Material for EM-Tec ultra-precision DX biology tweezers

The material used for manufacturing the EM-Tec high precision anti-magnetic tweezers is a selected grade of low carbon high alloy austenitic AISI 904L stainless steel.

It is used for the following types of EM-Tec tweezers:

- EM-Tec ultra-precision DX biology tweezers

General remarks:

- AISI 904L is a low carbon high alloy austenitic stainless steel (AISI 904L, DIN 1.4439, UNS N08904)
- Developed for use under severe corrosive conditions
- Very good corrosion resistance to attacks in acidic environments, e.g. sulphuric, phosphoric and acetic acid
- Very good resistance to pitting in neutral chloride-bearing solutions
- Very good resistance to stress corrosion cracking
- Non-magnetic (95%) in all conditions
- Excellent formability and weldability
- Excellent toughness, even down to cryogenic temperatures
- Maximum service temperature is at 450 °C
- Typical applications include ultra-fine tweezers for microscopy, electronic industry, fine mechanics, laboratory and medical in moderately aggressive chemical requirements

Composition of AISI 904L

Element	Wt. %
C	≤0.02
Cr	19.0 – 23.0
Ni	23 – 28.0
Mo	4.0 – 5.0
Cu	2.0 - 1.0
Mn	≤2.0
Si	≤1.0
P	≤0.045
S	≤0.035
Fe	Balance

Micro to Nano
Tappersweg 91
2031ET Haarlem
The Netherlands

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

Properties of AISI 904L

Mechanical Properties	
State	Annealed
Density	8.0 g/cm^3
Hardness Vickers	250
Tensile strength, ultimate	490 - 646 MPa
Tensile strength, yield	220 - 339 MPa
Elongation until break	35-40%
Modulus of Elasticity	195 GPa
Poisson's ratio	0.3
Thermal Properties	
Coefficient of linear thermal expansion	16.1 x 10-^{6} /°C (20-100°C)
Coefficient of linear thermal expansion	16.9 x 10-^{6}/°C (20-400°C)
Specific heat capacity	0.45 J/(g.K)
Thermal conductivity	12W/(m.K)
Maximum service temperature	450°C
Electrical Properties	
Resistivity	1 (Ohm.mm^2)/m

TSB 50-001010 Material for EM-Tec high precision anti-magnetic tweezers 2016-3-03 Revision 2

Micro to Nano
Tappersweg 91
2031ET Haarlem
The Netherlands

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