Duratron® D7000 PI – the basic grade within the Duratron PI family – is made from unfilled polyimide resin and provides maximum physical properties and best electrical and thermal insulation.

**Physical properties (indicative values)**

**PROPERTIES**

- Colour
- Density
- Water absorption:
  - after 24 immersion in water of 23 °C (1)
  - at saturation in water of 23 °C
- Thermal Properties (2)
  - Melting temperature (DSC, 10 °C/min)
  - Glass transition temperature (DSC, 20 °C/mm)
  - Thermal conductivity at 23 °C
  - Max. allowable service temperature in air
  - Temperature of deflection under load
  - Flammability (6):
  - according to UL 94 (3 mm thickness)

**Mechanical Properties at 23 °C (7)**

- Tensile test (9):
  - tensile strength
  - tensile strain at yield
  - tensile strain at break
  - tensile modulus of elasticity
  - Compression test (11):
    - compressive stress at 1 / 2 / 5 % nominal strain

**Electrical Properties at 23 °C**

- Electric strength
- Dielectric constant
- Volume resistivity
- Surface resistivity
- Relative permittivity
- Dielectric dissipation factor tan δ

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 amor.
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 23 °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 impact. The value given here is based on unfavourable impact conditions and may consequently not be considered as being the absolute practical limit.
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 of tests run on dry test specimens machined either out of plate 15-20 mm thick or rod diameter 40-50 mm, 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 B
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-disk" as described in ISO 7148-6: Load 3MPa, sliding velocity= 0.35 m/s, mating plate steel Ra= 0.7-0.9 μm, tested at 23°C, 50/RH%
16) Electrode configuration: Ø 25 mm / Ø 75 mm coaxial cylinders - in transformer oil according to IEC 60296: 1 mm thick test specimens.

This table is a valuable help in the choice of a material. The data listed here fall within the normal range of product properties of dry material. However, they are not guaranteed and they should not be used to establish material specification limits not 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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