

Material for EM-Tec high precision titanium tweezers

The material used for manufacturing the EM-Tec high precision titanium tweezers is a selected non-alloyed titanium Grade 1.

It is used for the following titanium tweezers:

- [#50-006010 EM-Tec 1.TI high precision titanium tweezers, style 1](#)
- [#50-006020 EM-Tec 2A.TI high precision titanium tweezers, style 2A](#)
- [#50-006030 EM-Tec 3.TI high precision titanium tweezers, style 3](#)
- [#50-006035 EM-Tec 3C.TI high precision titanium tweezers, style 3C](#)
- [#50-006040 EM-Tec 4.TI high precision titanium tweezers, style 4](#)
- [#50-006050 EM-Tec 5.TI high precision titanium tweezers, style 5](#)
- [#50-006070 EM-Tec 7.TI high precision titanium tweezers, style 7](#)

General remarks:

- Titanium Grade 1 (non-alloy Titanium)
- Fully non-magnetisable
- Engineering material with an extraordinary combination of properties:
 - low density
 - strong
 - very high melting point
- Good cold form ability, high ductility
- Bio compatible material; cell integrity is maintained, no inflammatory response
- Good corrosion resistance at room temperature to air, marine and industrial environments
- Generally used where corrosion resistance and high strength-to weight ratio are primary requirements
- Typical applications include tweezers for medical, surgery, magnetic fields, biology, histology and high temperature use.

General composition of Titanium grad 1

| Element | Wt. % |
|---------|--------|
| Ti | 99.5 |
| C | ≤0.1 |
| O | ≤0.18 |
| N | ≤0.03 |
| Fe | ≤0.2 |
| H | ≤0.015 |

Properties of Titanium Grade 1

| Mechanical Properties | |
|----------------------------|------------------------|
| State | Annealed |
| Density | 4.51 g/cm ³ |
| Hardness, Vickers | 122 HV |
| Tensile strength, ultimate | 330 MPa |

| | |
|---|---|
| Tensile strength, yield | 240 MPa |
| Elongation until break | 30% |
| Modulus of Elasticity | 100 GPa |
| Thermal Properties | |
| Coefficient of linear thermal expansion | $9.2 \times 10^{-6} / ^\circ\text{C}$ (0-315°C) |
| Specific heat capacity | 0.52 J/(g.K) |
| Thermal conductivity | 16W/(m.K) |
| Continuous use (service) temperature | 350°C |
| Maximum service temperature (short) | 860°C |
| Electrical Properties | |
| Resistivity | 0.45×10^{-4} Ohm.cm |

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