Technical data sheet

# Mecoline IS TP 1002 F

Halogen-free, thermoplastic, flame retardant insulation and sheathing compound for low and medium voltage cables.

| ■ Compound class | ■ Compound category | ■ Flame retardant |
|---|---|---|
| Insulation / sheathing | TP | ATH |

**■ Standards**

| | | |
|---|---|---|
| BS 6724 | BS 7655 section 6.1 LTS 2 | DIN EN 50525-3-11 TI 6, TM 7 |
| DIN EN 50363-7 TI 6, TI7 | DIN EN 50363-8 TM7 | IEC 60092- 360 SHF 1 |
| VDE 0207 part 24 HM2, HM4 | VDE 0250 part 215 HM5 | VDE 0276 part 604 HM 4 |

| ■ Operating temperature [C°] | ■ Oil resistance level |
|---|---|
| -30 to 90 | ★★ |

**■ Typical applications**

*Halogen-free, low smoke, thermoplastic, flame retardant compound for the sheathing and insulation of low and medium voltage cables in General Installation applications.*

Installation

Shipboard

Telecomm., Optical Fibre, Coaxial

**■ Features**

Flame retardant

Halogen-free

Low smoke

## PHYSICAL PROPERTIES

| ■ Physical properties | Unit | Typical value | Test method |
|---|---|---|---|
| Density* | g/cm$^3$ | **1.58** | DIN EN ISO 1183-1A |
| Hardness* | Shore D | **55** | DIN ISO 48-4 |
| Mooney viscosity, ML (1+4) 150°C | MU | **38** | DIN ISO 289-1 |
| Melt Flow Index (150°C; 21,6kg) | g/10 min | **7.0** | DIN EN ISO 1133 |

## THERMAL PROPERTIES **

| ■ Heat tests | Unit | Typical value | Test method |
|---|---|---|---|
| Hot pressure test: penetration 6h at 80°C | % | **1** | IEC 60811-508 |
| Hot pressure test: penetration 6h at 90°C | % | **8** | IEC 60811-508 |

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## ELECTRICAL PROPERTIES *

| ■ Major electrical properties | Unit | Typical value | Test method |
|---|---|---|---|
| Volume resistivity at 23°C / 500V | Ω cm | **1.5 x $10^{12}$** | DIN IEC 60093 |
| Voltage resistance at 50 Hz / 23°C | kV/mm | **20.4** | IEC 60243-1 |
| Dielectric constant at 23 °C/3 V/100 Hz | [ ] | **4.76** | IEC 60250 (1969) |
| Dielectric constant at 23 °C/3 V/1 MHz | [ ] | **3.99** | IEC 60250 (1969) |

## MECHANICAL PROPERTIES **

| ■ Thermoplastic | Unit | Typical value | Test method |
|---|---|---|---|
| Tensile strength | N/mm² | **11.0** | IEC 60811-501 |
| Elongation at break | % | **186** | IEC 60811-501 |
| **■ After ageing in air oven 240h at 100°C** | **Unit** | **Typical value** | **Test method** |
| Variation in tensile strength | % | **+5.5** | IEC 60811-401 |
| Variation in elongation at break | % | **-2.7** | IEC 60811-401 |
| **■ After ageing in air oven 240h at 120°C** | **Unit** | **Typical value** | **Test method** |
| Variation in tensile strength | % | **+13.8** | IEC 60811-401 |
| Variation in elongation at break | % | **-5.6** | IEC 60811-401 |
| **■ After ageing in air oven 168h at 110°C** | **Unit** | **Typical value** | **Test method** |
| Variation in tensile strength | % | **-10.0** | IEC 60811-401 |
| Variation in elongation at break | % | **-3.8** | IEC 60811-401 |
| **■ After ageing in air oven 168h at 136°C** | **Unit** | **Typical value** | **Test method** |
| Variation in tensile strength | % | **+6.5** | IEC 60811-401 |
| Variation in elongation at break | % | **-10.1** | IEC 60811-401 |

## RESISTANCE **

| ■ Fluid IRM 902 6h at 70°C | Unit | Typical value | Test method |
|---|---|---|---|
| Variation in tensile strength | % | **-33.6** | IEC 60811-404 |
| Variation in elongation at break | % | **-11.3** | IEC 60811-404 |
| **■ Fluid IRM 902 20h at 50°C** | **Unit** | **Typical value** | **Test method** |
| Variation in tensile strength | % | **-9.8** | IEC 60811-404 |
| Variation in elongation at break | % | **-0.5** | IEC 60811-404 |
| Variation in weight | % | **6.0** | IEC 60811-404 |
| **■ Fluid IRM 902 72h at 50°C** | **Unit** | **Typical value** | **Test method** |
| Variation in tensile strength | % | **-25.5** | IEC 60811-404 |
| Variation in elongation at break | % | **-18.6** | IEC 60811-404 |
| Variation in weight | % | **10.7** | IEC 60811-404 |

## BURNING PROPERTIES *

| ■ Main burning properties | Unit | Typical value | Test method |
|---|---|---|---|
| LOI | % | **37** | ASTM D 2863 A |
| Temperature index | °C | **295** | NES 715 |

* pressed plaques, 155°C / 5 min.
** extruded tapes

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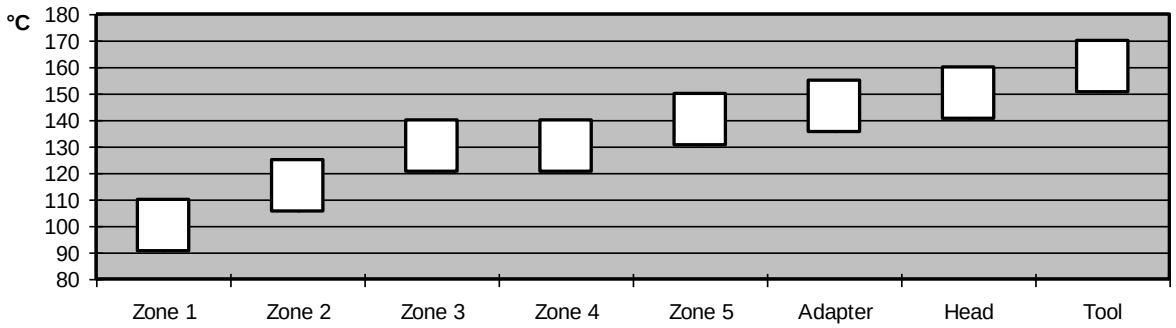
## PROCESSING GUIDE

| | |
|---|---|
| ■ **Extruder Type** | Standard extruders for elastomeric or thermoplastic processing. |
| ■ **Screw configuration** | Low compression screw with L/D of 20 to 25 and compression ratio of 1:1.2 |
| ■ **Tooling** | For insulation pressure tools, for jacketing tube tools are recommended. Note: Pressure Tooling may have an effect on low temperature flexibility. |
| ■ **Temperature profile extruder** | The profile shown below may vary slightly depending on extruder type, head design & output. |




| | |
|---|---|
| ■ **Maximum mass temperature** | 160 – 170°C |
| ■ **Conductor pre-heating** | Pre-heating between 100°C-140°C to achieve maximum properties of elongation at break of the insulation. |
| ■ **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. |

## STORAGE INFORMATION

| | |
|---|---|
| ■ **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 |



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