

Electronics

Tweezers

3X Plastic tips Reverse Action Tweezers

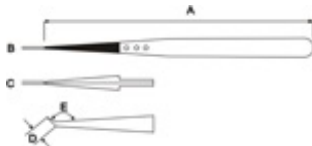


Fine tips

A 5" 130 mm

B 0.03" 0.8 mm

C 0.05" 1.3 mm



3XCF.SA **Anti-Magnetic Anti-Acid Stainless Steel body with ESD Carbofib (CF) tips**

General notes *Plastic Type CF*

- **PA66/CF30** polyamide 66 reinforced with 30 wt% carbon fibre
- heat stabilized
- very high rigidity, excellent tensile and flexural strength, fatigue and creep resistance

- low friction, self lubricating properties, excellent wear and abrasion resistance
- good heat capability
- good chemical resistance (oils, grease, fuels, non polar solvents); not resistant to strong acids, alkalis and hot water or steam
- ESD safe material, (avoid powder attraction, sparks generation, ignition sources).
- very low coefficient of linear thermal expansion
- typical applications include handling of sensitive components and devices (electronic components, micro-mechanical parts, glass and ceramic substrates, capillary, etc.)

Mechanical properties

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

Thermal properties

| | | |
|------------------------------------------|-------------|------------|
| Temp. of defl. uner load (1.80 MPa): | 256°C | ASTM D648 |
| Temp. of defl. uner load (0.45 MPa): | 260°C | ASTM D648 |
| Vicat softening temperature (50°C/h 50N) | 254°C | ISO 306 |
| Coef. of lin.therm expansion, normal: | 2.80 E-5/°C | ASTM D 696 |
| Continuous Use Temperature | 130°C | 20'000 h |
| Short Time Temperature | 190°C | |

Electrical properties

| | | |
|-----------------------------|---------------------|-----------|
| Surface resistivity | 10 ² Ohm | 100V |
| Comparative tracking index: | <100 Volts | IEC 112 |
| Decay time: | < 0.1 sec | 1000-10 V |

Other properties

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

General Notes *Stainless Steel type SA*

- low carbon austenitic steel (Material number 1.4435, DIN X2CrNiMo18-14-3, AISI number 316L)
- contains from 16.5 to 18.5 wt% chromium and has important quantities of nickel and molybdenum as additional alloying elements
- non-magnetizable
- good corrosion resistance to most chemicals, salts and acids
- generally used where corrosion resistance and toughness are primary requirements
- typical applications include tweezers for the electronic industry, watch-makers, jewelers and laboratory and medical applications in moderately aggressive chemical environments

Composition

| Component | Wt. % | Component | Wt. % | Component | Wt. % |
|-----------|---------|-----------|-----------|-----------|-----------|
| C | ≤0.03 | Si | ≤1.0 | Mn | ≤2.0 |
| P | ≤0.045 | S | ≤0.03 | Cr | 17.0-19.0 |
| Mo | 2.5-3.0 | Ni | 12.5-15.0 | | |

Mechanical properties:

| | |
|----------------------------|-----------------------|
| State | annealed |
| Density | 8.0 g/cm ³ |
| hardness HB30 | ≤215 |
| Hardness Rockwell B | 79 |
| Tensile strength, ultimate | 500-700 MPa |
| Tensile strength, yield | 290 |
| 0.2% Yield stress | ≤200 MPa |
| Elongation, break | 40% |
| Modulus of elasticity | 200 GPa |

Thermal properties

| | | |
|-------------------------------|--------------|------------|
| Coef. of lin. therm expansion | 16.0 E-6/°C | 20°C-100°C |
| Coef. of lin. therm expansion | 17.0 E-6/°C | 20°C-300°C |
| Specific heat capacity: | 0.50 J/(g·K) | |
| Thermal conductivity: | 15W/(m·K) | |
| Continuous use temperature: | 350°C | |
| Max service temperature, ait | 925°C | |

Electrical properties

| | |
|-------------|-----------------|
| Resistivity | 0.75 E-4 Ohm.cm |
|-------------|-----------------|

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Credits