








Radiation cross-linkable, flame retardant insulation compound

<p>■ Compound class Insulation</p>	<p>■ Compound category </p>	<p>■ Flame retardant Halogenated</p>
<p>■ Standards</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
 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	51	DIN ISO 48-4
Melt Flow Index (190°C; 10,0kg)	g/10 min	10.8	DIN EN ISO 1133

MECHANICAL PROPERTIES

Before cross-linking **	Unit	Typical value	Test method
Tensile strength	N/mm ²	12.6	IEC 60811-501
Elongation at break	%	600	IEC 60811-501
After cross-linking ***	Unit	Typical value	Test method
Tensile strength (75kGy)	N/mm ²	16	IEC 60811-501
Elongation at break (75kGy)	%	380	IEC 60811-501

■ After ageing in air oven 3000h at 150°C ***	Unit	Typical value	Test method
Variation in tensile strength	%	6	IEC 60811-401
Variation in elongation at break	%	4.5	IEC 60811-401

THERMAL PROPERTIES***

■ Hot set test at 200°C / 15min / 0,2MPa	Unit	Typical value	Test method
Elongation under load	%	< 70	IEC 60811-507
Residual elongation	%	< 15	IEC 60811-507

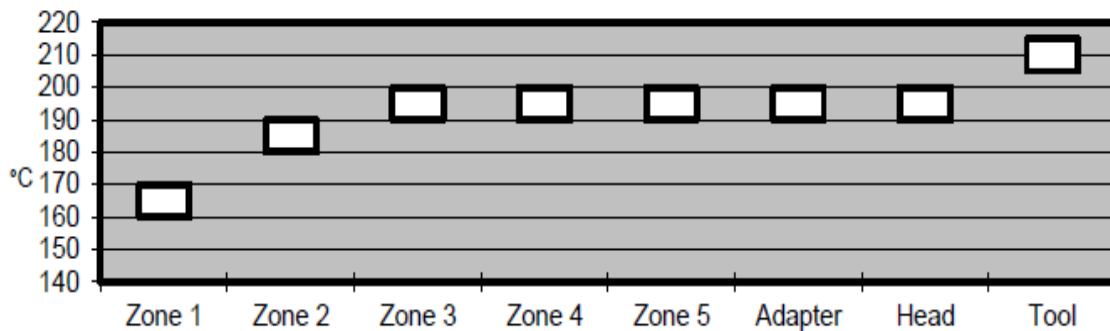
BURNING PROPERTIES *

■ Main burning properties	Unit	Typical value	Test method
LOI	%	27	ASTM D 2863 A

* pressed plaques
 ** extruded tapes
 *** cross-linked plaques / tapes

PROCESSING GUIDE

<ul style="list-style-type: none"> ■ Extruder Type ■ Screw configuration ■ Screw cooling ■ Tooling 	<p>Standard extruders for elastomeric or thermoplastic materials.</p> <p>Barrier type screw (BM) having high flights and a L/D-ratio > 24:1</p> <p>Not required</p> <p>For insulation pressure tools, for jacketing tube tools are recommended. Note: Pressure Tooling may have an effect on low temperature flexibility.</p>
<ul style="list-style-type: none"> ■ Extrusion dies 	<p>For pressure extrusion, normal (single angle) dies are recommended</p> <p>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.</p>
<ul style="list-style-type: none"> ■ Die opening 	<p>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.</p>
<ul style="list-style-type: none"> ■ Temperature profile extruder 	<p>The profile shown below may vary slightly depending on extruder type, head design & output.</p>



<ul style="list-style-type: none"> ■ Maximum mass temperature 	<p>230°C</p>
<ul style="list-style-type: none"> ■ Conductor pre-heating 	<p>Pre-heating between 100°C-140°C to achieve maximum properties of elongation at break of the insulation.</p> <p>Target: Ensure to achieve an elongation at break of > 600% after extrusion</p> <p>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.</p>
<ul style="list-style-type: none"> ■ Wire/conductor 	<p>Bare copper for thicker wall products is OK.</p> <p>Tin plated conductors for wall thicknesses < 0,40 mm (16 mill) to meet class D</p>

■ **Quenching**

Quenching in a hot water bath (60-80°C) is recommended to improve elongation at break, although good results have also been achieved without hot water cooling.

■ **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 INFORMSTION

■ **Recommended radiation dose**

75-100kGy

■ **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
Moisture-resistant bags (25kg) & octabins (alu-innerliner, max. 1250kg)

■ **Shelf life**

1 year after date of manufacturing

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