



Kkalpana Industries (India) Limited

An ISO 9001:2015 company

TECHNICAL DATA

**Ambient Curable Polyethylene Compound
For Insulation of Low Voltage Power Cable**

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KI – XL – 03 SC / KI – SC10

DESCRIPTION :

KI-XL-03 SC is a superior grade of silane pre-grafted low density polyethylene compound. It is designed to be used as insulation of low voltage Power cable. Keeping in mind the stringent quality requirements, special attention are paid to maintain dust free environment during its manufacture. An enriched additive package makes it highly scorch retardant and protects it against heavy metal induced degradation.

KI-XL-03 SC may be used in conjunction with KI-SC10, which contains a catalyst to enhance the process of cross-linking in open environment, (no needs of sauna, CV tube or steam bath).

These two components XL-03 SC & KI-SC 10 are stable for a long period, when stored separately in a cool & dry place. However when mixed, extruded and exposed to moisture, cross-linking takes place rapidly. The components are therefore to be mixed just before consumption, usually in the ratio of 95 parts of Grafted Polymer (XL-03 SC) to 5 part of Catalyst Master Batch (KI-SC10).

Such system allows the compound to be extruded as a normal thermoplastic in a conventional PE (or even PVC) extrusion line. In each case time of curing is determined as a function of thickness of Insulation, concentration of catalyst and atmospheric humidity.

SPECIFICATIONS :

KI-XL-03 & XL-SC10 meets requirements as applicable under following standards, when processed using sound extrusion practice and testing procedure;

- IS-7098 Part 1 / IS 10810
- BS 5467, 5468, 6724, 7655
- IEC 60502
- DIN VDE – 0250 Part-214 Type-2XI1

TYPICAL PROPERTIES :

A) XL-03

Property	Unit	Typical Value	Test Method
Density	gm / cm ³	0.923 – 0.925	ASTM-D-792
Melt Flow Index (190°C, 2.16 Kg)	gms / 10 Min	0.6 – 2.0	IS-10810 (Part-23) / ASTM-D-1238
Contamination (Visual)	No./Kg	< 5	KIIL

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B) XL-03 SC / KI-SC10 Combination

Mixed in Proportion of 95:5 and extrude a tape of 1.0 mm thickness. Extruded tape kept in open environment (Relative humidity \approx 60 – 70 & temperature 27 – 30°C) for 24 hrs.

Property	Unit	Typical Value	Test Method
Tensile Strength	MPa	16 - 19	IS-10810 (Part-7) / ASTM-D-638
Elongation at break	%	500 – 600	IS-1081 (Part-7) / ASTM-D-638
Hot set at 200 °C Hot Elongation after 15 min.	%	80 – 100	IS-10810 Part-30 / IEC 60811-507
Permanent Set after 5 min	%	\pm 5	-- do --
Oven ageing at 135 °C, 168 hours Variation in Tensile Strength	%	\pm 15	IS-10810 Part-11 / IEC 60811-401
Variation in Elongation at Break	%	\pm 15	IS-10810 Part-11 / IEC 60811-401
Volume Resistivity	Ohm-cm	1×10^{16}	ASTM-D-257
Dissipation factor @ 250V / 50 Hz, 25°C	-	0.0004	ASTM-D-150
Dielectric Constant @ 250V / 50Hz, 25°C	-	2.1 – 2.4	ASTM-D-150

CROSS LINKING WITH AMB. CURING CATALYST M. B. (KI-SC10)

The time of cross-linking of the insulation usually dependent on the following factors:

- Catalyst concentration
- Relative humidity
- Temperature
- Insulation thickness

Relative humidity %	Temperature °C	Insulation Thickness mm	Time to reach 100% hot elongation, days
50	23	0.7	2
50	23	1.0	5
50	23	1.2	7

For an insulation thickness above 1.2 mm the time needed for optimum crosslinking should be ascertained by small trial runs; bulk production should be taken up only after getting satisfactory results.

PROCESSING GUIDELINES :

It is recommended to dry the Catalyst Master batch and Colour Master Batch (if any) at 60°C in air oven in 4-6 cm layers for 8-12 hours. The Grafted Polymer should never be pre-heated.

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

It is important that extruder should not be kept idle for more than 10 minutes when filled with KI-XL-03 / KI-SC10 premix. If it is needed to side change etc., the extruder should be kept running at a low RPM.

PACKAGING :

- Moisture Barrier Multilayer Bags of 25 kg.
- 20' FCL will take palletized 11 MT & 40' will take 24.75 MT.

STORAGE :

The shelf life of the product is 90 days (In case of Export packaging the shelf life is guaranteed for 180 days instead of 90 days) from the date of production, subject to following conditions:

- Storage temperature not generally exceeding 25°C
- Away from direct sunlight and weathering.
- Closed and unbroken bags.
- Use of compound within 3-4 hours after bags are open.

The information given in the document is believed to be reliable and is given in the good faith but without warranty. The user should test the product to ascertain the suitability for the intended use. Product specification or the whole document is subject to change without any prior notice.