

Grilamid TR 55 PA12/MACMI

EMS-GRIVORY | a unit of EMS-CHEMIE AG

Product Texts

Product designation according to ISO 1874:

PA 12/MACMI, GT, 11-020

| Mechanical properties | dry / cond | Unit | Test Standard |
|--|-------------|-------|---------------|
| Tensile Modulus | 2200 / 2200 | MPa | ISO 527-1/-2 |
| Yield stress | 75 / 75 | MPa | ISO 527-1/-2 |
| Yield strain | 7/9 | % | 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) | 7/8 | kJ/m² | ISO 179/1eA |
| Charpy notched impact strength (-30°C) | 7/7 | kJ/m² | ISO 179/1eA |

| Mechanical properties (TPE) | dry / cond | Unit | Test Standard |
|-----------------------------|------------|------|---------------|
| Ball indentation hardness | - / 120 | MPa | ISO 2039-1 |

| Thermal properties | dry / cond | Unit | Test Standard |
|--|------------|-------|-----------------|
| Glass transition temperature (10°C/min) | 160 / - | °C | ISO 11357-1/-2 |
| Temp. of deflection under load (1.80 MPa) | 130 / - | °C | ISO 75-1/-2 |
| Temp. of deflection under load (0.45 MPa) | 145 / - | °C | ISO 75-1/-2 |
| Coeff. of linear therm. expansion (parallel) | 80 / - | 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 - 100 | °C | ISO 2578 |
| Max. usage temperature (short term) | 120 | С° | EMS |

| Electrical properties | dry / cond | Unit | Test Standard |
|----------------------------|------------|-------|---------------|
| Volume resistivity | - / 1E11 | Ohm*m | IEC 60093 |
| Surface resistivity | - / 1E12 | Ohm | IEC 60093 |
| Electric strength | - / 31 | kV/mm | IEC 60243-1 |
| Comparative tracking index | - / 600 | - | IEC 60112 |

| Other properties | dry / cond | Unit | Test Standard |
|---------------------|------------|-------|----------------|
| Water absorption | 3.5 / - | % | Sim. to ISO 62 |
| Humidity absorption | 1.5 / - | % | Sim. to ISO 62 |
| Density | 1060 / - | kg/m³ | ISO 1183 |

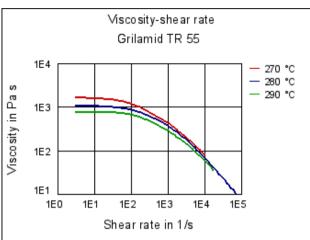
| Rheo/Phys properties | dry / cond | Unit | Test Standard |
|------------------------------|------------|------|-----------------|
| Molding shrinkage (parallel) | 0.6 / - | % | ISO 294-4, 2577 |
| Molding shrinkage (normal) | 0.7 / - | % | ISO 294-4, 2577 |

Diagrams

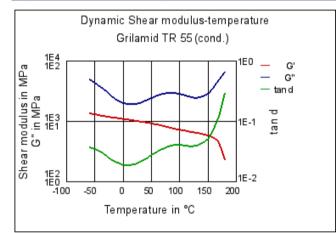
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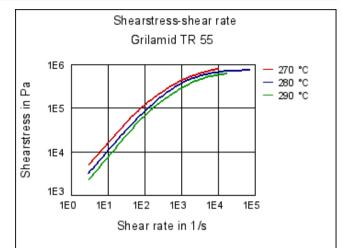
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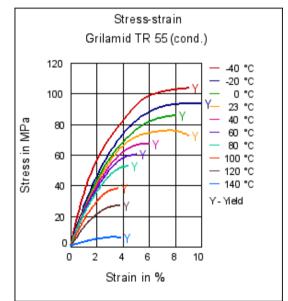
Dynamic Shear modulus-temperature



Shearstress-shear rate







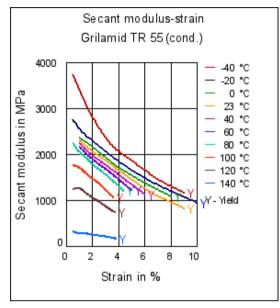
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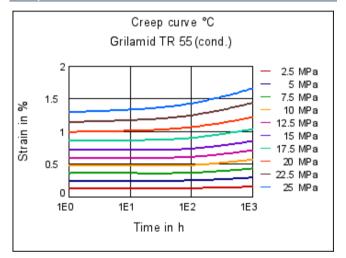
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Viscosity-shear rate

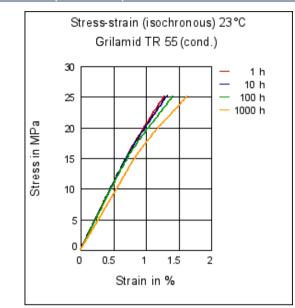




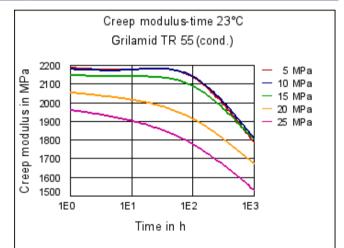
Creep curve °C



Stress-strain (isochronous) 23°C





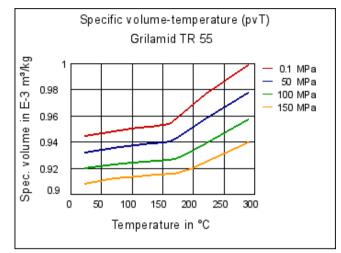


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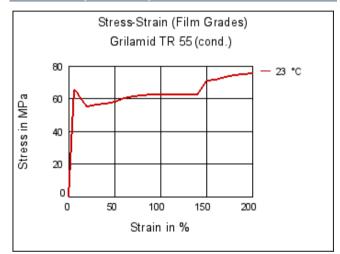
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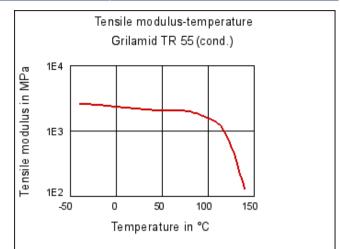
Specific volume-temperature (pvT)



Stress-Strain (Film Grades)



Tensile modulus-temperature



Characteristics

| Processing | Optics |
|---|---|
| Injection Molding, Other Extrusion | Lenses, Optical components |
| Delivery form | Packaging |
| Granules | Non oriented film, Cosmetics / Personal care, Medical packaging |
| Special Characteristics | Burning Behaviour |
| Transparent | UL V2 |
| Regional Availability | Food Contact |
| North America, Europe, Asia Pacific, South and Central America, Near East/Africa | EU Requirements, FDA |
| | Biocompatibility |
| | USP VI, ISO 10993 |

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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, Cables & Tubes, Energy distribution, Lighting, Mobile phones and other portable devices

Industry & Consumer goods

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

Chemical Media Resistance

Acids

- Citric Acid solution (10% by mass) (23°C)
- United 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)
- Unite 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)
- U 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)
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Potable Water Contact

NSF 61, KTW, WRAS, DVGW W270

- USAE 10W40 multigrade motor oil (130°C)
- U 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)
- 90°C) ISO 1817 Liquid 3
- ISO 1817 Liquid 4 (60°C)
- Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23°C)
- United Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23°C)
- Uiesel fuel (pref. ISO 1817 Liquid F) (23°C)
- Uiesel fuel (pref. ISO 1817 Liquid F) (90°C)
- Uiesel fuel (pref. ISO 1817 Liquid F) (>90°C)

Salt solutions

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

Other

- Ethyl Acetate (23°C)
- UNIC 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)

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