**Physical properties (indicative values *)**

**PROPERTIES** | **Test methods** | **Units** | **VALUES**
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Density | ISO 1183-1 | g/cm³ | 1.2
Water absorption: | - after 24 h immersion in water of 23 °C (1) | ISO 62 | %
| - at saturation in water of 23 °C | - | % | 0.4
Thermal Properties (2) | | | |
Melting temperature (DSC, 10 °C/min) | ISO 11357-1/3 | °C | 150
Glass transition temperature (DSC, 20 °C/min) - (3) | ISO 11357-1/2 | °C | 0.21
Thermal conductivity at 25 °C | W/(m.K) | | 0.09
Coefficient of linear thermal expansion: | - average value between 23 and 100 °C | m/(m.K) | 65 x 10-6
| - average value between 23 and 150 °C | - | m/(m.K) | 
| - average value above 150 °C | - | | 
Temperature of deflection under load: | - method A: 1.8 MPa | ISO 75-1/2 | °C | 130
Max. allowable service temperature in air: | | | |
| - continuously | | | °C | 120
| - Min. service temperature | | | °C | 50
Flammability (6): | - according to UL 94 (3 thickness) | | | HB
Mechanical Properties at 23 °C (7) | | | |
Tensile test (8): | - tensile strength (9) | ISO 527-1/-2 | MPa | 74
| | - tensile strain at yield(9) | ISO 527-1/-2 | % | 6
| | - tensile strain at break (9) | ISO 527-1/-2 | % | 50
| | - tensile modulus of elasticity (10) | ISO 527-1/-2 | MPa | 2400
 Compression test (11): | - compressive stress at 1 / 2 / 5 % nominal strain (10) | ISO 604 | kN/mm² | 22 / 40 / 80
Charpy impact strength - notched (12) | ISO 179-1/4 | kJ/m² | 9
Charpy impact strength - unnotched (13) | ISO 179-1/TU | kJ/m² | no break
Rockwell M hardness (14) | ISO 2039 | 75
Dynamic Coefficient of Friction (r): | ISO 7146-2 (15) | | 0.5-0.6
Wear rate | ISO 7146-2 (15) | µm/km | 60
Electrical Properties at 23 °C | | | |
Electric strength (16) | IEC 60243-1 | kV/mm | 28
Volume resistivity | IEC 60093 | Ohm.cm | >109 x 14
Surface resistivity | ANSI/ESD STM 11.1 | Ohm/cm² | >106 x 10²
Relative permittivity ε1: | - at 1 MHz | | | 2.5
Dielectric dissipation factor tan δ: - at 1 MHz | IEC 60265 | | 0.008

**Certifications on biocompatibility type testing**

USP Class VI; ISO 10993-4 (hemocompatibility); ISO 10993-5 (cytotoxicity); ISO 10993-10 (intra-cutsaneous reactivity & sensitisation); ISO 10993-11 (acute systemic toxicity).

Legend:
1) According to method 1 of ISO 62 and done on discs Ø 50 mm x 3 mm.
2) The figures given for these properties are for the most part derived from raw material supplier data and other publications.
3) Values for this property are only given here for amorphous materials and for materials that do not show a melting temperature (PBI, PAI, Pli).
4) Temperature resistance over a period of min. 20,000 hours. After this period of time, there is a decrease in tensile strength – measured at 25 °C – of about 50 % as compared with the original value. The temperature value given here is thus based on the thermal-oxidative degradation which takes place and causes a reduction in properties. Note, however, that the maximum allowable service temperature depends in many cases essentially on the duration and the magnitude of the mechanical stresses to which the material is subjected.
5) Impact strength decreasing with decreasing temperature, the minimum allowable service temperature is practically mainly determined by the extent to which the material is subjected to unloading/unfavourable impact conditions and may consequently not be considered as being applicable to practical limits.
6) These estimated ratings, derived from raw material supplier data and other publications, are not intended to reflect hazards presented by the material under actual fire conditions. There is no 'UL File Number available' for these stock shapes.
7) Most of the figures given for these mechanical properties of the materials are average values. Tests run on dry test specimens machined either out of plate 15-20 mm thick and not 40-50mm, the test specimens were then taken from the stock shape with their length in longitudinal direction (parallel to the extrusion direction).

8) Test specimens: Type 1.8
9) Test speed: either 5 or 50 mm/min [chosen acc. to ISO 10350-1] as a function of the ductile behaviour of the material (tough or brittle)
10) Test speed: 1 mm/min.
11) Test specimens: cylinders Ø 8 mm x 16 mm
12) Test specimens: bars 4 mm [thickness] x 10 mm x 80 mm; test speed: 2 mm/min ; span: 64 mm
13) Pendulum used: 4 J.
14) Measured on 10 mm thick test specimens.
15) Test procedure similar to Test Method A: “Pin-on-disc” as described in ISO 7149-2, load 3MPa, sliding velocity= 0.33 m/s, mating steel plate Ra = 0.7-0.9 μm, tested at 23°C, 50%RH.
16) Electric configuration: Ø 25 mm / Ø 75 mm coaxial cylinders ; in transformer oil according to IEC 60266 ; 1 mm thick test specimens.

This table is a valuable help in the choice of a material. The data listed here within the range of product properties of PEEK material, however, they are not guaranteed and they should not be used to establish material specification limits nor used alone as the basis of design.

It has to be noted that reinforced and filled material shows an anisotropic behaviour (properties differ when measured parallel and perpendicular to the manufacturing direction).

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**Poly carbonate**

LSG PC natural stock shapes are produced from selected batches of a specific non-UV-stabilized polycarbonate resin. This polymer shows a combination of good mechanical, thermal and electrical properties combined with a good chemical resistance. The composition of the resin used for production of PC LSG natural stock shapes complies with the regulations that apply in the Member States of the European Union (Directive 2002/72/EC, as amended) and in the United States of America (FDA) for plastic materials and articles intended to come into contact with foodstuffs. PC LSG natural stock shapes have been successfully tested and meet the requirements applicable to the specific use of the finished product. The customer undertakes all liability in respect of the application, processing or use of the aforementioned information or product, or any consequence thereof, and shall verify its quality and other properties.