Micro to Nano
Innovative Microscopy Supplies

Technical Support Bulletin

Material for EM-Tec CT carbon fibre reinforced PVDF ESD safe plastic tweezers

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

It is used for the following products:
#50-011702 EM-Tec 702A.CT ESD safe PVDF/carbon fibre reinforced tweezers, blunt tips
#50-011705 EM-Tec 705.CT ESD safe PVDF/carbon fibre reinforced tweezers, fine tips
#50-011707 EM-Tec 707.CT ESD safe PVDF/carbon fibre reinforced tweezers, sharp tips
#50-011708 EM-Tec 708.CT ESD safe PVDF/carbon fibre reinforced tweezers, sharp angled tips
#50-011709 EM-Tec 709.CT ESD safe PVDF/carbon fibre reinforced tweezers, flat tips
#50-011710 EM-Tec 710.CT ESD safe PVDF/carbon fibre reinforced tweezers, flat thin tips
#50-011717 EM-Tec 707A.CT ESD safe PVDF/carbon fibre reinforced tweezers, sharp curved tips

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

Micro to Nano
Innovative Microscopy Supplies

Vof Micro to Nano
Wateringweg 79
2031EK Haarlem
The Netherlands

T +31-85-2013155
E info@microtonano.com
W www.microtonano.com
Kvk AMS: # 62301959

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

Micro to Nano
Innovative Microscopy Supplies

Vof Micro to Nano
Wateringweg 79
2031EK Haarlem
The Netherlands

T +31-85-2013155
E info@microtonano.com
W www.microtonano.com
Kvk AMS: # 62301959