Technical data sheet

# Mecoline I RDX 5210 F

## Radiation cross-linkable, flame retardant insulation compound.

| ■ Compound class | ■ Compound category | ■ Flame retardant |
|---|---|---|
| Insulation | RDX | Halogenated |

**■ Standards**

| | | |
|---|---|---|
| Chrysler MS 9502A; MS 9502B | LV 112 Class C | ISO 6722 Class C |
| SAE J-1128 TXL, GXL and SXL | LV 112 Class D | ISO 6722 Class D |
| Ford ES-AU5T-1A348-AA | | |

**■ Typical applications**

*A high performance radiation cross-linkable compound, offering excellent mechanical and electrical properties*

Automotive

General Applications

**■ Features**

- Flame retardant
- High temperature resistant
- Oil resistant
- Low smoke
- 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 | **54** | DIN ISO 7619-1 |
| Melt Flow Index (190°C; 21,6kg) | g/10 min | **0,6** | DIN EN ISO 1133 |
| Abrasion* | mm | **1900** | MS 9502B |

## MECHANICAL PROPERTIES

# Mecoline I RDX 5210 F

| ■ Before cross-linking ** | Unit | Typical value | Test method |
|---|---|---|---|
| Tensile strength | N/mm² | > 10 | IEC 811-1-1 |
| Elongation at break | % | > 600 | IEC 811-1-1 |
| ■ After cross-linking *** | Unit | Typical value | Test method |
| Tensile strength (120kGy) | N/mm² | 20 | IEC 811-1-1 |
| Elongation at break (120kGy) | % | 250 | IEC 811-1-1 |
| Tear strength (120kGy) | Lbs/inch | 400 | MS 9502B |
| ■ After ageing in air oven 240h at 180°C *** | Unit | Typical value | Test method |
| Variation in tensile strength | % | 5 | MS 9502B |
| ■ After ageing in air oven 3000h at 150°C *** | Unit | Typical value | Test method |
| Variation in tensile strength | % | 15 | MS 9502B |

## Resistance ***

| ■ Engine oil (ASTM D471, IRM 902) 20h at 50°C | Unit | Typical value | Test method |
|---|---|---|---|
| O.D. Change | % | 1 | SAE J 1128 |
| ■ Gasoline (ASTM D471 Ref Fuel C) 20h at 23°C | Unit | Typical value | Test method |
| O.D. Change | % | 2 | SAE J 1128 |
| ■ Brake fluid (SAE-J-1703) 20h at 50°C | Unit | Typical value | Test method |
| O.D. Change | % | 2 | SAE J 1128 |
| ■ Ethanol (85% Ethanol, 15% ASTM D471) 20h at 23°C | Unit | Typical value | Test method |
| O.D. Change | % | 2 | SAE J 1128 |
| ■ Diesel Fuel (90% IRM 903 + 10% p-Xylene) 20h at 23°C | Unit | Typical value | Test method |
| O.D. Change | % | 2 | SAE J 1128 |
| ■ Power steering (ASTM D 471, IRM 903) 20h at 50°C | Unit | Typical value | Test method |
| O.D. Change | % | 1 | SAE J 1128 |
| ■ Auto transmission (Citgo # 33123) 20h at 50°C | Unit | Typical value | Test method |
| O.D. Change | % | 3 | SAE J 1128 |
| ■ Engine Coolant (50% Glycol + 50% water) 20h at 50°C | Unit | Typical value | Test method |
| O.D. Change | % | 1 | SAE J 1128 |
| ■ Battery acid (H2SO4, spec. Grav. 1.260) 20h at 23°C | Unit | Typical value | Test method |
| O.D. Change | % | 1 | SAE J 1128 |

## BURNING PROPERTIES *

| ■ Main burning properties | Unit | Typical value | Test method |
|---|---|---|---|
| 45 degree flame resistance test | Seconds | 5 | MS 9502 B |

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

# Mecoline I RDX 5210 F

## PROCESSING GUIDE

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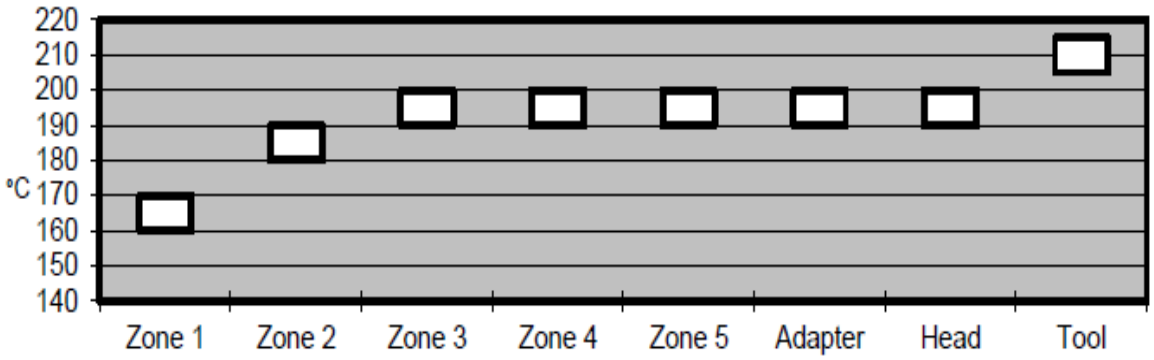
|---|---|
| ■ **Extruder Type** | Standard extruders for elastomeric or thermoplastic materials. |
| ■ **Screw configuration** | Barrier type screw (BM) having high flights and a L/D-ratio > 24:1 |
| ■ **Screw cooling** | Not required |
| ■ **Tooling** | For insulation pressure tools, for jacketing tube tools are recommended. Note: Pressure Tooling may have an effect on low temperature flexibility. |
| ■ **Extrusion dies** | For pressure extrusion, normal (single angle) dies are recommended 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. |
| ■ **Die opening** | 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. |
| ■ **Temperature profile extruder** | The profile shown below may vary slightly depending on extruder type, head design & output. |




| | |
|---|---|
| ■ **Maximum mass temperature** | 230°C |
| ■ **Conductor pre-heating** | Pre-heating between 100°C-140°C to achieve maximum properties of elongation at break of the insulation.<br>Target: Ensure to achieve an elongation at break of > 600% after extrusion<br>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. |
| ■ **Wire/conductor** | Bare copper for thicker wall products is OK.<br>Tin plated conductors for wall thicknesses < 0,40 mm ( 16 mill ) to meet class D |
| ■ **Drying** | Not necessary if the compound has been stored in original packing under cool (max. 30°C) and dry conditions. Mecoline compounds used from open packing require pre-drying during 4–6 hours at 60–70°C. |

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| ■ **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

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|---|---|
| ■ **Recommended radiation dose** | 120 kGy |
| ■ **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

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| ■ **Form & packaging** | Pellets in sizes 2.8mm & 5.5mm<br>Moisture-resistant bags (25kg) & octabins (alu-innerliner, max. 1250kg) |
| ■ **Shelf life** | 1 year after date of manufacturing |