

## Compound RDX 2125-IN-S

Radiation crosslinkable high performance halogenfree flame retardant compound for cable and wire insulation applications for 125 C continuous operating temperature

### Compound properties

RDX 2125-IN-S is a radiation crosslinkable halogenfree, low smoke compound, offering excellent mechanical and electrical properties. The combined flammability properties and the extrudability at high speeds makes this compound an ideal choice for the insulation of heat-resistant wires and cables for applications in railway systems, nuclear power stations, engine compartments and other area's.

#### Features

- Able to withstand temperatures of 280 C during a shortcircuit overload period, without detrimental effect
- Safer cable and wire constructions during overload conditions
- Shows a flexibility similar to EPR and is highly resistant against ozone, weathering and hydrolysis
- Easy to strip and therefore process-able on automatic stripping devices
- Continuous operating temperature from – 40 C to + 125 C
- It combines extremely thin wall insulation thickness and high current carrying capacity
- Soldering resistant
- Highly resistant to ozone, weathering, hydrolysis, oil, heat pressure and abrasion

#### Specifications

- UL 3173, 3182, 3195, 3196, 3265, 3266, 3271, 3272, 3290, 3296, 3298, 3343, 3344, 3351, 3352, 3406, 3435, 3496  
CSA AWM I A/B, CL 1252, CL 1251.
- Wire insulation with RDX 2125-IN-S can meet specifications set up by railway systems such as train, tram and underground, shipbuilding, power stations, chemical plants, control cabinets and panels, white goods, (public) building industry, magnetic valves, solenoids, motor leads, appliances and many more.

| Properties                          | Test Method | Typical value   |
|-------------------------------------|-------------|-----------------|
| <b>Physical properties</b>          |             |                 |
| Specific gravity                    | ISO 1183    | 1.41 gr/cm3     |
| Hardness                            | ASTM D-2240 | 49 Shore D      |
| Tensile strength                    | IEC 811-1-1 | 17 Mpa          |
| Elongation at break                 | IEC 811-1-1 | 350%            |
| Abrasion resistance                 |             | Excellent       |
| <b>Thermal properties</b>           |             |                 |
| Melt flow rate (160 C, 10 kg)       | ISO 1133    | 7               |
| Heat ageing ( 7 days, 158 C)        |             |                 |
| Variation in tensile strength       | IEC 811-1-1 | 10%             |
| Variation in elongation at break    | IEC 811-1-1 | - 2%            |
| <b>Electrical properties</b>        |             |                 |
| Dielectric constant (50 Hz, 20 C)   | ASTM D 150  | 5               |
| Dissipation factor (50 HZ, 20 C)    | ASTM D 150  | 0.025           |
| Volume resistivity                  | ASTM D 257  | 4x 10@12 ohm.cm |
| Dielectric strength                 | ASTM D 149  | 25 kV/mm        |
| Dielectric test (1.5 kV ; 1 minute) | UL          | Pass            |
| <b>Burning properties</b>           |             |                 |
| Halogen content                     | IEC 754-1   | 0%              |
| Limited oxygen index                | ASTM D 2863 | 32%             |
| Temperature index                   | NES 715     | 225 C           |
| Corrosivity test : pH               | IEC 754-2   | 4.5             |
| : conductivity                      | IEC 754-2   | 2 uS/mm         |
| Toxicity index                      | NES 713     | 2               |

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| Properties  | Test Method    | Typical value |
|---|----------------|---------------|
| <b>Resistance against fluids and weathering</b>                 |                |               |
| Solvents  |                | Fair          |
| Mineral oil   |                | Fair          |
| Acid and bases  |                | Good          |
| Hydrolysis  |                | Good          |
| Oil   |                | Good          |
| Ozone   |                | Good          |
| Weathering  |                | Good          |
| <b>Crosslinking</b>   |                |               |
| Dose (e-beam radiation)   |                | 100 – 150 kGy |
| Hot-set-elongation : - 200 C and a load of 20 N/cm <sup>2</sup> | EN 60811-2-1/8 | 20%           |
| : - Set (after removal of load)                                 | EN 60811-2-1/8 | 10%           |

| Extrusion guide |   |
|-----------------|---|
| Screw           | Good results have been achieved with 'halogenfree' screws, with PVC screws and barrier type screws (BM) having high flights and a L/D-ratio > 24  |
| Screw cooling   | For high line speeds, cooling the screw to around 80 C could be effective, although this could lead to pulsation.   |
| Screen pack     | Not required  |
| Extrusion dies  | For pressure extrusion, normal dies are recommended.<br>Die opening should be 1 – 5% below the required OD of the wire.   |
| Temp. profile   | Zone 1 to 4 : 140 - 160 - 180 - 180      Head : 180      Die : 180      (C)   |
| Max. mass temp. | 180 C   |
| Conditioning    | Pre-dry at 50 C during 3 hrs  |
| Wire/conductor  | Tin-plated  |
| General         | After extrusion it should be possible to achieve an elongation at break of > 500%. By using wire pre-heating and or quenching in hot-water in the first cooling compartment, this may be optimized. |

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