Ddev Plastiks Industries Limited

An ISO 9001:2015 company

TECHNICAL DATA

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

KI – XL – 03 SC / KI – SC 10N (or KI-SC10HS for Copper Conductor)

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 attentions are paid to maintain dust free environment during its manufacture. An enriched additive package makes it highly scorch retardant.

KI-XL-03 SC may be used in conjunction with KI-SC 10N (or KI-SC10HS for Copper Conductor), 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 KI-XL-03 SC & KI-SC 10N (or KI-SC10HS) 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 (KI-XL-03 SC) to 5 part of Catalyst Master Batch KI-SC 10N (or KI-SC10HS).

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 SC & XL-SC 10N (or KI-SC10HS) 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

TYPICAL PROPERTIES :

A) KI-XL-03 SC

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	KIL

B) KI-XL-03 SC / KI-SC 10N OR KI-SC10HS Combination

Mixed in Proportion of 95:5 and extrude a tape of 1.0 mm thickness. Extruded tape kept in open environment (Relative humidity ≈ 60 – 70 & temperature 27 – 30°C) for 48 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 a) Hot Elongation after 15 min. b) Permanent Set after 5 min	 % %	 80 – 100 ± 5	IS-10810 Part-30 / IEC 60811-507
Oven ageing at 135 °C, 168 hours a) Variation in Tensile Strength b) Variation in Elongation at Break	 % %	 ± 15 ± 15	IS-10810 Part-11 / IEC 60811-401
Volume Resistivity	Ohm-cm	1 X 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-SC10N OR KI-SC10HS)

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	3
50	23	1.2	5
50	23	1.8	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 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 SC / KI-SC10N OR KI-SC10HS premix. If it is needed to size change etc., the extruder should be kept running at a low RPM.

The following Temperature profile could be used as guideline.

Barrel Zones-I	Barrel Zones-II	Barrel Zones-III	Barrel Zones-IV	Clamp/Neck	Head	Die
140	145-150	150-155	150-160	155-165	160-170	165-175

The actual temperature profile varies from extruder to extruder and depends on screw design and size and type of conductor.

PACKAGING :

- Aluminum Foil Multilayer Bags of 25 kgs.
- 20' FCL will take palletized 12 MT. & 40' FCL will take 24.750 MT

STORAGE :

The shelf life of the product is 90 days from the date of production, subject of 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.