

Compound RDX 2306-1

Halogenfree, oil-resistant radiation crosslinkable flame retardant compound for thin wall insulation of wire for railways, rapid transit and other rolling stock applications.

Compound properties

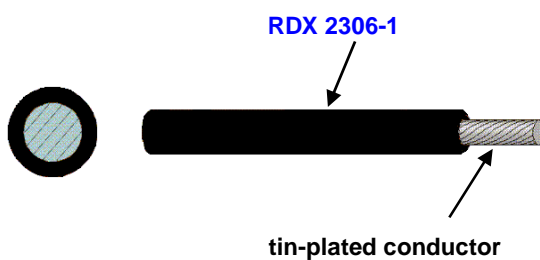
RDX 2306-1 is a radiation crosslinkable halogenfree, low smoke compound, offering excellent mechanical and electrical and good oil-resistant properties. This compound meets EN 50306 S2 requirements.

RDX 2306-1 is an excellent choice for compact wiring systems, where a reduced wall thickness results in space and weight savings. The **RDX 2306-1** possesses all properties to meet the electrical, mechanical and fire performance requirements according to EN 50306-1, -2, -3 and -4.

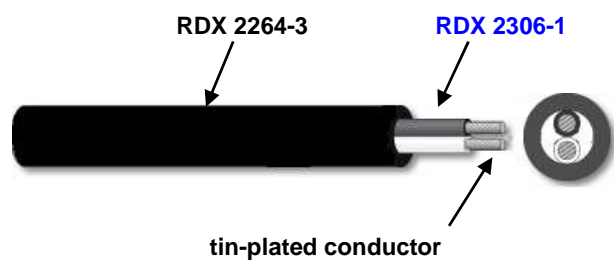
The halogenfree, highly oil-resistant RDX 2264-3 can be used as sheathing material in sheathed multicore cable constructions according to EN 50306-3 and -4, where **RDX 2306-1** is used as insulation.

Features

- For reduced wall and compact wiring systems
- Able to withstand temperatures of 280 C during a short-circuit overload period, without detrimental effect
- Flame-retarded acc. to EN 60332-2-1
- IRM 902 Oil resistant (24 hrs @ 100 C)
- Soldering iron resistant
- Shows good flexibility and is resistant against UV (*), ozone and hydrolysis
- Continuous operating temperature from – 40 C to + 125 C (20.000 hrs)



Single core wire



Sheathed multi core cable

Specifications : EN 50306 S2

Applications : Rolling stock, railways, rapid transit



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Properties (:after crosslinking with a dosis of 175 kGy (**))	Test Method	Typical value
<i>Physical properties</i>		
Specific gravity	ISO 1183	1.40 gr/cm ³
Hardness	ASTM D-2240	50 Shore D
Tensile at break	EN 60811-1-1	> 16 MPa
Elongation at break	EN 60811-1-1	> 150 %
<i>Thermal properties</i>		
Heat shock (4 hr, 175 C)	EN 60811-3-1	Pass
- Variation in Tensile strength		< 25%
- Variation in elongation at break		< 25%
Heat ageing (10 days at 120 C)		
-Variation in tensile strength	EN 60811-1-1	< 25 %
-Variation in elongation at break	EN 60811-1-1	< 25 %
Elongation at break @ - 40 Celsius		> 30%
Low temp flexibility (winding on mandrel) @ - 40 C	EN 60811-1-4	No cracking
Hot-set elongation (after radiation with 150 kGy)		
(200 C, 15 min, 20 N/cm ²) : - under load		< 60 %
- set (5 min @ 200 C)		< 10%
Hot pressure test (4hrs @ 140 C) : Penetration	EN 60811-3-1	< 50%
Shrinkage test 1hr @ 120 C		< 2%
Water absorption (168 hrs @ 70 C)	EN 50306-1	< 15 mg/cm ²
<i>Ozone resistance</i>		
Method A (250 ppm, 25 C, 24 hrs)	EN 50305	No cracks
Method B (200 ppm, 40 C, 72 hrs)	EN 50305	No cracks
<i>Fluid resistance</i>		
N Oxalic-acid & N Sodium-hydroxide (168 hr @ 23 C)		
- Elongation at break	EN 60811-2-1	> 100%
- Variation in Tensile strength	EN 60811-2-1	< 30%
IRM 902 oil (24 hrs @ 100 C)		
- Variation in tensile strength & elongation at break	EN 60811-2-1	< 30%

(*) : UV-resistant if > 2% Carbon black is added by addition of approx. 3 – 4% of a standard carbon black color masterbatch
 (**): 150 – 200 kGy: This needs to be optimized by customer for maximum result

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Properties (after crosslinking with 175 kGy (**))	Test Method	Typical value
Electrical properties Electrical breakdown	EN 50264	No breakdown
Burning properties Burning test (vertical)	EN 60332-2-1	Pass
Halogen content	IEC 754-1	0
Limited oxygen index	ASTM D-2863	32
Temperature index	NES 715	250
Corrosivity test : pH	EN 50267-2-2	> 4,5
Conductivity	EN 50267-2-2	< 4 uS/mm
Toxicity	EN 50305	2
Fire performance BS 6853 : Class Ia, Ib and class II for interior and exterior use DIN 5510 : Level of protection: 1,2,3 and NF F 16-101 : Classification C/FO; class A1, A2 and B for interior and exterior use		

(**): 150 – 200 kGy: This needs to be optimized by customer for maximum result

Extrusion guide	
Screw	Good results have been achieved with 'halogenfree' screws, and barrier type screws (BM) having high flights and a L/D-ratio > 24. 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. Die opening should be 1 – 5% below the required OD of the wire.
Temp. profile	Zone 1 to 4 : 140 - 160 - 180 - 200 Head : 210 Die : 210 (C)
Max. mass temp.	220 C
Wire pre-heating	Required to improve elongation at break. 100 – 140 C (to be optimized).
Quenching	Quenching in a hot water bath (80 C) will help to improve elongation at break.

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