap may give too high extruder pressure.
Borstar® FB2230 is sensitive to the orientation obtained by the film blowing conditions like Blow Up Ratio (BUR) and Frost Line Height (FLH). Higher impact can be achieved by rising the FLH to 4DD. High BUR (>2) also results in better mechanical properties and better balance in MD/TD.
As a guideline the following conditions should be used.
FLH: 2 - 4 DD
BUR: 3:1

Packaging and storage

Borstar® FB2230 should be stored in dry conditions at temperatures below 50°C and protected from UV-light. Improper storage can initiate degradation, which can result in odour generation and colour changes and can have negative effects on the physical properties of this product.

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.

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 and www.borealiseverminds.com.

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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.
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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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