PEXIDAN® SX559:CM540U

Low-smoke, low-toxicity, halogen-free, flame-retardant, silane crosslinkable compound for low voltage insulation and sheathing of all types of cable

This is a low smoke, low fume, fire retardant silane crosslinkable compound which can be processed as a thermoplastic at high output rates and cured post processing by exposure to moisture. The graft component SX559 is mixed with a crosslinking catalyst masterbatch CM540U generally in the ratio 97:3 to 95:5

The compound combines good mechanical, electrical and fire retardant properties to meet demanding insulation specifications including BS 7211. The compound can also be used for sheathing of cables requiring high fire retardance.

Test	Test method	Unit	Typical value
Physical properties and mechanical properties			
Density	BS EN ISO 1183-3	g/cm^3	1.49
Melt flow rate (2.16kgs at 190°C)	AEI Method	g/10min	2.5
Tensile strength	IEC 60811-501	N/mm^2	14
Elongation at break	IEC 60811-501	%	165
Typical ageing behaviour after 7 days at 135°C			
Tensile strength	IEC 60811-401	% variation	+20
Elongation at break	IEC 60811-401	% variation	-15
Thermo mechanical properties			
Hot pressure deformation at 100°C (K=1)	IEC 60811-508	%	40
Cold bend at -30°C	IEC 60811-504	-	Pass
Cure assessment by hot set test (forced cured at 80°C in water)			
Elongation under load (20N/cm^2 at 200°C)	IEC 60811-507	%	30
Permanent elongation after cooling	IEC 60811-507	%	0
Fire & smoke properties			
Smoke Density	ASTM 2843-99(2004)	%	<3.5
Oxygen Index	BS ISO 4589-2	%	36
Temperature Index	BS ISO 4589-3	°C	>300
Halogen Acid Gas Evolution	IEC 60754-1	%	<0.5
Corrosivity of gases	IEC 60754-2	pH	4.6
Conductivity of gases	IEC 60754-2	µS/cm	13
Electrical properties			
Insulation Constant Ki at 20°C	BS EN 50395	MΩ.Km	1260
Insulation Constant Ki at 90°C	BS EN 50395	MΩ.Km	0.5

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Recommended processing and handling conditions

Extruder

Many modern thermoplastic extruders will process the material although a screw designed to give good homogenisation without excessive shear (which could cause unacceptable increases in melt temperature) should be used. An extruder with an L/D ratio (length/diameter) of 15-24 and an extruder screw with a compression ratio 1.2:1 are recommended.

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	180°C	190°C	190°C

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

Screw water temperature 40-60°C

Recommended screen pack 50 (mesh apertures per linear inch) or 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, a maximum draw down ratio of 1.5:1 is recommended to avoid internal stresses.

Crosslinking & cure

A satisfactory cure can be obtained either by immersion in hot water or exposure to low pressure steam at a temperature up to 65°C

Catalyst and colour masterbatches

CM540U catalyst masterbatch is normally added at 3-5% to 97%-95% of SX559 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 at 60°C for 8 hours or at 80°C for 4 hours.

Storage and shelf life

SX559 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.
