Grilamid TRV-4X9
PAMACM12-GF40 EMS-GRIVORY | a unit of EMS-CHEMIE AG

Product Texts

Product designation according to ISO 1874:
PA MCM 12, MH, 12-090, GF40

Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	**9000 / 9000**	MPa	ISO 527-1/-2
Stress at break	**140 / 130**	MPa	ISO 527-1/-2
Strain at break	**2 / 2**	%	ISO 527-1/-2
Charpy impact strength (+23°C)	**- / 45**	kJ/m²	ISO 179/1eU
Charpy impact strength (-30°C)	**- / 45**	kJ/m²	ISO 179/1eU
Charpy notched impact strength (+23°C)	**- / 14**	kJ/m²	ISO 179/1eA
Charpy notched impact strength (-30°C)	**- / 13**	kJ/m²	ISO 179/1eA

Mechanical properties (TPE)	dry / cond	Unit	Test Standard
Ball indentation hardness	**- / 160**	MPa	ISO 2039-1

Thermal properties	dry / cond	Unit	Test Standard
Glass transition temperature (10°C/min)	**155 / -**	°C	ISO 11357-1/-2
Temp. of deflection under load (1.80 MPa)	**125 / -**	°C	ISO 75-1/-2
Temp. of deflection under load (0.45 MPa)	**135 / -**	°C	ISO 75-1/-2
Coeff. of linear therm. expansion (parallel)	**20 / -**	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion (normal)	**80 / -**	E-6/K	ISO 11359-1/-2
Burning Behav. at thickness h	**HB / -**	class	IEC 60695-11-10
Thickness tested	**0.8 / -**	mm	IEC 60695-11-10
Max. usage temperature (long term)	**80 - 110**	°C	ISO 2578
Max. usage temperature (short term)	**125**	°C	EMS

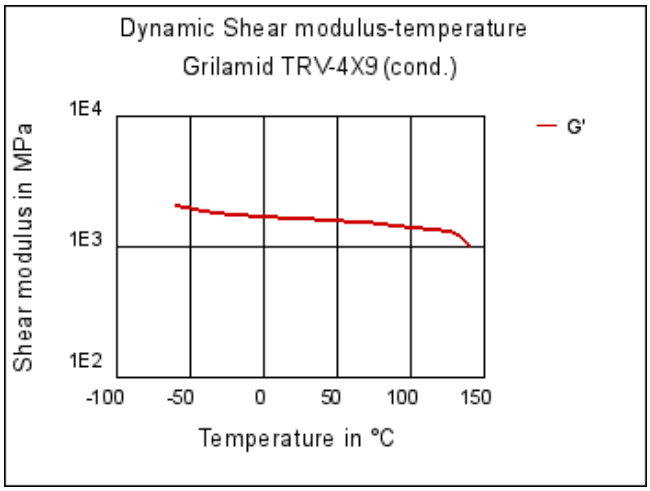
Electrical properties	dry / cond	Unit	Test Standard
Volume resistivity	**- / 1E11**	Ohm*m	IEC 60093
Surface resistivity	**- / 1E12**	Ohm	IEC 60093
Electric strength	**- / 27**	kV/mm	IEC 60243-1
Comparative tracking index	**- / 600**	-	IEC 60112

Other properties	dry / cond	Unit	Test Standard
Water absorption	**1.5 / -**	%	Sim. to ISO 62
Humidity absorption	**0.8 / -**	%	Sim. to ISO 62
Density	**1320 / -**	kg/m³	ISO 1183

Rheo/Phys properties	dry / cond	Unit	Test Standard
Molding shrinkage (parallel)	**0.1 / -**	%	ISO 294-4, 2577
Molding shrinkage (normal)	**0.4 / -**	%	ISO 294-4, 2577

Diagrams

Dynamic Shear modulus-temperature



Characteristics

Processing

Injection Molding

Delivery form

Granules

Regional Availability

North America, Europe, Asia Pacific, South and Central America, Near East/Africa

Automotive

Automotive electr. and electronics, lighting, Cooling and climate control, Powertrain and Chassis

Electricals & Electronics

Electrical appliances, Electrical equipment, Energy distribution, Mobile phones and other portable devices

Industry & Consumer goods

Heating systems, Housewares, Hydraulics & Pneumatics, Mechanical Engineering, Medical devices, Power transmission, Tools & Accessories

Potable Water Contact

NSF 61

Chemical Media Resistance

Acids

- Acetic Acid (5% by mass) (23°C)
- Citric Acid solution (10% by mass) (23°C)
- Lactic Acid (10% by mass) (23°C)
- Hydrochloric Acid (36% by mass) (23°C)
- Nitric Acid (40% by mass) (23°C)
- Sulfuric Acid (38% by mass) (23°C)
- Sulfuric Acid (5% by mass) (23°C)
- Chromic Acid solution (40% by mass) (23°C)

Bases

- Sodium Hydroxide solution (35% by mass) (23°C)
- Sodium Hydroxide solution (1% by mass) (23°C)
- Ammonium Hydroxide solution (10% by mass) (23°C)

Alcohols

- ⛔ Isopropyl alcohol (23°C)
- ⛔ Methanol (23°C)
- ⛔ Ethanol (23°C)

Hydrocarbons

- 🙂 n-Hexane (23°C)
- 🙂 Toluene (23°C)
- 🙂 iso-Octane (23°C)

Ketones

- ⛔ Acetone (23°C)

Ethers

- 🙂 Diethyl ether (23°C)

Mineral oils

- 🙂 SAE 10W40 multigrade motor oil (23°C)
- 🙂 SAE 10W40 multigrade motor oil (130°C)
- 🙂 SAE 80/90 hypoid-gear oil (130°C)
- 🙂 Insulating Oil (23°C)

Standard Fuels

- 🙂 ISO 1817 Liquid 1 (60°C)
- 🙂 ISO 1817 Liquid 2 (60°C)
- 🙂 ISO 1817 Liquid 3 (60°C)
- 🙂 ISO 1817 Liquid 4 (60°C)
- 🙂 Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23°C)
- 🙂 Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23°C)
- 🙂 Diesel fuel (pref. ISO 1817 Liquid F) (23°C)
- 🙂 Diesel fuel (pref. ISO 1817 Liquid F) (90°C)
- 🙂 Diesel fuel (pref. ISO 1817 Liquid F) (>90°C)

Salt solutions

- 🙂 Sodium Chloride solution (10% by mass) (23°C)
- ⛔ Sodium Hypochlorite solution (10% by mass) (23°C)
- 🙂 Sodium Carbonate solution (20% by mass) (23°C)
- 🙂 Sodium Carbonate solution (2% by mass) (23°C)
- 🙂 Zinc Chloride solution (50% by mass) (23°C)

Other

- 🙂 Ethyl Acetate (23°C)
- 🙂 Hydrogen peroxide (23°C)
- ⛔ DOT No. 4 Brake fluid (130°C)
- 🙂 Ethylene Glycol (50% by mass) in water (108°C)
- 🙂 1% nonylphenoxy-polyethyleneoxy ethanol in water (23°C)
- 🙂 50% Oleic acid + 50% Olive Oil (23°C)
- 🙂 Water (23°C)

- Deionized water (90°C)
- Phenol solution (5% by mass) (23°C)