









Halogen-free, radiation cross-linkable, flame retardant compound

<p>■ Compound class Insulation</p>	<p>■ Compound category </p>	<p>■ Flame retardant ATH</p>
<p>■ Standards EN 50264-1 EI 105 and EI 110</p>	<p>■ Oil resistance level ★</p>	
<p>■ Operating temperature [C°] -40 to 125</p>		
<p>■ Typical applications <i>Radiation cross-linkable halogen-free, low smoke compound, offering excellent mechanical and electrical properties. The compound is made to meet EN 50264-1 EI 105 and EI 110 requirements.</i></p>		
		
<p>Rolling Stock, Rapid Transit, Railways</p>		
<p>■ Features</p>		
 Flame retardant	 Halogen-free	 Low smoke
 High temperature resistant	 Flexible	 Flexible at low temperatures

PHYSICAL PROPERTIES

■ Physical properties	Unit	Typical value	Test method
Density*	g/cm ³	1.50	DIN EN ISO 1183-1A
Hardness*	Shore D	49	DIN ISO 7619-1
Melt Flow Index (170°C; 21,6kg)	g/10 min	22	DIN EN ISO 1133

MECHANICAL PROPERTIES**

■ Thermoplastic / before crosslinking	Unit	Typical value	Test method
Tensile strength	N/mm ²	>10	IEC 60811-501
Elongation at break	%	>200	IEC 60811-501
■ After crosslinking ***	Unit	Typical value	Test method
Tensile strength (175kGy)	N/mm ²	14	IEC 60811-501
Elongation at break (175kGy)	%	220	IEC 60811-501
■ After ageing in air oven 240h at 120°C**/*	Unit	Typical value	Test method
Variation in tensile strength	%	<25	IEC 60811-401
Variation in elongation at break	%	<25	IEC 60811-401

THERMAL PROPERTIES***

■ Low temperature tests	Unit	Typical value	Test method
Low temp. flexibility winding on mandrel @ -40°C	-	No cracks	IEC 60811-506
Cold impact at -15°C	-	Pass	IEC 60811-506
Elongation at break at -40°C	%	>35	IEC 60811-505
■ Heat tests	Unit	Typical value	Test method
Penetration 4h at 140°C	%	<50	IEC 60811-508
Shrinkage test 1h at 120°C	%	<2	IEC 60811-502
■ Hot set test at 200°C / 15min / 0,2MPa	Unit	Typical value	Test method
Elongation under load	%	<50	IEC 60811-507
Residual elongation	%	< 10	IEC 60811-507

ELECTRICAL PROPERTIES*

■ Major electrical properties	Unit	Typical value	Test method
Electrical breakdown	-	No breakdown	EN 50264
Volume resistivity (at 23°C)	Ω cm	10¹⁴	IEC 60093
Volume resistivity (at 90°C)	Ω cm	> 10¹¹	IEC 60093

RESISTANCE***

■ Ozone resistance	Unit	Typical value	Test method
Method A 250ppm – 24h at 25°C		No cracks	EN 50305
Method B 200ppm – 72h at 40°C		No cracks	EN 50305

BURNING PROPERTIES*

■ Main burning properties	Unit	Typical value	Test method
LOI	%	32	ASTM D 2863 A
Halogen content	%	0	IEC 754-1
Temperature index	°C	250	ASTM D 2863 D
Toxicity index	-	2	EN 50305
■ Acid gas emission	Unit	Typical value	Test method
Corrosivity: pH (min.)	-	>4.5	IEC 60754-2
Conductivity (max.)	μS/mm	<4	EN 50267-2-2

* pressed plaques

** extruded tapes

*** cross-linked plaques or tapes

PROCESSING GUIDE

■ **Screw configuration**

Good results have been achieved with ‘halogen-free’ screws, and barrier type screws (BM) having high flights and a L/D-ratio > 24:1. Screws having low shear are recommended

■ **Screw cooling**

For increase of line speeds, cooling the screw to around 80°C could be effective, although this could lead to pulsation.

■ **Screen pack**

40-60-40 mesh

■ **Extrusion dies**

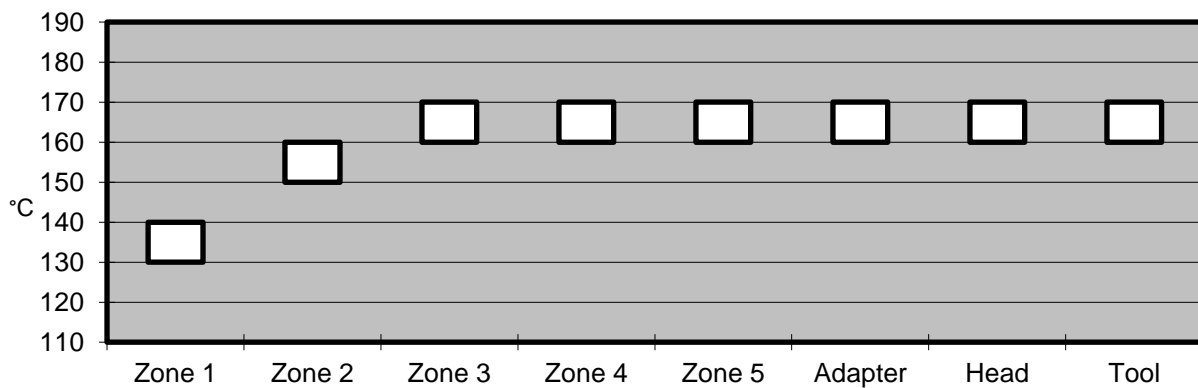
For pressure extrusion, normal dies are recommended. Use of semi-pressure tooling may improve low temperature flexibility properties

■ **Die opening**

Die opening should be 1 – 5% below the required OD of the wire.

■ **Temperature profile extruder**

The profile shown below may vary slightly depending on extruder type, head design & output.



■ **Maximum mass temperature**

170°C

■ **Wire/conductor**

Tin-plated. Concentric conductors are required for optimum abrasion resistance and low temperature flexibility.

■ **Drying**

Pre-drying of Mecoline Compounds is normally not necessary provided that the compound has been stored in the original sealed bags under cool (max. 30°C) and dry conditions. Mecoline compounds used from open bags require pre-drying during 4–6 hours at 60–70°C.

■ **Recommended colour master batches**

Well dispersed EVA master batch 0,5-1,0%. For black jacket applications, UV resistance can be obtained by adding a higher level of master batch depending on requirements and type of carbon black master batch used.

CROSSLINKING INFORMATION

<p>■ Recommended radiation dose</p>	<p>150-200 kGy</p>
<p>■ Radiation information</p>	<p>If the RDX 2264-1 is used as single layer only, we recommend to irradiate with approx. 175 kGy to achieve a hot-set-elongation (under load at 200°C and 20 N/cm²) of maximum 50%. Should the RDX 2264-1 be used as primary insulation in a (co-extruded) dual wall construction with RDX 2264-3 as secondary insulation (=sheath) it is suggested to crosslink this dual wall construction in one step only with approx. 150 kGy. In this way the RDX 2264-1 will be slightly under cross-linked and the RDX 2264-3 will be slightly over-crosslinked.</p>
<p>■ Dual wall constructions</p>	<p>In dual-wall constructions, where RDX 2264-1 is used as the primary insulation and the RDX 2264-3 as secondary insulation (to achieve Oil and fuel resistance), the adherence of the 2 insulation-layers is moderate, due to the difference in polarity of the 2 compounds.</p>

STORAGE INFORMATION

<p>■ Form & packaging</p>	<p>Pellets in sizes 2.8mm, PE-bags (25 kg), Octabins (1.000kg) Moisture-resistant bags (25kg) & octabins (alu-innerliner, max. 1250kg)</p>
<p>■ Shelf life</p>	<p>1 year after production</p>

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