

4214N/4244N

NATURAL CURING SILANE XLPE COMPOUND FOR 3KV AND BELOW CABLE & WIRE

Description

Grade 4214N/4244N is sioplas (two steps) natural curing silane XLPE compound, it is composed by compound A and compound B. Compound A is high-quality special polyethylene material with unique grafting process, while compound B adopts the advanced catalyst system. The product can be quickly cross linked in hot water or after some time exposed in the air, it is suitable for 3kv and below low voltage cable. The major characteristics are

- Quick crosslinking speed, not necessary be boiled in hot water, simplify the procedure, and improve the production efficiency and cost saving.
- Non-corrosive to the equipment line, non-corrosive to copper conductor.
- Less affected by the masterbatch.
- Grade 4214N is suitable for the extrusion method of squeezing extrusion, half-tubing extrusion and tubing extrusion; grade 4244N is suitable for tubing extrusion method.
- Suitable for small cable with cross sectional area equal to or larger than 1.5mm².
- Halogen free, and environment friendly.

Standard

Performance test is in accordance with JB/T 10437-2004 standard. The cable made from the product grade 4214N/4244N can comply with the standard of IEC60502-2004, GB/T12706-2002.

Main Properties & Typical Values

Test items	Test method	Unit	Typical value	
			4214N	4244N
Tensile strength	GB/T1040.3	MPa	19.8	20.5
Elongation at break	GB/T1040.3	%	502	525
Heat elongation (200±3)°C x 15min x 0.2MPa)				
Maximum elongation change under load	GB/T2951	%	72	64
Maximum permanent elongation change after cooled		%	4	0
Gel content	JB/T 10437	%	65*	72*
Heat ageing properties (Test temperature 135°C, 168hr)				
Maximum tensile strength change	GB/T8815	%	6*	8*
Maximum elongation at break change		%	-8*	-6*
Impact brittle temp. (-76°C)	GB/T5470	---	Pass**	Pass**
Dielectric strength	GB/T1408.1	MV/m	37**	35**
Dielectric loss factor 50Hz, 20°C	GB/T1409	---	3.0×10 ^{-4**}	5×10 ^{-4**}
Dielectric constant 50Hz, 20°C	GB/T1409	---	2.25**	2.30**

Volume resistance (20℃)	GB/T1410	Ω.m	2×10 ^{14**}	1×10 ^{14**}
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Typical values were tested on the 1mm sample strip by squeezing film extrusion after mixing compound of A & B (at percentage of 95:5), double-sided exposure in the constant temperature and humidity box (23℃, relative humidity 75%) and measured after 48 hours.

*Especially, these typical values were tested on fully solidified and cured sample (If the sample is not fully cured, it will continue the curing during ageing procedure, and consequently will affect the test result before and after heat ageing).

**Especially, these typical values were tested by press moulding sample under the condition of 180±2 ℃, 15min, and pressure over 15MPa, then boiled in 90℃ water for one hour.

Recommended Processing Technique

1. Extrusion Equipment

The product is easy to be plasticized, ordinary PVC-use single screw extruder (length-diameter ratio is 15 to 20) can be used, the equipment requirement is relatively simple screw structure and the flow way is smooth and no dead end.

2. Extruder processing temperature and other related settings

Temperature Setting: Specific processing temperature should be based on different equipment and pressing conditions, reference settings are as following:

Grade	Feeding Section (℃)	Compression Section (℃)	Measurement Section (℃)	Die head and Mould (℃)
4214N	130~140	150~160	160~170	170~180
4244N	130~140	150~160	160~170	160~170

Die head setting: 4214N is suitable for squeezing extrusion style, half-tubing extrusion style and tubing extrusion style. 4244N is suitable for tubing extrusion method. To produce with tubing extrusion style, the recommended draw ratio is less than 1.2 (4214N) / 1.3 (4244N), the greater the draw ratio the greater the thermal shrinkage.

Cooling water temperature: Should not be less than 25℃, gradual cooling water tank is recommended.

Conductor temperature: Appropriate warm-up the copper or aluminium conductor, which can further reduce the heat shrinkage of the insulation and accelerate the cross link speed.

Crosslink Speed

For the cable made from this material, the cross link speed has close relation to the insulation thickness, ambient temperature, environment humidity and coil size. The thinner and smaller the coil size, the higher temperature and humidity, the shorter the time needed for cross linking. During cold and dry winter season, the crosslink speed in natural environment will be comparatively slow down. To reduce the cross linking time, it is recommended to spray some hot water on the surface of the insulation to accelerate cross link procedure.

Insulation thickness	23℃, humidity 75%	35℃, humidity 60%	90℃ in water
0.9 mm	2-3 days	1-2 days	<30 min
1.4 mm	5-7 days	3-4 days	<60 min
1.8 mm	8-10 days	5-7 days	<90 min

Note: The above data were tested on the sample by squeezing film extrusion after mixing compound of A & B (at percentage of 95:5), double-sided exposure in the constant temperature and humidity box; the above value may differ from the actual cross link speed.

Please contact our customer service for more technical service.