









Radiation cross-linkable, flame retardant insulation compound.

<p>■ Compound class Insulation</p>	<p>■ Compound category </p>	<p>■ Flame retardant Halogenated</p>
<p>■ Standards Chrysler MS 9502A; MS 9502B SAE J-1128 TXL, GXL and SXL Ford ES-AU5T-1A348-AA</p>	<p>LV 112 Class C LV 112 Class D</p>	<p>ISO 6722 Class C ISO 6722 Class D</p>
<p>■ Operating temperature [C°] -55 to 150</p>	<p>■ Oil resistance level ★★★★★</p>	
<p>■ Typical applications <i>A high performance radiation cross-linkable compound, offering excellent mechanical and electrical properties</i></p>		
		
Automotive	General Applications	
<p>■ Features</p>		
 Flame retardant	 High temperature resistant	 Oil resistant
 Low smoke	 Abrasion resistant	

PHYSICAL PROPERTIES

Physical properties	Unit	Typical value	Test method
Density*	g/cm ³	1,19	DIN EN ISO 1183-1A
Hardness*	Shore D	54	DIN ISO 7619-1
Melt Flow Index (190°C; 21,6kg)	g/10 min	0,6	DIN EN ISO 1133
Abrasion*	mm	1900	MS 9502B

MECHANICAL PROPERTIES

Before cross-linking **	Unit	Typical value	Test method
Tensile strength	N/mm ²	> 10	IEC 60811-501
Elongation at break	%	> 600	IEC 60811-501
After cross-linking ***	Unit	Typical value	Test method
Tensile strength (120kGy)	N/mm ²	20	IEC 60811-501
Elongation at break (120kGy)	%	250	IEC 60811-501
Tear strength (120kGy)	Lbs/inch	400	MS 9502B

■ After ageing in air oven 240h at 180°C ***	Unit	Typical value	Test method
Variation in tensile strength	%	5	MS 9502B
■ After ageing in air oven 3000h at 150°C ***	Unit	Typical value	Test method
Variation in tensile strength	%	15	MS 9502B

Resistance ***

■ Engine oil (ASTM D471, IRM 902) 20h at 50°C	Unit	Typical value	Test method
O.D. Change	%	1	SAE J 1128
■ Gasoline (ASTM D471 Ref Fuel C) 20h at 23°C	Unit	Typical value	Test method
O.D. Change	%	2	SAE J 1128
■ Brake fluid (SAE-J-1703) 20h at 50°C	Unit	Typical value	Test method
O.D. Change	%	2	SAE J 1128
■ Ethanol (85% Ethanol, 15% ASTM D471) 20h at 23°C	Unit	Typical value	Test method
O.D. Change	%	2	SAE J 1128
■ Diesel Fuel (90% IRM 903 + 10% p-Xylene) 20h at 23°C	Unit	Typical value	Test method
O.D. Change	%	2	SAE J 1128
■ Power steering (ASTM D 471, IRM 903) 20h at 50°C	Unit	Typical value	Test method
O.D. Change	%	1	SAE J 1128
■ Auto transmission (Citgo # 33123) 20h at 50°C	Unit	Typical value	Test method
O.D. Change	%	3	SAE J 1128
■ Engine Coolant (50% Glycol + 50% water) 20h at 50°C	Unit	Typical value	Test method
O.D. Change	%	1	SAE J 1128
■ Battery acid (H2SO4, spec. Grav. 1.260) 20h at 23°C	Unit	Typical value	Test method
O.D. Change	%	1	SAE J 1128

BURNING PROPERTIES *

■ Main burning properties	Unit	Typical value	Test method
45 degree flame resistance test	Seconds	5	MS 9502 B

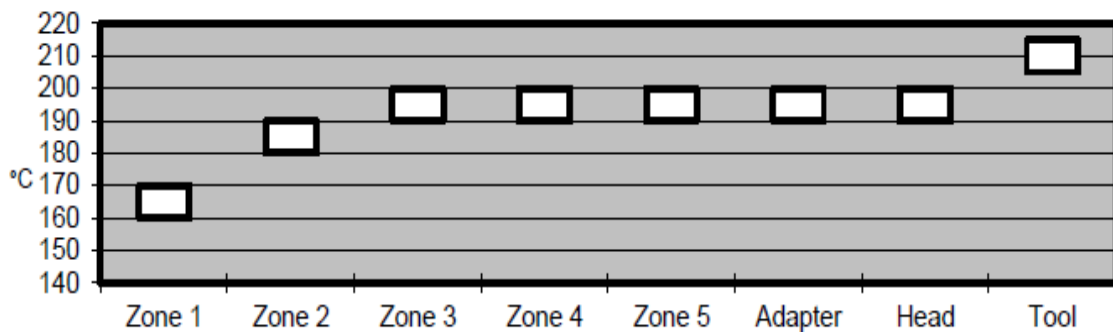
* pressed plaques

** extruded tapes

*** cross-linked plaques / tapes

PROCESSING GUIDE

■ Extruder Type	Standard extruders for elastomeric or thermoplastic materials.
■ Screw configuration	Barrier type screw (BM) having high flights and a L/D-ratio > 24:1
■ Screw cooling	Not required
■ Tooling	For insulation pressure tools, for jacketing tube tools are recommended. Note: Pressure Tooling may have an effect on low temperature flexibility.
■ Extrusion dies	For pressure extrusion, normal (single angle) dies are recommended. If strip force is too high, use a slightly larger die and switch to a 'draw down of the melt'. Also a reduction of head-pressure will reduce strip force.
■ Die opening	Approx. 0,5 - 3% above the required OD of the wire. It is required to DRAW DOWN the melt, to achieve good surface and moderate stripping force.
■ Temperature profile extruder	The profile shown below may vary slightly depending on extruder type, head design & output.



■ Maximum mass temperature	230°C
■ Conductor pre-heating	Pre-heating between 100°C-140°C to achieve maximum properties of elongation at break of the insulation. Target: Ensure to achieve an elongation at break of > 600% after extrusion to meet various properties such as low temperature flexibility, abrasion resistance and various others. A too low conductor pre-heating temperature may lead to inferior wire quality.
■ Wire/conductor	Bare copper for thicker wall products is OK. Tin plated conductors for wall thicknesses < 0,40 mm (16 mill) to meet class D
■ Drying	Not necessary if the compound has been stored in original packing under cool (max. 30°C) and dry conditions. Mecoline compounds used from open packing require pre-drying during 4–6 hours at 60–70°C.

■ **Recommended colour master batches**

Well dispersed PE master batch 0,5-1,0%. For black jacket applications, UV resistance can be improved by adding more black master batch. This depends on requirements and type of carbon black master batch used

CROSS-LINKING INFORMATION

■ **Recommended radiation dose**

120 kGy

■ **Concentricity & Wall thickness**

To achieve highest possible abrasion resistance on the 0,35 mm² wires, ensure highest possible and allowed wall thickness and > 90 % concentricity to pass abrasion resistance and 3000 hrs @ 150°C ageing on bare copper.

■ **Elongation at break after cross-linking**

If the elongation at break after crosslinking/irradiation is low, annealing the complete insulated wire at temperatures of 150 Celsius during a few hours (to ensure that the insulated wires, which are positioned close to the core of the cable-drum, also reach 150 C) will increase elongation at break, provided that the cable-drum, incl. insulated wires, will cool down in a slow and gentle way.

STORAGE INFORMATION

■ **Form & packaging**

Pellets in sizes 2.8mm & 5.5mm
Moisture-resistant bags (25kg) & octabins (alu-innerliner, max. 1250kg)

■ **Shelf life**

1 year after date of manufacturing

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