



## SX409:CM401

### Silane crosslinkable polyethylene for medium voltage power cable insulation

This is a silane crosslinkable polyethylene compound, curable by exposure to moist conditions and possessing excellent extrusion properties at high output rates. The graft component SX409 is mixed with a crosslinking catalyst masterbatch CM401 generally in the ratio 95:5.

The SX409:CM401 compound has been specifically developed for cables operating up to 36kV. This compound is typically used in conjunction with SX 539 crosslinkable semi-conducting material for conductor and insulation shields. Strippable outer shields are possible using SX528.

Test	Test method	Unit	Typical value
<b>Physical properties and mechanical properties</b>			
Density	BS 2782 Pt. 6 Mtd 620A-D	g/cm <sup>3</sup>	0.928
Melt flow rate (2.16kg at 190°C)	AEI Method	g/10min	0.6-0.9
Tensile strength	IEC 60811-1-1	N/mm <sup>2</sup>	18
Elongation at break	IEC 60811-1-1	%	350
<b>Typical ageing behaviour after 7 days at 135°C</b>			
Tensile strength	IEC 60811-1-2	%Variation	+4
Elongation at break	IEC 60811-1-2	% Variation	-2
<b>Thermo mechanical properties</b>			
Cold bend at -70°C	IEC 60811-1-4 Mtd 151A	-	Pass
<b>Cure assessment</b>			
Hot set (20N/cm <sup>2</sup> at 200°C)	IEC 60811-2-1		
Insulation thickness 3-6mm	<100% Hot Set	Hours	6-24
Insulation thickness 8mm	<100% Hot set	Hours	190
Insulation thickness 15mm	<100% Hot Set	Hours	280
<b>Electrical properties</b>			
Volume resistivity at 20°C	IEC 60502	Ohm.cm	>1 x 10 <sup>16</sup>
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	-	2.5

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## Recommended processing and handling conditions

### Extruder

Most modern thermoplastic extruders will process SX409: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
150°C	160°C	170°C	180°C	170°C	180°C

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

**Screw water temperature** 60°C – 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 SX409 graft.

It is recommended that all masterbatches including those containing the catalyst should be thoroughly dried before use at 60°C for 6 hours or 80°C for 4 hours.

### Storage and shelf life

SX409 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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