


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

■ Compound class Insulation / sheathing	■ Compound category 	■ Flame retardant ATH
■ Standards EN 50264 EM 101, 102, 103 and 104	■ Oil resistance level ★★★★★	
■ Operating temperature [C°] -40 to 125		

■ Typical applications

It is an excellent choice for single core power cable for protected, fixed installation inside and outside railway vehicles for connecting fixed parts in direct current and alternating voltage technology, especially converter technology. The Mecoline IS RDX 1231 F compound is very low temperature resistant to -40°C and IRM 902 & IRM 903 oil resistant










Marine, Aerospace, Defence



Rolling Stock, Rapid Transit, Railways

■ Features

 Flame retardant	 Halogen-free	 Low smoke
 Oil resistant	 High temperature resistant	 Flexible
 Flexible at low temperatures		

PHYSICAL PROPERTIES

■ Physical properties	Unit	Typical value	Test method
Density*	g/cm ³	1.62	DIN EN ISO 1183-1A
Hardness*	Shore A	85	DIN ISO 48-4
Melt Flow Index (175°C; 21,6kg)	g/10 min	7.0	DIN EN ISO 1133

MECHANICAL PROPERTIES

■ Before crosslinking **	Unit	Typical value	Test method
Tensile strength	N/mm ²	>9.0	IEC 60811-501
Elongation at break	%	>200	IEC 60811-501
■ After crosslinking ***	Unit	Typical value	Test method
Tensile strength (75kGy)	N/mm ²	>12.0	IEC 60811-501
Elongation at break (75kGy)	%	>180	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 at -40°C	-	No cracks	IEC 60811-506
Elongation at break at -40°C	%	>35	IEC 60811-505
Elongation at break at -60°C	%	24	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	%	<40	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	≥10 ¹⁰	IEC 60093

RESISTANCE***

■ Fluid IRM 902 72h at 100°C	Unit	Typical value	Test method
Variation in tensile strength	%	<30	IEC 60811-404
Variation in elongation at break	%	<40	IEC 60811-404
■ Fluid IRM 903 168h at 70°C	Unit	Typical value	Test method
Variation in tensile strength	%	<30	IEC 60811-404
Variation in elongation at break	%	<40	IEC 60811-404
■ 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	%	40	ASTM D 2863 A
Halogen content	%	0	IEC 754-1
Burning test (vertical)	mm	<540	EN 60332-1-2
Temperature index	°C	300	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	<4.0	IEC 60754-2

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

PROCESSING GUIDE

■ **Extruder type**

Standard extruders for elastomeric or thermoplastic materials.

■ **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.

■ **Extrusion dies**

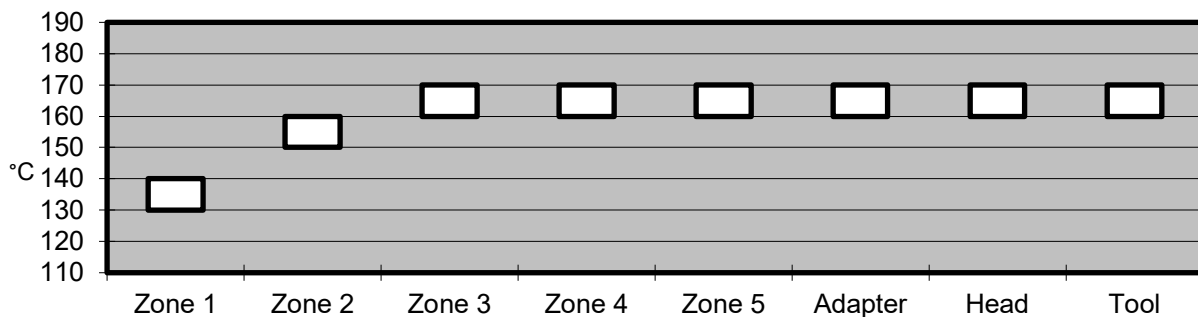
For pressure extrusion, normal dies are recommended.

■ **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

■ **Drying**

Pre-dry the compound 4 hrs at 60°C. Dry air, which has been dried by a desiccant air-dryer’ should be used.

■ **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

■ **Recommended radiation dose**

75-100 kGy

■ **Radiation information**

75 kGy is a good starting point. This can be optimized by customer for maximum result.

STORAGE INFORMATION

■ **Form & packaging**

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

■ **Shelf life**

1 year after production

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