PEXIDAN® SX407:CM424

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

This is a flame-retardant chemically crosslinkable compound, curable by exposure to moist conditions and possessing good extrusion properties. The graft component SX407 is mixed with a crosslinking catalyst masterbatch CM424 generally in the ratio 95:5. The SX407:CM424 system has been specifically developed to meet the requirements of limited toxic/corrosive fume emission.

Core or cable designs made using SX407 have complied with the following flame tests:- BS 4066 Part 1/IEC 332 Part 1; CEGB GDCD Standard 21; VDE 0472 Pt.804 Method C; VDE 0472 Pt.814; NF C 32-070 Test 2 (Category C1); BS 4066 Part 3; IEC 332 Part 3 (Categories A, B & C).

Test	Test method	Unit	Typical value
Physical properties and mechanical properties			
Density	BS EN ISO 1183-3	g/cm^3	1.37
Tensile strength	IEC 60811-501	N/mm^2	10
Elongation at break	IEC 60811-501	%	150
Typical ageing behaviour after 7 days at 135°C			
Tensile strength	IEC 60811-401	% variation	+20
Elongation at break	IEC 60811-401	% variation	-15
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	%	40
Permanent elongation after cooling	IEC 60811-507	%	5
Thermo mechanical properties			
Hot pressure deformation at 100ºC	IEC 60811-508	%	15
Cold bend at -70°C	IEC 60811-504	-	Pass
Fire and smoke properties			
Smoke density	ASTM 2843:2004	%	4.13
Oxygen index	BS ISO 4589-2	%	29
Temperature index	BS ISO 4589-3	ºC	280
Halogen gas evolution	IEC 60754-1	%	<0.5
Electrical properties			
Volume resistivity at 20°C	BS EN 50395	Ω.cm	1.0×10^{13}
Dielectric strength at 20°C	IEC 60243	kV/mm	14.4
Permittivity at 50Hz at 23°C	IEC 60250	-	4.15

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Recommended processing and handling conditions

Extruder

Extruders of L/D ratios (length/diameter) of 15-24 and extruder screws of compression ratio 2:1 or less are recommended.

Extruder temperature conditions

It is important that the melt temperature is not allowed to rise above 170ºC. As a guide the following temperature profile is recommended:-

Zone 1	Zone 2	Zone 3	Head	Die
130°C	140°C	140°C	150°C	150°C

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

Screw water temperature 30-50°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). Small compact heads with minimum distance between the end of the screw and the mandrel, have proved to give best results. In the case of tubing tools, a draw down ratio of 1.5:1 is recommended to avoid internal stresses.

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 65°C.

Catalyst and colour masterbatches

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 in a de-humidifying drier.

Storage and shelf life

SX407 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

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Packaging – The following possibilities are available:-

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

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