

XECARB® 7-C20-D16

20% carbon fiber reinforced TPU ester

Physical Properties

| | Test Condition | Standard | Unit | Dam / Cond. |
|--------------------------------------|-----------------|---------------|-------------------|-------------|
| Density | | ISO 1183 | g/cm ³ | 1,33 |
| Water absorption (Equilibrium value) | 23 °C ; 50 % RH | | % | |
| Water absorption (Saturation value) | 23 °C ; water | | % | |
| Post-shrinkage | | | | |
| Parallel | | Sim.ISO 294-4 | % | |
| Normal | | Sim.ISO 294-4 | % | |

Mechanical Properties

| | | | | |
|--------------------------------|-----------------|---------|-------------------|-------------|
| Tensile Modulus | 1 mm/min | ISO 527 | MPa | 7600 |
| Tensile Strength at break | 5 mm/min | ISO 527 | MPa | 140 |
| Tensile Elongation at break | 5 mm/min | ISO 527 | % | 9,5 |
| Flexural Modulus | 2 mm/min | ISO 178 | MPa | 7300 |
| Flexural Strength | 2 mm/min | ISO 178 | MPa | |
| Flexural Stress at 3,5% strain | 2 mm/min | ISO 178 | MPa | 130 |
| Flexural Strain at break | 2 mm/min | ISO 178 | % | |
| Deflection at break | | | mm | |
| Deflection at 3,5% strain | | | mm | |
| Notched Izod Impact Strength | 23 °C ; 50 % RH | ISO 180 | kJ/m ² | 34 |
| Unnotched Izod Impact Strength | 23 °C ; 50 % RH | ISO 180 | kJ/m ² | 138 |
| Notched Izod Impact Strength | -30 °C | ISO 180 | kJ/m ² | 14 |
| Unnotched Izod Impact Strength | -30 °C | ISO 180 | kJ/m ² | 93 |

Thermal Properties

| | | | | |
|---|---------------------|-----------|----|---------------------|
| Melting Point | 10 °C/min | ISO 11357 | °C | |
| HDT – heat deflection temperature | 0,45 MPa a 120 °C/h | ISO 75 | °C | |
| HDT – heat deflection temperature | 1,80 MPa a 120 °C/h | ISO 75 | °C | |
| HDT – heat deflection temperature | 8.00 MPa a 120 °C/h | ISO 75 | °C | |
| VICAT - softening temperature | 10 N a 120 °C/h | ISO 306 | °C | |
| VICAT - softening temperature | 50 N a 120 °C/h | ISO 306 | °C | |
| Coefficient of linear thermal expansion | | | | |
| 30÷50°C Parallel | | | | 10 ⁻⁴ /K |
| 30÷50°C Normal | | | | 10 ⁻⁴ /K |
| Maximum Usage Temperature | | | | |
| Short Term | | | | °C |
| Long Term | | | | °C |

Electrical Properties

| | | | | |
|---------------------|--|------------|-------|--|
| Volume Resistivity | | IEC 60093 | Ohm*m | |
| Surface Resistivity | | ISTR 18L-A | Ohm | |

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Process Recommendation

| | <i>Test Condition</i> | <i>Standard</i> | <i>Unit</i> | <i>Value</i> |
|--------------------|-----------------------|-----------------|-------------|----------------|
| Drying temperature | desiccant dryer | | °C | 80–100 |
| Drying time | desiccant dryer | | h | 6–8 |
| Melt temperature | | | °C | 205–230 |
| Mould temperature | | | °C | 30 |

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Test values

Unless specified to the contrary, the values given have been established on standardized test specimens at room temperature. The figures should be regarded as guide values only and not as binding minimum values. Kindly note that, under certain conditions, the properties can be affected to a considerable extent by the design of the mould/die, the processing conditions and the coloring.

Processing note

Under the recommended processing condition small quantities of decomposition product may be given off during processing. To preclude any risk to the health and well-being of the machine operatives, tolerance limits for the work environment must be ensured by the provision of efficient exhaust ventilation and fresh air at the workplace in accordance with the Safety Data Sheet. In order to prevent the partial decomposition of the polymer and the generation of volatile decomposition products, the prescribed processing temperatures should not be substantially exceeded. Since excessively high temperatures are generally the result of operator error or defects in the heating system, special care and controls are essential in these areas.

Edition: December 2023