

Test Standard

Grilamid TR 90 PAMACM12

EMS-GRIVORY | a unit of EMS-CHEMIE AG

Product Texts

Product designation according to ISO 1874:

PA MACM12, GT,14-020

Mechanical properties (TPE)

Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	1600 / 1600	MPa	ISO 527-1/-2
Yield stress	60 / 60	MPa	ISO 527-1/-2
Yield strain	6 / 6	%	ISO 527-1/-2
Nominal strain at break	>50 / >50	%	ISO 527-1/-2
Charpy impact strength (+23°C)	N / N	kJ/m²	ISO 179/1eU
Charpy impact strength (-30°C)	N / N	kJ/m²	ISO 179/1eU
Charpy notched impact strength (+23°C)	9 / 13	kJ/m²	ISO 179/1eA
Charpy notched impact strength (-30°C)	9 / 12	kJ/m²	ISO 179/1eA

dry / cond

Ball indentation hardness	- / 90	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)	115 / -	°C	ISO 75-1/-2
Temp. of deflection under load (0.45 MPa)	135 / -	°C	ISO 75-1/-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 - 100	°C	EMS
Max. usage temperature (short term)	120	°C	EMS

Floatrical properties	dw./oond	Heit	Toot Ctondovd
Electrical properties	dry / cond	Unit	Test Standard
Volume resistivity	- / 1E11	Ohm*m	IEC 60093
Surface resistivity	- / 1E12	Ohm	IEC 60093
Electric strength	- / 34	kV/mm	IEC 60243-1
Comparative tracking index	- / 600	_	IFC 60112

Other properties	dry / cond	Unit	Test Standard
Water absorption	3 / -	%	Sim. to ISO 62
Humidity absorption	1.5 / -	%	Sim. to ISO 62
Density	1000 / -	kg/m³	ISO 1183

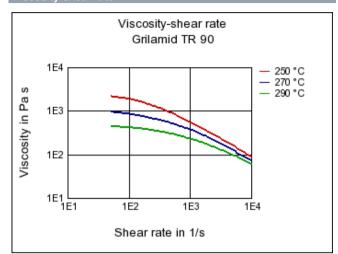
Rheo/Phys properties	dry / cond	Unit	Test Standard
Molding shrinkage (parallel)	0.7 / -	%	ISO 294-4, 2577
Molding shrinkage (normal)	0.8 / -	%	ISO 294-4, 2577

Diagrams

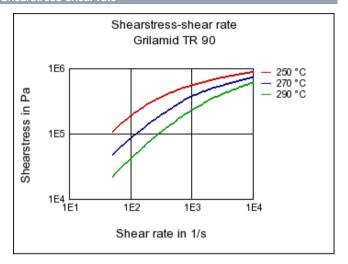
Source: www.materialdatacenter.com - Last update: 2011-12-20

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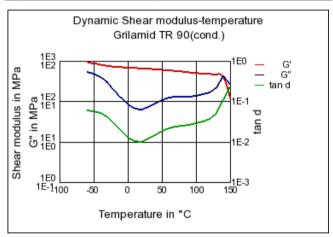
Viscosity-shear rate



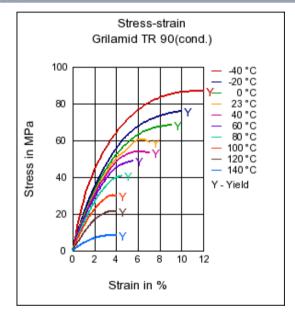
Shearstress-shear rate



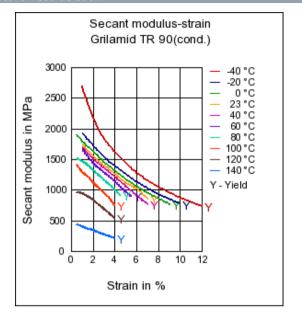
Dynamic Shear modulus-temperature



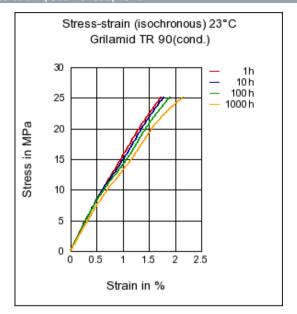
Stress-strain



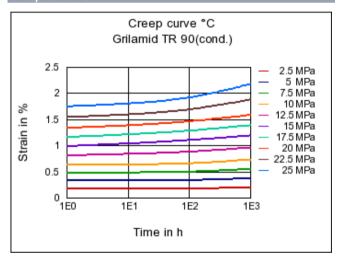
Secant modulus-strain



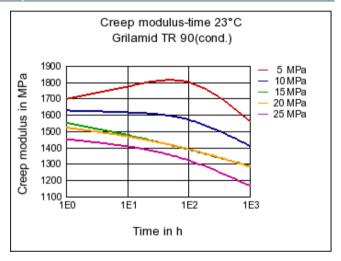
Stress-strain (isochronous) 23°C



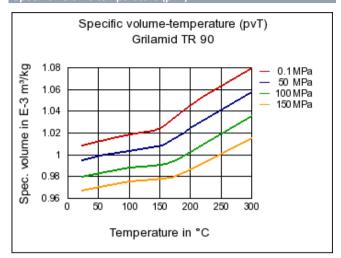
Creep curve °C



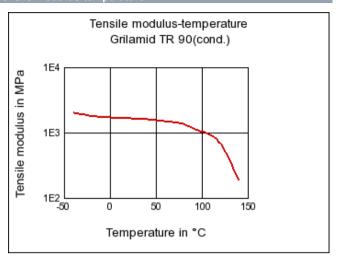
Creep modulus-time 23°C



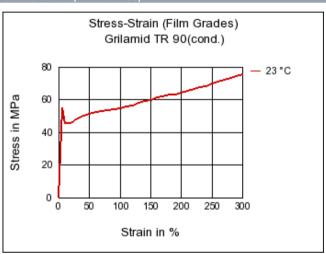
Specific volume-temperature (pvT)



Tensile modulus-temperature



Stress-Strain (Film Grades)



Characteristics

Processing

Injection Molding, Other Extrusion

Delivery form

Pellets

Special Characteristics

Transparent

Regional Availability

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

Industry & Consumer goods

Heating systems, Housewares, Hydraulics & Pneumatics, Mechanical Engineering, Medical devices, Power transmission, Sanitary, water and gas supply, Sports & Leisure, Tools & Accessories

Optics

Lenses, Optical components, Safety glasses, Sunglasses, Spectacle frames

Packaging

Non oriented film, Cosmetics / Personal care, Medical packaging

Food Contact

EU Requirements, FDA

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Automotive

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

Electricals & Electronics

Electrical appliances, Electrical equipment, Connectors, Lighting, Mobile phones and other portable devices

Medical

USP VI, FDA

Water contact

NSF 61, KTW, WRAS, DVGW W270

Chemical Media Resistance

Acids

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

Bases

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

Alcohols

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

Hydrocarbons

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

Ketones

Acetone (23°C)

Ethers

Diethyl ether (23°C)

Mineral oils

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

Standard Fuels

U Diesel fuel (pref. ISO 1817 Liquid F) (23°C)

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

Salt solutions

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

Other

- 1% nonylphenoxy-polyethyleneoxy ethanol in water (23°C)
- € 50% Oleic acid + 50% Olive Oil (23°C)
- DOT No. 4 Brake fluid (130°C)
- Deionized water (90°C)
- ethyl Acetate (23°C)
- Ethylene Glycol (50% by mass) in water (108°C)
- Hydrogen peroxide (23°C)
- Phenol solution (5% by mass) (23°C)
- Water (23°C)