



KLJ GROUP

XLPE COMPOUND



TECHNICAL INFORMATION

KLJ XL 36

April 2022, Ed.1

SIOPLAS COMPOUND FOR HIGH VOLTAGE APPLICATION

Description:

KLJ XL 36/KLJ XL MB 02 SC is a silane crosslinkable natural compound system designed for High voltage power cables application up to 36 KV.

Cable insulation with a proper mixture of KLJ XL 36 (95 parts) and Catalyst master batch KLJ XL MB 02 SC (5 parts) exhibits excellent thermo-oxidative stability. The combination is suitable for both copper and aluminum conductors. Sufficient antioxidant added to meet specific ageing requirements.

Application:

KLJ XL 36/KLJ XL MB 02 SC is designed for insulation of High voltage power cable up to 36 KV.

Specification:

KLJ XL 36/KLJ XL MB 02 SC in blend meets the applicable requirements as below when processed using echo extrusion and testing procedure:

IS 7098 Part 2

IEC 60502 -1

IS 10810

The Sioplas compound (KLJ XL 36 & KLJ XL MB 02 SC) to be extruded as a normal thermoplastic in a PE extrusion line for insulation and suitable semi-con compounds in semi-con extrusion lines with triple crosshead (three layers in common cross head) and longer water trough for graded cooling, thus obviating the need of an expensive continuous vulcanizing (CCV) extrusion line. The cross-linking of extruded core is subsequently carried out by immersion in hot water or exposure to steam. In both cases, time of curing is to be optimized as a function of thickness of insulation, concentration of catalyst MB and temperature of water bath or steam.

The standards referred to above is a short selection of standards and does not cover all applicable standards. Contact your KLJ representative for additional information.



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Special Features:

KLJ XL 36/KLJ XL MB 02 SC insulation system offers:

- Excellent processing properties
- Excellent surface finish
- Free from heavy metal
- Consistent quality

Technical Characteristics:

A) KLJ XL 36

Properties	Unit	Test Method	Specification	Typical Value
Physical Properties				
Density	gm/cm ³	ASTM D 792	0.922- 0.925	0.922
Melt Flow Index (190°C, 2.16 kg Load)	gm/10min	ASTM D 1238	0.5 – 1.5	1.0

B) KLJ XL 36/KLJ XL MB 02 SC

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

Properties	Unit	Test Method	Specification	Typical Value
Physical Properties				
Tensile Strength at Break	MPa	IS 10810 Part 7	≥ 12.5	19
Elongation at Break	%	IS 10810 Part 7	≥ 200	500
Hot set at 200°C				
Hot Elongation after 15 min	%	IS 10810 Part 30	≤ 175	60
Permanent Set after 5 min	%	IS 10810 Part 30	± 15	2.5
Oven ageing at 135°C, 168 hours				
Tensile Strength at Break	%	IS 10810 Part 11	± 25	+7
Elongation at Break	%	IS 10810 Part 11	± 25	-8
Shrinkage @ 130°C / 1 hours	%	IS 7098	≤ 4	1.2
Moisture content	ppm		<100	10
Methanol wash	ppm	KLJ TM	≤ 100	50



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9001:2015



14001:2015

Electrical Properties

Volume Resistivity	Ohm-cm	ASTM D 257	$\geq 10^{14}$	2.0×10^{16}
Dissipation Factor @ 250 V/50 Hz, 25 °C	-	ASTM D 150	0.004	0.0002
Dielectric Constant @ 250 V/50 Hz, 25 °C	-	ASTM D 150	≥ 2.1	2.2
Dielectric withstand (1000 V/Sec. rise @+25 °C) KV/mm		ASTM D 149	≥ 22	32

Processing Techniques:

It is recommended to pre-heat the Catalyst Master Batch and Colour Master Batch (if any) at 80°C in hot air oven in 4-6 cm layers for 2-4 hours. The Grafted Polymer should never be pre-heated.

The Grafted Polymer and Catalyst Master batch should be manually mixed at a ratio 95:5 at room temperature without shearing, just before consumption. Mixing in large quantities should be avoided, since such leftover premix cannot be stored.

It is essential that extruder should not be kept idle when filled with KLJ XL36 / KLJ XL MB 02 SC premix. It should be kept running at a low RPM if it is needed for changeover of size etc.

Typically the following process condition is used:

Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Head	Die
140±10°C	145±10°C	155±10°C	165±10°C	175±10°C	185±10°C	195±10°C

Cross Linking Data:

The above extruded product can be cross linked by immersion in hot water or upon exposure to low pressure steam at a temperature of 95 to 105 °C.

Typical Cross linking data are as under.

	Thickness mm	Curing Hours	Hot Set %	Permanent Set (Max.) %
Tape Sample	3.6	9.0	130 - 140	9
		12.0	100 - 120	6
		15.0	70 - 100	4
		18.0	60 - 80	4



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Storage:

- KLJ-XL-36 can be stored for 9 months from date of manufacturing , however it is suggested to use within 90 days from the date of receipt. Shelf life is subject to storage in original intact packing, in cool and dry place, away from sunlight and weathering, storage temperature not generally exceeding 30°C.
- Use the compound immediately, may be within 1 to 2 hours, of opening the bag.

Packaging:

KLJ XL 36 base materials.

Form: Granules.

Package: 25 kg aluminium multilayer bag and 550 kg Octabin with aluminium liner with Top & Bottom discharge as required by the customer.

KLJ XL MB 02 SC Catalyst Master batch.

Form: Granules.

Package: 25 kg aluminium multilayer bag and in smaller aluminium pouch, if required.

Safety:

This compound is not classified as dangerous preparation.

The products are supplied in the form of free-flowing granules of approx. 2-3 mm size and can be readily handled with commercially available equipment. Handling and transport of the products may generate some dust and fines, which constitute a potential hazard for dust explosion. All metal parts in the system should, therefore, be properly grounded. Properly designed equipment and good housekeeping will reduce the risk. Inhalation of any type of dust should be avoided as it may cause irritation of the respiratory system.

The product is intended for industrial use only. MSDS is available on request.

For technical service & further information and assistance:

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Disclaimer: The specifications given are the guidelines only. Above compound is suitable to run on different machines; however some adjustments may be required on individual machine. All properties are tested as per ASTM/IS/IEC standards. Any data may change without prior information. The customers are advised to check the quality, prior to commercial use. There is no guarantee and/or warrantee what so ever, after processing.