

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

<b>■ Compound class</b> Sheathing	<b>■ Compound category</b> <span style="background-color: #2e7d32; color: white; padding: 2px 5px;">TP</span>	<b>■ Flame retardant</b> MDH
<b>■ Standards</b> DIN EN 50363-8 TM7 IEC 60092-360 SHF 1 UL 1277 Oil Res I	DIN VDE 0276-604 HM4 VDE 0207 part 24 HM2, HM4 UL 1277 Oil Res II	DIN VDE 0281 part 14 TM7 VDE 0250 part 215 HM5 IEC 60502-1 ST8
<b>■ Operating temperature [°C]</b> -75 to 105	<b>■ Oil resistance level</b> ★★★★★	

**■ Typical applications**

Halogen-free, low smoke, thermoplastic, highly oil and extra fuel resistant, flame retardant compound for the sheathing of low and medium voltage cables for moving applications. (e. g. Green Energy/Shipboard)



Shipboard



Green Energy

**■ Features**



Flame retardant



Halogen-free



Low smoke



Flexible



Flexible at low temperatures



Oil resistant

## PHYSICAL PROPERTIES

■ Physical properties	Unit	Typical value	Test method
Density*	g/cm <sup>3</sup>	<b>1.60</b>	DIN EN ISO 1183-1A
Hardness*	Shore A	<b>88</b>	DIN ISO 7619-1
Mooney viscosity, ML (1+4) 160°C	MU	<b>71</b>	DIN ISO 289-1
■ Water absorption **	Unit	Typical value	Test method
Water absorption after 24h at 90°C	mg/cm <sup>2</sup>	<b>0.99</b>	DIN EN 60811-402
Water absorption after 240h at 70°C	mg/cm <sup>2</sup>	<b>0.97</b>	DIN EN 60811-402

## MECHANICAL PROPERTIES

■ Thermoplastic	Unit	Typical value	Test method
Tensile strength **	N/mm <sup>2</sup>	<b>15,0</b>	IEC 60811-501
Elongation at break **	%	<b>200</b>	IEC 60811-501
Pulley flexing test	Cycles	<b>&gt;30.000</b>	EN 50 396 cl. 6.2

■ After ageing in air oven 168h at 136°C **	Unit	Typical value	Test method
Variation in tensile strength	%	<b>-11.3</b>	IEC 60811-401
Variation in elongation at break	%	<b>-15.5</b>	IEC 60811-401

## THERMAL PROPERTIES \*\*

■ Low temperature tests	Unit	Typical value	Test method
Cold bend test at -40°C	-	<b>No cracks</b>	IEC 60811-504
Brittleness temperature	°C	<b>-75</b>	ASTM D 746
Elongation at break @ -40°C	%	<b>37</b>	DIN EN ISO 527
Elongation at break @ -50°C	%	<b>24</b>	DIN EN ISO 527
■ Heat tests	Unit	Typical value	Test method
Hot pressure test: penetration 6h at 90°C	%	<b>14</b>	IEC 60811-508
Hot pressure test: penetration 6h at 100°C	%	<b>16</b>	IEC 60811-508
Hot pressure test: penetration 6h at 120°C	%	<b>21</b>	IEC 60811-508
Heat shock 1h at 150°C	%	<b>Pass</b>	IEC 60811-509

## RESISTANCE \*\*

■ Fluid IRM 902 168h at 100°C	Unit	Typical value	Test method
Variation in tensile strength	%	<b>-3.3</b>	IEC 60811-404
Variation in elongation at break	%	<b>-16.8</b>	IEC 60811-404
Variation in weight	%	<b>+9.0</b>	IEC 60811-404
■ Fluid IRM 902 100h at 150°C	Unit	Typical value	Test method
Variation in tensile strength	%	<b>-26.0</b>	IEC 60811-404
Variation in elongation at break	%	<b>+5.0</b>	IEC 60811-404
Variation in weight	%	<b>+17.0</b>	IEC 60811-404
■ Fluid IRM 902 1440h at 80°C	Unit	Typical value	Test method
Variation in tensile strength	%	<b>-6.7</b>	IEC 60811-404
Variation in elongation at break	%	<b>-15.5</b>	IEC 60811-404
Variation in weight	%	<b>7.0</b>	IEC 60811-404
■ Fluid IRM 903 168h at 70°C	Unit	Typical value	Test method
Variation in tensile strength	%	<b>-10.0</b>	IEC 60811-404
Variation in elongation at break	%	<b>-23.6</b>	IEC 60811-404
Variation in weight	%	<b>+12.0</b>	IEC 60811-404
■ Diesel 24h at 23°C	Unit	Typical value	Test method
Variation in tensile strength	%	<b>-11.3</b>	IEC 60811-404
Variation in elongation at break	%	<b>-14.5</b>	IEC 60811-404
Variation in weight	%	<b>+5.0</b>	IEC 60811-404
■ Diesel 24h at 100°C	Unit	Typical value	Test method
Variation in tensile strength	%	<b>-31.3</b>	IEC 60811-404
Variation in elongation at break	%	<b>-15.5</b>	IEC 60811-404
Variation in weight	%	<b>+18.0</b>	IEC 60811-404

■ Diesel 168h at 70°C	Unit	Typical value	Test method
Variation in tensile strength	%	<b>-13.3</b>	IEC 60811-404
Variation in elongation at break	%	<b>-26.5</b>	IEC 60811-404
Variation in weight	%	<b>+15.0</b>	IEC 60811-404
■ Ozone resistance	Unit	Typical value	Test method
Method A (250 ppm, 24h, 25°C)	%	<b>no cracks</b>	EN 50396

## BURNING PROPERTIES \*

■ Main burning properties	Unit	Typical value	Test method
LOI	%	<b>40</b>	ASTM D 2863 A
Amount of halogen acid gas	mg/g	<b>&lt;5</b>	IEC 60754-1
Toxicity index	-	<b>4.57</b>	EN 50305
■ Acid gas emission	Unit	Typical value	Test method
Corrosivity: pH (min.)	-	<b>6.45</b>	IEC 60754-2
Conductivity (max.)	µS/mm	<b>0.72</b>	IEC 60754-2

\* pressed plaques, 165°C / 5 min.

\*\* extruded tapes

## PROCESSING GUIDE

■ **Extruder Type**

Standard extruders for elastomeric or thermoplastic processing.

■ **Screw configuration**

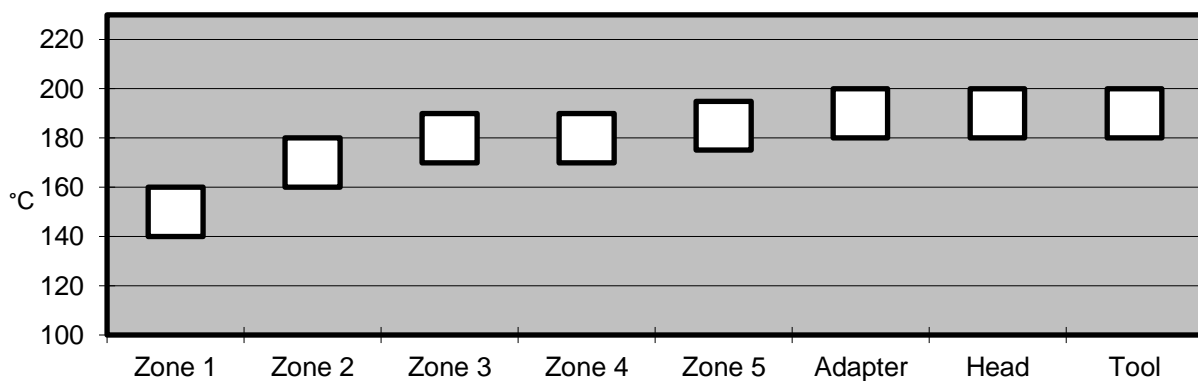
Low compression screw with L/D of 20 to 25 and compression ratio of 1:1.2

■ **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**

200 – 210°C

■ **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  
Moisture-resistant bags (25kg) & octabins (alu-innerliner, max. 1250kg)

■ **Shelf life**

1 year after date of manufacturing

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