

# POLYETHYLENE

## Borstar<sup>®</sup> LE3405

### Black LLDPE for Irrigation Pipe

#### DESCRIPTION

**LE3405** is a black, bimodal linear low density polyethylene, with an optimum balance between flexibility and strength, produced with the advanced Borstar technology. It has pressure resistance equivalent to MRS 4.0 material (PE40).

**LE3405** contains well dispersed, fine particle size Carbon Black and stabiliser to ensure excellent weathering resistance.

**LE3405** has high average molecular weight giving good toughness and impact resistance even at low temperatures.

#### APPLICATIONS

**LE3405** is recommended for pressure pipe systems in the application field of irrigation where flexibility and coilability is of importance. The material has good weldability properties and outstanding extrudability.

#### PHYSICAL PROPERTIES

		Typical Value*	Unit	Test Method
Density	(Base)	923	Kg/m <sup>3</sup>	ISO 1183/ISO 1872-2B
Density	(Compound)	933	kg/m <sup>3</sup>	ISO 1183/ISO 1872-2B
Melt Flow Rate	(190°C/2.16 kg)	0.25	g/10 min	ISO 1133
Melt Flow Rate	(190°C/5.0 kg)	1.0	g/10 min	ISO 1133
Melt Flow Rate MFR	(190°C/21.6 kg)	22	g/10min	ISO 1133
Carbon black content		≥2	%	ASTM D 1603
Melting temperature		124	°C	ISO 311357/03
Brittleness Temperature		<-70	°C	ASTM D 746
ESCR	(10% Igepal), F50	>5000	Hours	ASTM 1693-A
Thermal Stability	(210°C)	>15	min	EN 728

\* Data should not be used for specification work.

#### PROCESSING GUIDELINES

The actual extrusion conditions will depend on the type of equipment used and the size and wall thickness of the pipe required. The following conditions should be used as a guide when starting up the extruder.

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Cylinder	180 – 200°C
Head	180 – 200°C
Die	180 – 200°C
Melt temperature	180 – 200°C

For normal extrusion conditions and applications we suggest preheating and drying with a maximum preheating temperature of 90°C.

Specific recommendations for processing conditions can be determined only when the application and type of equipment are known. Please contact your local Borouge representative for such particulars.

### STORAGE AND HANDLING

**Borstar LE3405** 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 can have negative effects on the physical properties of the product.

### SAFETY

**Borstar LE3405** is not classified as a dangerous preparation.

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.

A Safety Datasheet is available on request. Please contact your Borouge representative for more details on various aspects of safety, recovery and disposal of the product.

### 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 represents various aspects on the usability, safety, recovery and disposal of the product:

Safety Data Sheet, SDS  
Environmental fact sheet  
Recovery and disposal of Polyolefins  
Information on Emissions from Processing and Fires

Liability statements on:  
- Heavy Metals