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SX558:CM401

Ambient cure, silane crosslinkable, polyethylene for low voltage power cable insulation

This crosslinkable polyethylene compound is designed for the insulation of power cables and heating cables; possessing outstanding extrusion properties at high output rates. The graft component SX558 is mixed with the crosslinking catalyst masterbatch CM401 generally in the ratio 95:5. It can be cured at ambient temperatures and is specifically designed for small and sector shaped conductors.

Test	Test method	Unit	Typical value
Physical properties and mechanical properties			
Density	BS 2782 Pt. 6 Mtd 620A-D	g/cm^3	0.93
Melt flow rate (2.16kg at 190°C)	AEI Method	g/10min	1.4
Tensile strength	BS EN 60811-1-1	N/mm^2	19
Elongation at break	BS EN 60811-1-1	%	450
Typical ageing behaviour after 7 days at 135°C			
Tensile strength	BS EN 60811-1-2	% variation	+7
Elongation at break	BS EN 60811-1-2	% variation	-7
Thermo mechanical properties			
Cold bend at -70°C	IEC 60811-14	-	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 elongation	Days	5
Insulation thickness 1.5mm	<100% Hot elongation	Days	14
Electrical properties			
Volume resistivity at 20°C	BS 6622	Ohm.cm	$>1 \times 10^{16}$
Dielectric strength at 20°C	IEC 60243	kV/mm	21
Power factor at 50Hz at 23°C	IEC 6025	-	0.0003
Permittivity at 50Hz at 23°C	IEC 6025	-	2.0

© **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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SX558:CM401

Recommended processing and handling conditions

Extruder

Most modern thermoplastic extruders will process SX558:CM401 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 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 is used.

Catalyst and colour masterbatches

CM401 catalyst masterbatch is normally added at 5% to 95% of SX558 graft.

An alternative catalyst masterbatch CM401CD or CM401CDS, containing a copper deactivator, are used where the material is required to undergo a 168 hour ageing test at 150°C on bare copper conductor.

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 at 60°C for 8 hours or at 80°C for 4 hours.

Storage & shelf life

SX558 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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