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Polyethylene

BorLite™ OPE795

Linear Low Density Polyethylene for Mono-directional Orientation (MDO)

Description

BorLite OPE795 is a high molecular weight linear low density polyethylene film grade providing high melt strength for good processing behaviour of primary films on blown film technology as well as excellent draw down on mono directional orientation (MDO) lines. MDO-films made of this product are characterised by very the high toughness and balanced MD/TD tear resistance.

BorLite OPE795 has been developed especially for property-enhancement of blown films through mono-directional orientation (MDO technology).

Applications

BorLite OPE795 is recommended for

Heavy-duty bags
Industrial films
Consumer packaging
Compression packaging
Twist wrap
Label film

Additives

BorLite OPE795 contains antioxidant.

Physical Properties

Property	Typical Value Data should not be used for specification work	Test Method
Density	931 kg/m3	ISO 1183
Melt Flow Rate (190 °C/5 kg)	0,85 g/10min	ISO 1133
Melt Flow Rate (190 °C/2,16 kg)	0,2 g/10min	ISO 1133
Melt Flow Rate (190 °C/21,6 kg)	20 g/10min	ISO 1133
Melting temperature (DSC)	127 °C	ISO 11357-3
Vicat softening temperature (10 N)	108 °C	ISO 306

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MDO-Film properties

Film properties are measured on a 25 µm MD-oriented film sample, DDR 1:6. Primary film produced on a 70mm extruder, BUR=1:2.7, Die gap: 1.2 mm, FLH 2 - 4 DD, thickness 150µm
MD = machine direction, TD = transverse direction.

Property			Typical Value Data should not be used for specification work	Test Method
Dart Drop			820 g	ISO 7765-1
Instrumented puncture test	Total Penetration Energy		31 J/mm	ISO 7765-2
Haze			14 %	ASTM D 1003
Tensile Stress at Yield		MD	180 MPa	ISO 527-3
Tensile Stress at Yield		TD	20 MPa	ISO 527-3
Tensile Strain at Break		MD	25 %	ISO 527-3
Tensile Strain at Break		TD	750 %	ISO 527-3
Tensile Strength		MD	190 MPa	ISO 527-3
Tensile Strength		TD	21 MPa	ISO 527-3
Tensile Modulus		MD	950 MPa	ISO 527-3
Tensile Modulus		TD	950 MPa	ISO 527-3
Tear resistance (Elmendorf)		MD	160 N/mm	ISO 6383/2
		TD	300 N/mm	

Processing Techniques

The actual conditions will depend on the type of equipment used.

Primary film production:
BorLite OPE795 is easily processed on conventional blown film extruders. The maximum achievable film thickness strongly depends on the line setup but is above 250µm.
Recommended extrusion temperature is 190-210ºC. Conventional die gaps can be used without shark skin or draw down problems. A gap of ~ 1.5 mm will give the best balance between extruder pressure and physical properties in the film.
Recommended temperature setting is 190°C - from cylinder to die. The minimum melt temperature should be 200°C

BorLite OPE795 MDO film properties are dependent on choosing the optimal 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: 2,5 - 3

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Mono-axial stretching:
BorLite OPE795 is preferably stretched on MDO-lines with a draw down ratio (DDR) of 1:5,5 - 6,5. Further the parameters for stretching are preferably (150µm primary film):

Heating:	~ 110°C - 115°C
Stretching:	~ 1:6
Annealing:	~ 90°C / 110°C
Cooling:	~ 20°C / 40°C
Stretching speed:	~150 - 200m/min

Please note that the temperature of the heating rolls needs to be adjusted depending on the thickness of the primary film. The higher the thickness the higher temperature needs to be set in order to avoid film rupture.

Storage
BorLite OPE795 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 is found in our "Safety data sheet" / "Product safety information sheet".

Safety
The product is not classified as dangerous.

Please see our "Safety data sheet" / "Product safety information sheet" for details on various aspects of safety, recovery and disposal of the product. For more information, contact your Borealis 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 data sheet" / "Product safety information sheet"
Statement on chemicals, regulations and standards
Statement on compliance to food contact regulations
Statement on polymer additives and BSE

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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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