Micro to Nano
Innovative Microscopy Supplies

Technical Support Bulletin

Material for EM-Tec CN carbon fibre reinforced polyamide ESD safe plastic tweezers

The material used for manufacturing the EM-Tec CN series ESD safe plastic tweezers is a Polyamide 66 (Nylon66) reinforced with 30% carbon fibre.

It is used for the following products:
#50-012702 EM-Tec 702A.CN ESD safe PA66/carbon fibre reinforced tweezers, blunt tips
#50-012705 EM-Tec 705.CN ESD safe PA66/carbon fibre reinforced tweezers, fine tips
#50-012707 EM-Tec 707.CN ESD safe PA66/carbon fibre reinforced tweezers, sharp tips
#50-012708 EM-Tec 708.CN ESD safe PA66/carbon fibre reinforced tweezers, sharp angled tips
#50-012709 EM-Tec 709.CN ESD safe PA66/carbon fibre reinforced tweezers, flat tips
#50-012710 EM-Tec 710.CN ESD safe PA66/carbon fibre reinforced tweezers, flat thin tips
#50-012717 EM-Tec 707A.CN ESD safe PA66/carbon fibre reinforced tweezers, sharp curved tips

General remarks:

- CN series is the engineering plastic polyamide 66 (PA66) reinforced with 30% carbon fibre
- ESD safe material (avoid powder or dust attraction, avoid spark generation)
- heat stabilised and good heat capacity
- Very high rigidity, excellent tensile and flexural strength
- good fatigue and creep resistance
- low friction and self lubricating properties
- excellent wear and abrasion resistance
- good chemical resistance against oils, grease, fuels and non-polar solvents. Not resistant to strong acids, alkalis, hot water or steam
- very low coefficient of linear expansion
- Typical applications include tweezers handling of sensitive components, devices and samples in laboratory, assembly and manufacturing

Properties of carbon fibre reinforced PA66

Mechanical Properties	
Flexural modulus +23°C	17000 MPa
Flexural modulus +60°C	12000 MPa
Flexural modulus +90°C	9800 MPa
Flexural modulus +120°C	8000 MPa
Tensile strength +23°C	210 MPa
Tensile strength +60°C	159 MPa
Tensile strength +90°C	134 MPa
Tensile strength +120°C	117 Mpa
Rockwell hardness M	>100
Izod-impact strength (notched) +23°C	70J/m
Charpy-impact strength (unnotched)	30kJ/m2

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Thermal Properties	
Coefficient of thermal linear expansion	2.8 x 10-5 /°C (20-100°C)
Temp. of defl. under load (1.8 MPa)	256°C
Temp. of defl. under load (0.45 MPa)	260°C
Vicat softening temp. (50°C/h 50N)	254°C
Continuous use (service) temperature	130°C
Maximum service temperature (short)	190°C
Electrical Properties	
Surface resistivity (100V)	100 Ohm
Comparative tracking index	<100 Volts
Decay time	<0.1 sec
Other properties	
Density	1.28 g/cm3
Water absorption (water 23°C)	0.60%

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