

## TECHNICAL DATA SHEET

(Rev. No. 04, Date: 02.01.2025)

### BLS XL 1110 / BLS XL 1102 SILANE CROSSLINKABLE PE COMPOUND

#### CROSSLINKABLE BY EXPOSURE TO MOISTURE FOR HIGH VOLTAGE POWER CABLE INSULATION

**BLS XL 1110** is a Polyethylene based silane pre-grafted base compound containing a permanent scorch retarder ensuring safe processing with the active natural curing crosslinking catalyst. **BLS XL 1110** is cross linkable by exposure to moisture when used with **BLS XL 1102**, which is Catalyst Masterbatch in LLDPE carrier containing **antioxidant**, in the ratio **BLS XL 1110** (95 part) and **BLS XL 1102** (5 part).

In order to prevent premature crosslinking, the pre-grafted compound and the catalyst masterbatch should be stored separately and mixed only when used, usually in the ratio of 95:5.

**BLS XL 1110 & BLS XL 1102** is designed for **High-Speed** High Voltage Power Cable application up to 11KV.

**SPECIFICATIONS COMPLYING** - IEC 60502-1, IS 7098 PART-2

#### TYPICAL PROPERTIES

##### BLS XL 1110

Properties	Unit	Test Method	Typical Value
<b>Physical Properties</b>			
Density	gm/cm <sup>3</sup>	ASTM D 792	0.923
Melt Flow Index (190°C, 2.16 kg Load)	gm/10min	ASTM D 1238	1.20±0.2
Hardness (1 S)	Sh-D	ASTM D 2240	53±1

##### BLS XL 1110/BLS XL 1102

Molding Procedure: After mixing in proportion of 95:5 and extruded into a tape/sheet of 1.2 mm thickness, the tape/sheet is immersed in water at 90±5°C for 2-3 hours. The testing is carried out after conditioning this tape for further 3 hrs at ambient conditions.

Properties	Unit	Test Method	Typical Value
<b>Physical Properties</b>			
Tensile Strength at Break	MPa	IS 10810 Part 7	18
Elongation at Break	%	IS 10810 Part 7	450
Hot Set, 15 min. at 200°C, 0.2N/mm <sup>2</sup>			
Elongation under load	%	IS 10810 Part 30	70
Permanent Set after 5 min cooling	%	IS 10810 Part 30	5
Oven ageing at 135°C, 168 hours			
Tensile Strength at Break	%	IS 10810 Part 11	+5
Elongation at Break	%	IS 10810 Part 11	-10
Shrinkage @ 130°C / 1 hours	%	IS 7098	<4
Water absorption @ 85±2°C / 14 days	mg/cm <sup>2</sup>	IEC 60811-1-3	0.3
Moisture content	ppm		80

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Properties	Unit	Test Method	Typical Value
<b>Electrical Properties</b>			
Volume Resistivity at 27°C	Ohm-cm	ASTM D 257	$1 \times 10^{16}$
Volume Resistivity at 90°C	Ohm-cm	IEC 60093	$1 \times 10^{14}$
Dissipation Factor @ 250 V/50 Hz, 25°C	-	ASTM D 150	0.0002
Dielectric Constant @ 250 V/50 Hz, 25°C	-	ASTM D 150	2.2
Dielectric withstand (1000 V/Sec. rise @+25 °C)	KV/mm	ASTM D 149	30

### PROCESSING METHOD

**BLS XL 1110** silane pre-grafted base compound must be added with **BLS XL 1102** Natural curing catalyst masterbatch 5% by weight depending on insulation thickness and blended just before use. For best results dosing the 2 components directly in the extruder hopper is suggested.

Both the silane pre-grafted base compound and the catalyst masterbatch is sensitive to moisture; open bags must be used immediately. It is recommended to pre-dry the catalyst masterbatch at  $75 \pm 5^\circ \text{C}$  in 5 cm layer for 3-5 hours before using it in production.

**BLS XL 1110** can be processed with standard PVC / PE extruders having a L/D ratio of 20:26 and an adequate barrel temperature control.

Preheating of conductor to  $110^\circ \text{C}$  is recommended.

The following temperature profile is suggested as a starting point:

Zone 1	140-160°C	Collar	170-190°C
Zone 2	150-170°C	Head	170-190°C
Zone 3	160-180°C	Die	180-210°C
Zone 4	160-180°C		

Curing must be done by immersion in hot water at  $90 \pm 5^\circ \text{C}$ .

In all cases curing time depends on insulation thickness and also on reel size.

### STORAGE & SELF-LIFE

The product should be stored under the following conditions:

- Closed and sealed bag
- Ambient temperature not exceeding  $30^\circ \text{C}$
- Avoid direct exposure to sunlight and weathering

The product could undergo irreversible alterations due to extended period of storage. BLS Polymers Ltd. suggests using the products within 6 months for Domestic & 8 months for Export customers from the production date printed for best results.

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### PACKAGING

**BLS XL 1110** is available in 25 kg moisture resistant bags.

**BLS XL 1102** is packed in 5 kg pouch and collated 4 pouches into 20 kg moisture resistant bags.

### SAFETY

The product is not classified as a hazardous 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 might be generated during processing of the product. Proper ventilation is therefore required.

Please refer to our MSDS for details on various aspects of safety, recovery, disposal and handling of the product.

We offer our Technical Services for further information and suggestion in using the product from the beginning and also for any need during the course of the product use.

### Disclaimer:

The information contained herein may include typical properties and processing parameters of the grade or its typical performances when used in respective applications. The values given above are based on analysis of representative samples and not the actual product supplied. It is the customer's responsibility to inspect and test our grades in order to satisfy itself as to the suitability of the products for customers' particular application. The customer is solely responsible for all determinations regarding any use of material or product and any process in its area of interest. BLS assumes no obligation or liability for any loss, damage or injury directly or indirectly suffered or incurred as a result of using any of the information or product given in this document. The information and data presented herein is true and accurate to the best of our knowledge. No warranty or guarantee expressed or implied, is made regarding performance or otherwise. This information and data may not be considered as a suggestion to use our products without taking into account existing patents, or legal provisions or regulations, whether national or international. The user of any information and/or data is advised to obtain the latest details from any of the offices of the company or its authorized agents, as the information and/or data is subject to change based on the research and development work undertaken by the company.