Issued June 2010

SX505:CM493 & SX505:CM497

Silane crosslinkable EPDM for low and medium voltage cable insulation

This is a silane crosslinkable rubber compound, curable when exposed to moist conditions. The compound can be processed on largely standard thermoplastic extrusion equipment with good extrusion properties at high output rates. The graft component SX505 is mixed with a crosslinking catalyst masterbatch CM493 or CM497 generally in the ratio 95:5. The SX505:CM493 or SX505:CM497 systems have passed type tests for use up to and including 33 kV.

This compound is typically used with SX539 and SX528 crosslinkable semi-conducting material for the conductor and insulation shields. Strippable outer shields are possible using SX528.

Test	Test method	Unit	Typical value
Physical properties and mechanical properties			
Density	BS 2782 Pt. 6 Mtd 620A-D	g/cm^3	0.90
Tensile strength	IEC 60811-1-1	N/mm^2	9
Elongation at break	IEC 60811-1-1	%	350
Ozone Resistance	BS EN 60811-2-1	%	Pass
Typical ageing behaviour after 7 days at 135°C			
Tensile strength	IEC 60811-1-2	%Variation	+12
Elongation at break	IEC 60811-1-2	% Variation	-10
Cure assessment			
Hot set (20N/cm^2 at 200°C)	IEC 60811-2-1	%	0
Hot Elongation (20N/cm^2 at 200°C)	IEC 60811-2-1	%	40
Electrical properties			
Volume resistivity at 20°C	IEC 60502	Ohm.cm	$>1 \times 10^{16}$
Power factor at 50Hz at 23°C	IEC 60250	-	0.00016
Permittivity at 50Hz at 23°C	IEC 60250	-	2.29

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SX505:CM493 & SX505:CM497

Recommended processing and handling conditions

Extruder

Most modern thermoplastic extruders will process SX505: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	Head	Die
130°C	150°C	180°C	190°C	200°C

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

Screw water temperature 40°C – 60°C

Recommended screen pack 30, 50 (mesh apertures per linear inch) or 600, 300 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.

Crosslinking or cure

A satisfactory cure can be obtained either by immersion in hot water or exposure to low pressure steam at a temperature up to 70°C.

Catalyst and Colour Masterbatches

CM493 or CM497 catalyst masterbatch is normally added at 5% to 95% of SX505 graft.

Addition of approved colour masterbatches, including black, up to a maximum of 1%, has no detrimental effect on the properties or crosslinking capability.

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

SX505 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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