

# Engineering plastic type CF

ESD safe replaceable fiber tip tweezers provide durable tip materials with self-aligning replacement tips and anti-magnetic stainless steel handles for precision handling applications.

## General notes:

- » **PA66/CF30** polyamide 66 reinforced with 30 wt% carbon fibre
- » ESD safe material
- » Low friction, self lubricating properties
- » Excellent wear and abrasion resistance
- » High mechanical strength and toughness
- » Very high rigidity, excellent tensile and flexural strength (bend strength), fatigue and creep resistance
- » Heat stabilized, 130°C (continuous use) - 190° (short time)
- » Very low coefficient of linear thermal expansion
- » Good chemical resistance (oils, grease, fuels, non polar solvents)
- » Lead-free

Applications include handling of sensitive components and devices (electronic components, micro-mechanical parts, glass and ceramic substrates, etc.) where non-scratching is critical. Popular in standard ESD and general electronics assembly and lab applications.

**NOTE: Not resistant to strong acids, alkalis, hot water or steam.**

## Mechanical properties

|  |                            |                   |
|--|----------------------------|-------------------|
| Flexural modulus +23°C                   | <b>17000 MPa</b>           | <i>ASTM D 790</i> |
| Flexural modulus +60°C                   | <b>12000 MPa</b>           | <i>ASTM D 790</i> |
| Flexural modulus +90°C                   | <b>9800 MPa</b>            | <i>ASTM D 790</i> |
| Flexural modulus +120°C                  | <b>8000 MPa</b>            | <i>ASTM D 790</i> |
| Tensile strength +23°C                   | <b>210 MPa</b>             | <i>ISO 527</i>    |
| Tensile strength +60°C                   | <b>159 MPa</b>             | <i>ISO 527</i>    |
| Tensile strength +90°C                   | <b>134 MPa</b>             | <i>ISO 527</i>    |
| Tensile strength +120°C                  | <b>117 MPa</b>             | <i>ISO 527</i>    |
| Rockwell hardness M                      | <b>&gt;100</b>             | <i>ASTM D 785</i> |
| Izod-Impact strength (notched) +23°C     | <b>70 J/m</b>              | <i>ASTM D 256</i> |
| Charpy-Impact strength (unnotched) +23°C | <b>30 kJ/m<sup>2</sup></b> | <i>DIN 53453</i>  |

## Thermal properties

|  |                    |                   |
|--|--------------------|-------------------|
| Temp. of defl. under load (1.80 MPa)     | <b>256 °C</b>      | <i>ASTM D648</i>  |
| Temp. of defl. under load (0.45 MPa)     | <b>260 °C</b>      | <i>ASTM D648</i>  |
| Vicat softening temperature (50°C/h 50N) | <b>254 °C</b>      | <i>ISO 306</i>    |
| Coef. of lin. therm expansion, normal    | <b>2,80 E-5/°C</b> | <i>ASTM D 696</i> |
| Continuous Use Temperature               | <b>130°C</b>       | <i>20'000 h</i>   |
| Short Time Temperature                   | <b>190°C</b>       |                   |

## Electrical properties

|                            |                           |                  |
|----------------------------|---------------------------|------------------|
| Surface resistivity        | <b>10<sup>2</sup> Ohm</b> | <i>100V</i>      |
| Comparative tracking index | <b>&lt;100 Volts</b>      | <i>IEC 112</i>   |
| Decay time                 | <b>&lt; 0.1 sec</b>       | <i>1000-10 V</i> |

## Other properties

|                                      |                   |                 |
|--------------------------------------|-------------------|-----------------|
| Density                              | <b>1.28 g/ccm</b> | <i>ISO 1183</i> |
| Water absorption in water 23°C (24h) | <b>0.60%</b>      | <i>ISO 62</i>   |

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