



TABOCAB TPG 003

Thermoplastic halogen-free flame retardant compound for cable insulation and sheathing

Description

TABOCAB TPG 003 is a thermoplastic polyolefin-based halogen-free flame retardant (HFFR) compound with high humidity resistance for operating temperature 90°C and voltage rating up to 1 kV. The compound exhibits self-extinguishing properties with significantly reduced toxic and corrosive gas emission, which make the compound suitable for all applications where the fire behaviour and safety of the cable is the main concern.

Typical application

Primarily used for insulation and sheathing power, control and signal cables in construction of J-H(St)H, LiHH, H05Z1Z1. The properties of this compound comply with the requirements of: **VDE 0207/24 HJ2, EN 50363-7 T16, T17**; IEC 60092-359 SHF1; IEC 60502-1 ST 8; EN 50363-8 TM7; VDE 0207/24 HM2, HM4.



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	Typical properties	Test method	Unit	Nominal value
Physical properties	Density	ISO 1183-1A	g/cm ³	1,51
	Melt Flow Index (150 °C/21,6 kg)	ISO 1133	g/10 min	8,5
	Shore hardness	ISO 868	Shore D	50
	Water absorption (90 °C, 24 hr)	EN 60811-402	mg/cm ²	< 2,0
Mechanical properties	Tensile strength at break	EN 60811-501	MPa	12,5
	Tensile elongation at break	EN 60811-501	%	> 270
	<i>Mechanical properties after ageing in air oven (90 °C, 336 hr)</i>			
	Change in tensile strength	EN 60811-401	%	+3
	Change in tensile elongation	EN 60811-401	%	-7
	Cold bend test (-15 °C)	EN 60811-504	-	no cracks
	Hot pressure test - max. penetration (80 °C)	EN 60811-508	%	< 15
Electrical properties	Hot air shrinkage (100 °C, 1 hr)	EN 60811-509	%	< 1,5
	Volume resistivity (20 °C, 500 V)	IEC 60502-1	Ω x cm	3,82 x 10 ¹⁴
	Volume resistivity (70 °C, 500 V)	IEC 60502-1	Ω x cm	9,9 x 10 ¹²
	Insulation resistance constant (20 °C, 50 Hz)	IEC 60502-1	MΩ x km	16700
Chemical resistance	Insulation resistance constant (90 °C, 50 Hz)	IEC 60502-1	MΩ x km	250
	<i>IRM 902 Oil immersion test (23 °C, 24 hr)</i>			
	Change in tensile strength	EN 60811-404	%	-8
	Change in tensile elongation	EN 60811-404	%	-17
	<i>IRM 902 Oil immersion test (70 °C, 4 hr)</i>			
	Change in tensile strength	EN 60811-404	%	-12
Flammability & Corrosivity	Change in tensile elongation	EN 60811-404	%	-15
	Oxygen index	ASTM D2863	%	37
	Caloric potential (upper gross)	ISO 1716	MJ/kg	18
	<i>Corrosive gas in smoke</i>			
	Conductivity	EN 60754-2	μS/mm	< 0,50
Flammability & Corrosivity	pH	EN 60754-2	-	> 7,0
	Halogenidric acid emissions	EN 60754-1	%	< 0,10

Notes* The above values are typical for this material, not standardized.

Processing Guidelines

Drying:

TABOCAB TPG 003 does not need to be additionally dried, in case the storage conditions have been fulfilled. Original packages shall be opened just before use. If the material was stored cold, it should be sufficiently conditioned in order to avoid moisture condensation on pellets, which may cause issues with the processability of the material.

Additional level:

Coloring: EVA and PE-based masterbatches added at 0,5 - 1,5 % by weight. Higher dosages of color masterbatches may negatively influence the final physical properties such as volume resistivity.

Machine requirements:

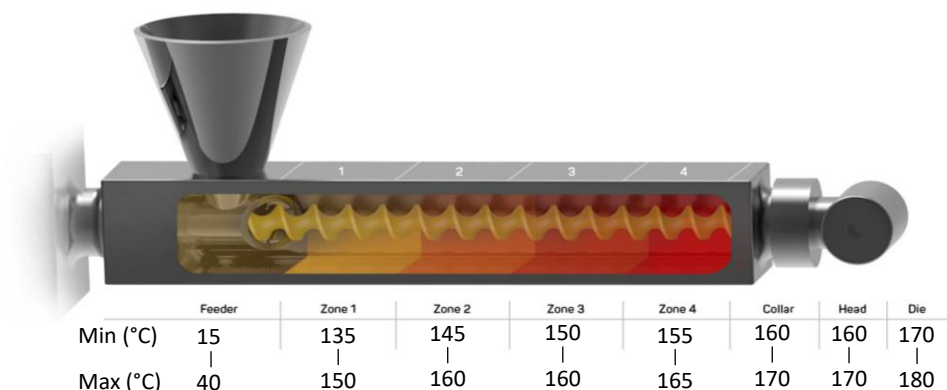
TABOCAB TPG 003 is easy to process on standard extruders for thermoplastics equipment with a low-compression screw. Adequate barrel thermoregulation is suggested. Screw cooling is not required. The following extrusion setups are recommended:

- Minimal extrusion speed: 15 - 25 RPM
- Using cartridge with the high volume output
- Breaker plate: not required, if so, to improve the melt flow
- Filter - sieve in extrusion head: not required, if yes 40 - 80 holes/cm²
- Semi-compression or tube tools with short polishing surface of the die
- For Semi-compression tools: \varnothing of the die has to be same as the \varnothing of the final cable
- For tube tools: Ratio between \varnothing of die and final cable has to be lower than 1,5:1

Screw:

preferable compression: 1,12-1,5 : 1 or 2,5-3 : 1 (Standard HFFR or PVC screw)
screw length: 20-25 L/D

Temperature profile:



Storage and handling

TABOCAB TPG 003 shall be stored under the following conditions:

- Sealed undamaged bags
- Ambient temperature not exceeding 30 °C
- Exposure to direct sunlight must be avoided
- Shelf life: 9 months from the production date printed on the packaging
- Material should be used directly after opening the packaging

Packaging

Boxes of 600 kg or 1 000 kg



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