



SX546:CM497CD and SX546:CM493CD

125°C rated silane crosslinkable polyethylene for low voltage power cable insulation

This is a silane crosslinkable polyethylene compound for insulation of power cables and is especially designed for operation temperatures up to 125°C. It possesses outstanding extrusion properties with low scorch characteristics. High output rates can be achieved with minimum point and die drool.

The graft component SX546 is mixed with a crosslinking catalyst masterbatch CM497CD or CM493CD generally in the ratio 95:5. This compound can also be cured at ambient temperatures and has a nominal melt index of 1.2.

Test	Test method	Unit	Typical value
Physical properties and mechanical properties			
Density	BS 2782 Pt. 6 Mtd 620A-D	g/cm ³	0.92
Tensile strength	IEC 60811-1-1	N/mm ²	24
Elongation at break	IEC 60811-1-1	%	500
Typical ageing behaviour after 3000 hours at 125°C			
Tensile strength	IEC 60811-1-2	% variation	+1
Elongation at break	IEC 60811-1-2	% variation	-11
Typical ageing behaviour after 240 hours at 155°C			
Tensile strength	IEC 60811-1-2	% variation	+4
Elongation at break	IEC 60811-1-2	% variation	-5
Thermo mechanical properties			
Cold bend at -70°C	IEC 60811-1-4	-	Pass
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	%	<100
Permanent elongation after cooling	IEC 60811-2-1	%	0
Cure assessment (ambient cure at 20°C and 50% humidity)			
Insulation thickness 0.8mm	<100% Hot Set	Hours	5
Insulation thickness 1.5mm	<100% Hot set	Hours	14
Electrical properties			
Volume resistivity at 20°C	IEC 60502	Ohm.cm	>1 x 10 ¹⁶
Dielectric strength at 20°C	IEC 80243	KV/mm	21
Power factor at 50Hz at 23°C	IEC 60250	-	0.0004
Permittivity at 50Hz at 23°C	IEC 60250	-	2.2

© AEI Compounds Limited, Sandwich Industrial Estate, Sandwich, Kent, CT13 9LY

Telephone +44 (0) 1304 616171

Facsimile +44 (0) 1304 616170

Email sales@aeicompounds.co.uk

Website www.aeicompounds.com

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Recommended processing and handling conditions

Extruder

Most modern thermoplastic extruders will process the SX546:CM497CD system, particularly if a screw suitable for the extrusion of polyethylene 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 70°C

Recommended screen pack 30, 100, 30 (mesh apertures 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 3.5:1 is used.

Catalyst and colour masterbatches

CM497CD OR CM493CD catalyst masterbatch is normally added at 5% to 95% of SX546 graft.

Addition of approved colour masterbatches, including black, up to a maximum of 1%, has no detrimental effect on the properties or crosslinking capability of SX546:CM497CD.

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

Storage and shelf Life

SX546 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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