



SX523:CM493 and SX523:CM497

UV stabilised silane crosslinkable polyethylene compound for “Câble Torsadé” overhead power cable insulation

This is a chemically crosslinkable polyethylene compounds for insulation of cables where resistance to ultra-violet radiation is required. The material is carbon loaded and possesses excellent extrusion properties at high output rates. The graft component SX523 is mixed with a crosslinking catalyst masterbatch CM493 or CM497 generally in the ratio 95:5 and is curable by exposure to moist conditions.

The compound has been specially developed for the “Câble Torsadé” NFC 33-209 specification for overhead power cable applications.

Test	Test method	Unit	Typical value
Physical properties and mechanical properties			
Density	BS 2782 Pt. 6 Mtd 620A-D	g/cm ³	0.95
Tensile strength	IEC 60811-1-1	N/mm ²	18
Elongation at break	IEC 60811-1-1	%	450
Typical ageing behaviour after 10 days at 150°C			
Tensile strength	IEC 60811-1-2	% variation	+20
Elongation at break	IEC 60811-1-2	% variation	-18
Cure assessment by hot set test (forced cured at 80°C in water)			
Elongation under load (20N/cm ² at 200°C)	IEC 60811-2-1	%	80
Permanent elongation after cooling	IEC 60811-2-1	%	5
Electrical properties			
Volume resistivity at 20°C	IEC 60502	Ohm.cm	1.5 x 10 ¹⁶
Power factor at 50Hz at 23°C	IEC 60250	-	0.0017
Permittivity at 50Hz at 23°C	IEC 60250	-	3.47

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Recommended processing and handling conditions

Extruder

Most modern thermoplastic extruders will process SX523:CM493 compounds, particularly if a screw suitable for polyethylene extrusion is available.

Extruder temperature conditions

As a guide the following temperature profile is recommended:-

Zone 1	Zone 2	Zone 3	Zone 4	Head	Die
130°C	150°C	170°C	190°C	200°C	210°C

This profile will vary slightly depending on extruder type, head design and output.

Screw water temperature 60-70°C

Recommended screen pack 30, 100, 30 (mesh aperture per linear inch) or 600,150, 600 micron

Head and tool design

The head and tools should be so designed as to allow streamlined flow without the possibility of stagnation of material (where pre-curing could take place). To obtain the optimum in physical properties in the case of tubing tools, it is generally recommended that a draw down ratio not greater than 2.6:1 is used. A combination of pressure and tubing techniques has been found satisfactory in aerial cable products.

Catalyst and colour masterbatches

CM493 or CM497 catalyst masterbatch is normally added at 5% to 95% of SX523 graft. The choice of catalyst masterbatch either CM493 or CM497 will be based on processing conditions and equipment and recommendations will be made by our Sales Engineer.

It is recommended that all masterbatches, including those containing the catalyst, should be thoroughly dried before use for 8 hours at 60°C or 4 hours at 80°C.

Storage and shelf life

SX523 normally has shelf life of at least 6 months from the date of manufacture. The storage of silane crosslinkable compounds in cool dry conditions will maximise useful shelf life. Other precautions are:-

- Packaging should remain sealed.
- Avoid temperature above 25°C.
- Avoid storage outside and in direct sunlight.
- Use within 8 hours of opening packaging.

Form and packaging

Form – pellets

Packaging – the following possibilities are available:-

- Moisture resistant sacks containing 25kg.
- Boxes with a moisture resistant heat sealed liner containing approximately 125kg, 500kg or 1000kg.

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