Grivory® HTM-4H1

Technical DataSheet | Supplied by EMS-Grivory (EMS Group)

Grivory® HTM-4H1 is a polyphthalamide (PPA) grade reinforced with 40% mineral fiber. Is based on a semi-crystalline, partially aromatic co-polyamide. Shows almost isotropic properties and outstanding strength when compared to other mineral filled materials. Exhibits good dimensional stability, low warpage, good surface quality, UV resistance and heat resistance. Provides parts which are stiffer, stronger and have better heat distortion stability and chemical resistance at high temperatures. Is suitable for processing by injection molding. Used in automotive applications like fuel systems, powertrain & chassis, interior & exterior, in housewares & consumer goods like hydraulics & pneumatics, electrical & electronic, power transmission, sports & leisure and engineering tools. Complies with REACH, RoHS and WEEE.

Product Type	PA (Polyamide, Nylon) > PPA Polyamide 6 (Nylon 6) other Copolymer [PA 6 (Nylon 6), other Copolymer] > > Polyamide 6T + Polyamide 6 [PA 6T + PA 6]
Physical Form	Granules
Product Status	COMMERCIAL
Geographical Availability	Africa, Asia / Pacific, Central and Eastern Europe, Middle East and Central Asia, North America, South and Central America, Western Europe
Applications/ Recommended for	Automotive > Structural - Chassis component Electrical markets Electronics / Computers Engineering / manufacturing > Tools & equipments Households products/ Consumer Goods Renewable energy equipment > Hydraulic Sports & Leisures Automotive >> Fuel systems Injection molding - thermoplastics
Labels/Agency Rating	REACH Compliant RoHS (2011/65/EU) Compliant WEEE (2002/96/EC) Compliant
Key Features	Chemical resistance, Good Crystalline, Semi Density, Low Dimensional stability, Good Heat Resistance, High Filled, Mineral Stiffness, Good Strength, Good Surface Finish, Good Aromatic

Grivory® HTM-4H1 Properties

Mechanical	Value & Unit	Test Condition	Test Method
Impact Strength, Notched Charpy	5 kJ/m²	23°C	ISO 179/1eA 2
Tensile Modulus	7500 MPa	1 mm/min	ISO 527-2
Hardness, Ball Indentation	260 MPa		ISO 2039-1
Impact Strength, Notched Charpy	3 kJ/m²	-30°C	ISO 179/1eA 2
Impact Strength, Charpy	50 kJ/m²	23°C	ISO 179/1eU
Impact Strength, Charpy	20 kJ/m²	-30°C	ISO 179/1eU
Tensile Strength at Break	105 MPa	At 5 mm/min	ISO 527-2
Elongation at Break	1.5 %	At 5 mm/min	ISO 527-2

Thermal	Value & Unit	Test Condition	Test Method
Melting Point	325 °C	10°C/min	ISO 11357-3
Deflection Temperature at 8 MPa	255 °C		ISO 75-2/B
CTE, Linear, Parallel to Flow	0.5×10^{-4} 1/K	23-55°C	ISO 11359-2
CTE, Linear, Transverse to Flow	0.5×10^{-4} 1/K	23-55°C	ISO 11359-2
Deflection Temperature at 8 MPa	115 °C		ISO 75-2 2
Maximum Service Temperature, Air	140 °C	Long term	ISO 2578

Decomposition Temperature	> 350 °C		
Maximum Service Temperature, Air	250 °C	Short term	ISO 2578
Heat Deflection Temperature (HDT), Unannealed	145 °C	At 264 psi (1.80 MPa)	ISO 75-2/A

Physical	Value & Unit	Test Condition	Test Method
Water Absorption at Saturation	3.5 %	23°C, 24 hr	ISO 62
Linear Mold Shrinkage, Flow	0.70 %		ISO 294-4, 2577
Humidity Absorption	1.5 %	23°C, 50% R.H.	ISO 62
Density	1.55 g/cm³		ISO 1183
Linear Mold Shrinkage, Transverse	0.85 %		ISO 294-4, 2577

Electrical	Value & Unit	Test Condition	Test Method
Volume Resistivity	10^{11} ohm-m		IEC 60093
Surface Resistivity	10^{12} ohm	Conditioned	IEC 60093
Dielectric Strength	32 kV/mm		IEC 60243-1
Comparative Tracking Index (CTI)	575 V	Conditioned	IEC 60112

Flammability	Value & Unit	Test Condition	Test Method
Flame Rating, UL 94	HB	0.8 mm	

Grivory® HTM-4H1 Processing Guidelines

Injection Molding	Value & Unit	Test Condition	Test Method
Drying Temperature	< 80 °C		
Dew Point of the Dryer	-40 °C		
Drying Time	4 - 12 hr		
Vacuum Oven Temperature	< 100 °C		
Suggested Max Moisture	0.10 %		
Vacuum Oven Time	4 - 12 hr		
Vent Depth	0.02 mm		
Screw Length	18 - 22 D		
Nozzle Temperature	330 - 340 °C		
Screw Compression ratio	2 - 2.5		
Processing (Melt) Temp	340 °C		
Vent Width	2 - 5 mm		
Holding Pressure	200 - 750 bar		

Flange Temperature	80 - 100 °C
Zone 1 Temperature	330 - 340 °C
Zone 2 Temperature	330 - 345 °C
Zone 3 Temperature	330 - 345 °C
Tool Temperature	140 °C
Dynamic Pressure	50 - 100 bar
Screw Speed	5 - 15 m/min

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