

Material for Micro-Tec CT carbon fibre reinforced PVDF ESD safe plastic probes

The material used for manufacturing the Micro-Tec CT series ESD safe plastic probes is polyvinylidene fluoride (PVDF) reinforced with 30% carbon fibre.

It is used for the following products:

- #52-001050 Micro-Tec CT1 carbon fibre reinforced PVDF probe, fine pointed / strong flat
- #52-001051 Micro-Tec CT2 carbon fibre reinforced PVDF probe, curved pointed / strong flat
- #52-001052 Micro-Tec CT3 carbon fibre reinforced PVDF probe, sharp flat / large flat
- #52-001053 Micro-Tec CTS carbon fibre reinforced PVDF probes, set of all three

General remarks:

- CT series is plastic polyvinylidene fluoride (PVDF) reinforced with 30% carbon fibre
- ESD safe material (avoid powder or dust attraction, avoid spark generation)
- smooth surface
- excellent mechanical strength and toughness
- heat stabilised, high heat capacity with a continuous use temperature of 150°C
- high purity (clean room and medical devices approved; low extraction value)
- high abrasion resistance
- cryo compatible material
- excellent chemical resistance to most aggressive substances (mineral and organic acids), solvents (hydrocarbons, alcohols, halogenated) and halogens
- outstanding resistance to hydrofluoric acid (40% conc. / 90°C), nitric acid (50% conc. / 90°C) and hydrochloric acid (36% conc. / 90°C)
- resistant to UV and nuclear radiation (compatible with this sterilisation)
- typical applications include tweezers for handling scratch and contamination sensitive components, sample processing with chemicals, cleaning and etching processes.

Properties of carbon fibre reinforced PVDF

Mechanical Properties	
Tensile strength +23°C	120 MPa
Tensile modulus +23°C	8000 MPa
Flexural strength +23°C	150 MPa
Flexural modulus +23°C	7500 Mpa
Shore D hardness	82
Izod-impact strength (notched) +23°C	110J/m
Charpy-impact strength (unnotched)	30kJ/m2

Thermal Properties	
Coefficient of thermal linear expansion	7.0 x 10 ⁻⁵ /°C (20-100°C)
Temp. of defl. under load (1.8 MPa)	158°C
Temp. of defl. under load (0.45 MPa)	170°C
Vicat softening temp. (50°C/h 50N)	172°C
Continuous use (service) temperature	150°C
Maximum service temperature (short)	200°C
Electrical Properties	
Surface resistivity (100V)	100 Ohm
Comparative tracking index	<100 Volts
Decay time	<0.1 sec

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