

KALPENA INDUSTRIES LIMITED

Silane Grafted PE Pipe Compound : KI – XL – HWP / KI - XL – 212B HS

Two component moisture curable HDPE Compound for hot and cold water pipes.

DESCRIPTION:

KIL-XL-HWP is a high density XLPE curable by moisture. It is designed to be used for hydro thermostatory and floor heating pipes. KI-HWP is silane pre-grafted base compound which has to be mixed with 5% of catalyst master batch, KI-XL-212B HS before extrusion or on-line. After extrusion to a pipe, the same has to be cured by exposure to steam or by immersion in hot water at 90 – 95 °C.

These two components KI-XL-HWP and KI-XL-212B HS are inert, when stored in a cool and dry place; however, when mixed, extruded and exposed to moisture, cross-linking takes place rapidly.

TYPICAL PROPERTIES:

Mixed at 130°C at 95:5 parts for 3 minutes, compression moulded to a sheet of 1.5 mm thickness and cured by immersion of hot water at 95°C for 3 hours; conditioning for 3 hours.

Properties	Unit	Typical Value	Test Method
Density	gm / cm ³	0.945	ASTM D-792
Melt flow index @ 190 °C / 2.16 kg	gm / 10 min	0.50	ASTM D-1238
Melt flow index @ 190 °C / 5.0 kg	gm / 10 min	2.0	ASTM D-1238
Hot elongation @ 200 °C (20 N/cm ² / 15 min)	%	50	IEC-60811-1-2
Permanent Set	%	0	IEC-60811
Tensile Strength	MPa	21	ASTM D-638
Elongation at Break	%	400	ASTM D-638
Gel Content	%	> 70	ASTM D-2765
Vicot softening point	°C	126	ASTM D-1525
Specific heat at 23 °C	J / (g °K)	1.90	-
Linear expansion coefficient	I / °K	1.40 X 10 ⁻⁴	ASTM D-696

PROCESSING GUIDLINES

It is recommended to dry the catalyst master batch (KI-XL-212A) and colour master batch (if any) at 60 °C in air oven in 4 – 6 cm layers for 2 – 4 hours. The Grafted Polymer KI-XL-HWP should never be pre-heated.

The Grafted Polymer and Catalyst Master batch should be mixed at a ratio of 95: 5 at room temperature manually or by on-line dosing without shearing just before extrusion. The leftover mix cannot be reused.

During extrusion, following temperature profile is suggested for normal PE extrusion.

The actual temperature profile will depend on extruder size and screw type.

Position	Temperature (°C)
Zone – 1	150 °C – 155 °C
Zone – 2	160 °C – 165 °C
Zone – 3	170 °C – 175 °C
Zone – 4	180 °C – 185 °C
Head	190 °C – 195 °C
Die	200 °C

Screw cooling 70 °C – 80 °C (screw outlet water temperature)

In case of prolonged stoppage of extruder, the extruder should be purged with HDPE.

Curing can be done -

- by immersion in hot water at 90 – 95 °C
- by exposure to low pressure steam (about 0.15 bar) sauna

The optimum curing time will depend in thickness; however 2 – 3 hours per mm of wall thickness is usually be needed to get optimum level of cross – linking.

**PACKAGING:**

The product is packed in 25 kg moisture – resistant bags.

STORAGE:

The shelf life of the product exceed 4 months 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 opened.
- * No mixing of left-overs from previous runs

Information provided in this bulletin is given in good faith. It is recommended to be used only as a general guideline. The end-user is well advised to verify at his end the fitness of this product to his specific needs, available technology and test method. KIL accepts no liability in manufacturing defects of end-product, not can give any guarantee.