

**Grilamid TR 90 LS**  
 PAMACM12

EMS-GRIVORY | a unit of EMS-CHEMIE AG

**Product Texts**

Product designation according to ISO 1874:

PA MACM12, GTR,14-020

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

| Mechanical properties (TPE) | dry / cond    | Unit | Test Standard |
|-----------------------------|---------------|------|---------------|
| Ball indentation hardness   | <b>- / 90</b> | MPa  | ISO 2039-1    |

| Thermal properties                           | dry / cond      | Unit  | Test Standard   |
|--|-----------------|-------|-----------------|
| Glass transition temperature (10°C/min)      | <b>155 / -</b>  | °C    | ISO 11357-1/-2  |
| Temp. of deflection under load (1.80 MPa)    | <b>115 / -</b>  | °C    | ISO 75-1/-2     |
| Temp. of deflection under load (0.45 MPa)    | <b>135 / -</b>  | °C    | ISO 75-1/-2     |
| Coeff. of linear therm. expansion (parallel) | <b>90 / -</b>   | E-6/K | ISO 11359-1/-2  |
| Coeff. of linear therm. expansion (normal)   | <b>90 / -</b>   | E-6/K | ISO 11359-1/-2  |
| Burning Behav. at thickness h                | <b>HB / -</b>   | class | IEC 60695-11-10 |
| Thickness tested                             | <b>0.8 / -</b>  | mm    | IEC 60695-11-10 |
| Max. usage temperature (long term)           | <b>80 - 100</b> | °C    | ISO 2578        |
| Max. usage temperature (short term)          | <b>120</b>      | °C    | EMS             |

| Electrical properties      | dry / cond      | Unit  | Test Standard |
|----------------------------|-----------------|-------|---------------|
| Volume resistivity         | <b>- / 1E11</b> | Ohm*m | IEC 60093     |
| Surface resistivity        | <b>- / 1E12</b> | Ohm   | IEC 60093     |
| Electric strength          | <b>- / 34</b>   | kV/mm | IEC 60243-1   |
| Comparative tracking index | <b>- / 600</b>  | -     | IEC 60112     |

| Other properties    | dry / cond      | Unit              | Test Standard  |
|---------------------|-----------------|-------------------|----------------|
| Water absorption    | <b>3 / -</b>    | %                 | Sim. to ISO 62 |
| Humidity absorption | <b>1.5 / -</b>  | %                 | Sim. to ISO 62 |
| Density             | <b>1000 / -</b> | kg/m <sup>3</sup> | ISO 1183       |

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

**Characteristics**
**Processing**

Injection Molding

**Delivery form**

Granules

**Electricals & Electronics**

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

**Industry & Consumer goods**

Housewares, Hydraulics &amp; Pneumatics, Mechanical Engineering, Power transmission, Sanitary, water and gas supply, Sports &amp;



**Special Characteristics**

Transparent

**Regional Availability**

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

**Automotive**

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

Leisure, Tools & Accessories

**Food Contact**

EU Requirements, FDA

**Potable Water Contact**

NSF 61, KTW, WRAS, DVGW W270

