POLYETHYLENE
Borstar® HE3490-LS
Black High Density Polyethylene for Pressure Pipe

DESCRIPTION
Borstar HE3490-LS is a black, bimodal, high density polyethylene classified as a MRS 10.0 material (PE100) produced by the advanced Borstar technology. Well dispersed carbon black gives outstanding UV resistance. Long term stability is ensured by an optimised stabilisation system.

Borstar HE3490-LS is now registered with the international Traceability coding (Traccoding), under the code **R01**, in support of ISO12176-4 (2003).

APPLICATIONS
Borstar HE3490-LS is recommended for pressure pipe systems in the applications field of drinking water and natural gas, pressure sewerage, relining, sea outfall and industrial. It is especially designed for the production of larger diameter, thick wall pipe, but can be processed for the whole range of diameters. It also shows excellent resistance to rapid crack propagation and slow crack growth.

PHYSICAL PROPERTIES

		Typical Value*	Unit	Test Method
Density	(Base resin)	949	kg/m^3	ISO 1183/ISO 1872-2B
Density	(Compound)	959	kg/m^3	ISO 1183/ISO 1872-2B
Melt Flow Rate	(190°C/2.16 kg)	<0.1	g/10 min	ISO 1133
Melt Flow Rate	(190°C/5.0 kg)	0.25	g/10 min	ISO 1133
Tensile Stress at Yield	(50 mm/min)	25	Mpa	ISO 527-2
Elongation at Break		>600	%	ISO 527-2
Charpy Impact, notched	(0°C)	16	kJ/m^2	ISO 179/1eA
Hardness, Shore D		60	-	ISO 868
Carbon Black content		≥2	%	ASTM D 1603
Brittleness Temperature		<-70	°C	ASTM D 746
ESCR	(10% Igepal), F_{50}	>10000	h	ASTM D 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. They will also depend on size and wall thickness of the pipe produced. The following conditions may be used as a guideline when starting up the extruder:

Cylinder	190 – 210°C
Head	200 – 210°C
Die	200 – 210°C
Melt temperature	200 – 220°C

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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 HE3490-LS 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 HE3490-LS is not classified as 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.

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.

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

RELATED DOCUMENTS

The following related documents are available on request, and represent various aspects on the usability, safety, recovery and disposal of the product:

Recovery and disposal of Polyolefins
Information on Emissions from Processing and Fires
Safety Data Sheet, SDS
Environment Fact Sheet

Liability statements on:

- Compliance to Food Contact Regulations
- Compliance to Regulations for Drinking Water Pipes
- Heavy Metals