

## TECHNICAL DATA SHEET

### KEPSTAN® 7003

#### POLYETHERKETONEKETONE PELLET OR FLAKE

KEPSTAN® is a high performance thermoplastic material, based on PolyEtherKetoneKetone (PEKK) highly stable chemical backbone. Its semi crystalline structure in solid state offers an outstanding combination of mechanical and thermal strength together with chemical and fire resistance.

Among the KEPSTAN® family, the 7000 Series benefits uniquely from PEKK crystalline capabilities while reducing significantly processing temperatures compared to the more crystalline 8000 Series. With a lower melting temperature and a Tg still above 160°C, the KEPSTAN® 7000 Series resins are very valued in all processes where a delayed or slower crystallization is key to ease thermoforming, to improve interlayer adhesion and to reduce internal stresses. They are for instance highly enabling in the field of continuous fiber composites for structural applications, and in filament additive manufacturing technologies with or without continuous fibers.

KEPSTAN® 7000 Series includes a very low flow grade, KEPSTAN® 7001, a medium flow grade, KEPSTAN® 7002, and a high flow grade, KEPSTAN® 7003, all unfilled PEKK resins designed to meet the requirements of a broad range of melt processing technologies, including among others extrusion, thermoforming, injection molding, fiber impregnation, composite consolidation and forming technologies, filament additive manufacturing.

KEPSTAN® is available in pellet form as well as in flake and in powder form with different particle sizes.

Standard packaging includes 20 kg boxes for pellets, 40kg drums for flakes and 10 kg boxes for powders.

#### TYPE

PEKK

#### MAIN APPLICATIONS

- Industry - Composites
- Compounding
- Extrusion - Industrial
- Extrusion - Aeronautics

#### DELIVERY FORM

- Flakes
- Pellets

#### TRANSFORMATION PROCESSES

- 3D Printing
- Extrusion - General
- Filament extrusion
- Film Extrusion
- Formulation ingredients

#### RHEOLOGICAL PROPERTIES

| PROPERTIES                                                 | VALUE | UNIT      | TEST STANDARD |
|------------------------------------------------------------|-------|-----------|---------------|
| Melt volume flow rate (MVR), 380°C / 1 kg (716°F / 2.2 lb) | 12    | cm³/10min | ISO 1133      |

#### MECHANICAL PROPERTIES

| PROPERTIES                                           | VALUE     | UNIT  | TEST STANDARD |
|------------------------------------------------------|-----------|-------|---------------|
| Tensile modulus, 23°C (73°F), 1 mm/min(A12)          | 4000      | MPa   | ISO 527-1/-2  |
| Yield stress, 23°C (73°F), 25 mm/min(A12)            | 110 - 120 | MPa   | ISO 527-1/-2  |
| Yield strain, 23°C (73°F), 25 mm/min(A12)            | n/a       | %     | ISO 527-1/-2  |
| Nominal strain at break, 23°C (73°F), 25 mm/min(A12) | 3 - 10    | %     | ISO 527-1/-2  |
| Compression modulus, 23°C (73°F), 1 mm/min           | 3800      | MPa   | ISO 604       |
| Charpy unnotched impact strength, 23°C (73°F)        | 22        | kJ/m² | ISO 179 1eU   |
| Charpy unnotched impact strength, -30°C (-22°F)      | 18        | kJ/m² | ISO 179 1eU   |
| Charpy notched impact strength, 23°C (73°F)          | 4.5       | kJ/m² | ISO 179 1eA   |

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| PROPERTIES                                    | VALUE | UNIT  | TEST STANDARD |
|-----------------------------------------------|-------|-------|---------------|
| Charpy notched impact strength, -30°C (-22°F) | 4     | kJ/m2 | ISO 179 1eA   |

## THERMAL PROPERTIES

| PROPERTIES                                                                       | VALUE | UNIT       | TEST STANDARD |
|----------------------------------------------------------------------------------|-------|------------|---------------|
| Melting temperature, 20°C/min(DSC, 2nd Heating)                                  | 336   | °C         |               |
| Glass transition temperature, 20°C/min(DSC)                                      | 162   | °C         |               |
| Specific heat temperature, 23°C (73°F)(DSC)                                      | 1.02  | J/g/K      |               |
| Heat deflection temperature, 1.8 MPa                                             | 164   | °C         | ISO 75-1/-2   |
| Coefficient of linear thermal expansion, from -100°C (-148°F) to Tg(DMA Tension) | 24    | 10E-6 / °K |               |
| Coefficient of linear thermal expansion, Tg to 300°C (572°F)(DMA Tension)        | 230   | 10E-6 / °K |               |
| Oxygen index(3.2mm)                                                              | 38    | %          | ISO 4589-1/-2 |

## ELECTRICAL PROPERTIES

| PROPERTIES                                       | VALUE              | UNIT   | TEST STANDARD |
|--------------------------------------------------|--------------------|--------|---------------|
| Dielectric strength(100µm thickness)             | 84                 | kV/mm  | IEC 60243-1   |
| Relative permittivity, 23°C (73,4°F)(1MHz)       | 3                  |        | IEC 62631-2-1 |
| Surface resistivity, 23°C (73,4°F)               | 100000000000000000 | ohm/sq | ASTM D257     |
| Volumic (transversal) resistivity, 23°C (73,4°F) | 100000000000000000 | ohm.cm | ASTM D257     |

## OTHER PROPERTIES

| PROPERTIES                                                      | VALUE | UNIT              | TEST STANDARD |
|-----------------------------------------------------------------|-------|-------------------|---------------|
| Moisture absorption, At equilibrium at 23°C (73°F) / 50%HR(2mm) | 0.4   | %                 | ISO 62        |
| Moisture absorption, After 24h at 23°C (73°F)/50%RH(2mm)        | 0.05  | %                 | ISO 62        |
| Water absorption, 23°C (73°F), immersion, equilibrium(2mm)      | 0.7   | %                 | ISO 62        |
| Water absorption, 23°C (73°F)(After 24h, immersion, 2mm)        | 0.11  | %                 | ISO 62        |
| Apparent density, 23°C (73°F)                                   | 1.29  | g/cm <sup>3</sup> |               |

## PACKAGING

Available packaging:

- 20 kg / 44 lb boxes

## SHELF LIFE

Indefinite when stored properly (sealed bags, appropriate UV protection and temperature)

## PROCESSING CONDITIONS:

- Typical melt temperature (Min / Recommended / Max) - Injection Molding:Rear 320°C / Center 340°C / Front 350°C / Nozzle 360°C (610°F / 645°F / 660°F / 680°F)
- Typical mold temperature - Injection molding:230-250°C (445-480°F), to facilitate skin & core cristallization
- Drying time and temperature:150°C (300°F) / 3-4 hours

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## SPECIAL CHARACTERISTICS

- Halogen Free Flame Retardant (HFFR)

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