PETG DATA SHEET

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Mechanical Properties (Injection Molded), ATSM Method

Properties	Test Method	Typical Value
Specific Gravity	D 792	1.27
Water Absorption, 24h immersion	D 570	0.13%
Tensile Stress @ Break	D 638	28 MPa (4100 psi)
Tensile Stress @ Yield	D 638	50 MPa (7300 psi)
Elongation @ Break	D 638	130%
Tensile Modulus	D 638	2100 MPa (3.0 x 105 psi)
Flexural Modulus	D 790	2100 MPa (3.0 x 10^5 psi)
Flexural Yield Strength	D 790	70 MPa (10200 psi)
Rockwell Hardness, R Scale	D 785	106
Izod Impact Strength, Notched @ 23°C (73°F) @ -40°C (-40°F)	 D 256 D 256	 101 J/m (1.9 ft·lbf/in.) 37 J/m (0.7 ft·lbf/in.)
Impact Strength, Unnotched @ 23°C (73°F) @ -20°C (-4°F) @ -30°C (-22°F) @ -40°C (-40°F)	 D 4812 D 4812 D 4812 D 4812	 NB NB NB NB
Impact Resistance (Puncture), Energy @ Max. Load 2.5-mm (0.100-in.) Thick Plaques, @ 23°C (73°F) 2.5-mm (0.100-in.) Thick Plaques, @ -40°C (-40°F) 3.2-mm (0.125-in.) Thick Plaques @ 23°C (73°F)	D 3763 D 3763 D 3763 D 3763	 28 J (21 ft·lbf) 41 J (30 ft·lbf) 33 J (24 ft·lbf)

3.2-mm (0.125-in.) Thick Plaques @ -40°C (40°F)		50 J (37 ft·lbf)

Mechanical Properties (Injection Molded), ISO Method

Properties	Test Method	Typical Value
Density	ISO 1183, Method D	1.27 g/cm3
Water Absorption, 24h immersion	ISO 62	0.13%
Tensile Stress @ Break	ISO 527	28 MPa
Tensile Stress @ Yield	ISO 527	50 MPa
Elongation @ Break	ISO 527	100%
Tensile Modulus	ISO 527	2100 MPa
Flexural Modulus	ISO 178	2000 MPa
Flexural Yield Strength	ISO 178	68 MPa
Rockwell Hardness, R Scale	ISO 2039-2	109
Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch @ 23°C @ -40°C	 ISO 180 ISO 180	 6.2 kJ/m2 4.2 kJ/m2
Impact Strength, Unnotched, Type 1 Specimen [a] @ 23°C (73°F) @ -20°C (-4°F) @ -30°C (-22°F) @ -40°C (-40°F)	 ISO 180 ISO 180 ISO 180 ISO 180	 NB kJ/m2 NB kJ/m2 NB kJ/m2 NB kJ/m2
Impact Resistance (Puncture), Energy @ Max. Load [b] 2.5-mm (0.100-in.) Thick Plaques, @ 23°C (73°F) 2.5-mm (0.100-in.) Thick Plaques, @ -40°C (-40°F) 3.2-mm (0.125-in.) Thick Plaques @ 23°C (73°F) 3.2-mm (0.125-in.) Thick Plaques @ -40°C (40°F)	 ISO 6603-2 ISO 6603-2 ISO 6603-2 ISO 6603-2	 40 J 35 J 44 J 36 J

Thermal Properties

Properties	Test Method	Typical Value
Deflection Temperature @ 0.455 MPa (66 psi) @ 1.82 MPa (264 psi)	 D 648 D 648	 70°C (158°F) 64°C (147°F)
Vicat Softening Temperature	D 1525	85°C (185°F)
Thermal Conductivity	C 177	0.21 W/m·K (1.5 Btu·in./h·ft2·°F)
Glass Transition Temperature (Tg)	DSC	80°C (176°F)
Specific Heat @ 60°C (140°F) @ 100°C (212°F) @ 150°C (302°F) @ 200°C (392°F) @ 250°C (482°F)	 DSC DSC DSC DSC DSC	 1.30 kJ/kg·K (0.31 Btu/lb·°F) 1.76 kJ/kg·K (0.42 Btu/lb·°F) 1.88 kJ/kg·K (0.45 Btu/lb·°F) 1.97 kJ/kg·K (0.47 Btu/lb·°F) 2.05 kJ/kg·K (0.49 Btu/lb·°F)
Coefficient of Linear Thermal Expansion [c]	D 696	5.1 x 10-5 /°C (mm/mm·°C) (2.8 x 10-5 /°F (in./in.·°F))

Electrical Properties

Properties	Test Method	Typical Value
Dielectric Constant 1kHz 1MHz	 D150 D150	 2.6 2.4
Dissipation Factor 1kHz 1MHz	 D150 D150	 0.005 0.02
Arc Resistance	D 495	158 sec
Volume Resistivity	D 257	1015 ohm·cm
Surface Resistivity	D 257	1016 ohms/square
Dielectric Strength, Short Time, 500 V/sec rateof-rise	D 149	16 kV/mm (410 V/mil)

Note:

a Nonbreak as defined by ISO 180 with 4-mm specimens.

b Testing based on ISO 6603-2 using a striker diameter of 20 mm, a support and clamp diameter of 40 mm, and a velocity of 4.1 m/s.

c -30°C to 40°C (-22°F to 104°F)

Properties reported here are typical of average lots. Rigid.ink makes no representation that the material in any particular shipment will conform exactly to the values given.

Medical Disclaimer

The resin used in this filament has met selected FDAModified ISO-10993, Part 1 "Biological Evaluation of Medical Devices" tests with human tissue contact time of 30 days or less. The tests include: cytotoxicity, sensitization, irritation or intracutaneous reactivity, systemic toxicity (acute), subchronic toxicity (sub-acute), implantation, hemocompatibility. However it is the user who is responsible for the biological evaluation of the finished print for its intended application.

The suitability of a rigid.ink filament in a given end-use environment is dependent upon various conditions including, without limitation, chemical compatibility, temperature, part design, sterilization method, residual stresses, and external loads. It is the responsibility of the consumer to evaluate their final product under actual end-use requirements and to adequately advise and warn the end user where necessary.

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