

# Technical Support Bulletin

## Material for EM-Tec stainless steel microscopy and laboratory scissors

The material used for manufacturing the EM-Tec stainless steel microscopy, preparation and laboratory scissors is a martensitic hardened stainless steel AISI 410

### It is used for the following products:

<a href="#">52-004311</a>	<a href="#">EM-Tec B11 microscopy lab scissors, blunt tips, straight, 110mm</a>
<a href="#">52-004313</a>	<a href="#">EM-Tec B13 microscopy lab scissors, blunt tips, straight, 130mm</a>
<a href="#">52-004315</a>	<a href="#">EM-Tec B15 microscopy lab scissors, blunt tips, straight, 150mm</a>
<a href="#">52-004321</a>	<a href="#">EM-Tec H11 microscopy lab scissors, sharp/blunt tips, straight, 110mm</a>
<a href="#">52-004323</a>	<a href="#">EM-Tec H13 microscopy lab scissors, sharp/blunt tips, straight, 130mm</a>
<a href="#">52-004325</a>	<a href="#">EM-Tec H15 microscopy lab scissors, sharp/blunt tips, straight, 150mm</a>
<a href="#">52-004331</a>	<a href="#">EM-Tec S11 microscopy lab scissors, sharp tips, straight, 110mm</a>
<a href="#">52-004333</a>	<a href="#">EM-Tec S13 microscopy lab scissors, sharp tips, straight, 130mm</a>
<a href="#">52-004335</a>	<a href="#">EM-Tec S15 microscopy lab scissors, sharp tips, straight, 150mm</a>
<a href="#">52-004341</a>	<a href="#">EM-Tec B11C microscopy lab scissors, blunt tips, curved, 110mm</a>
<a href="#">52-004351</a>	<a href="#">EM-Tec H11C microscopy lab scissors, sharp/blunt tips, curved, 110mm</a>
<a href="#">52-004361</a>	<a href="#">EM-Tec S11C microscopy lab scissors, sharp tips, curved, 110mm</a>
<a href="#">52-004508</a>	<a href="#">EM-Tec MS1 Vannas type micro scissors, sharp tips, straight, 80mm</a>
<a href="#">52-004518</a>	<a href="#">EM-Tec MS1C Vannas type micro scissors, sharp tips, curved, 80mm</a>

### General remarks:

- AISI 410 is a martensitic steel (DIN 1.4006, X12Cr13) which can be hardened by heat treatment
- Contains 11.5 – 213.5 wt% Chromium
- Magnetic, hardened stainless steel
- Hardened by heat treatment
- Properties can be varied by different heat treatments
- Provides sharp cutting edge after sharpening
- Good corrosion resistance to most solvents, moderate corrosion resistance to salts and weak acids
- Generally used where moderate corrosion resistance combined with high mechanical strength is required
- Typical applications include scissors, probes, spatulas, knives, tools and springs

### General composition of AISI 410

Element	Wt. %
C	≤0.15
Cr	11.5 – 13.5
Mn	≤1.0
Si	0.0
P	≤0.04
S	≤0.03

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Fe	Balance
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## Properties of AISI 410

<b>Mechanical Properties</b>	
State	Hardened, stress relieved
Density	7.74.0 g/cm <sup>3</sup>
Hardness Rockwell B	80
Hardness Vickers	291
Tensile strength, ultimate	485 MPa
Tensile strength, yield	310 MPa
Yield stress, 0.2%	275 Mpa
Elongation until break	25%
Modulus of Elasticity	200 GPa
Poisson's ratio	0.29
<b>Thermal Properties</b>	
Coefficient of thermal expansion	9.9 x 10 <sup>-6</sup> /°C (20-100°C)
Coefficient of linear expansion	11 x 10 <sup>-6</sup> /°C (20-300°C)
Specific heat capacity	0.46 J/(g.K)
Thermal conductivity	24.9W/(m.K)
Continuous use (service) temperature	705°C
Maximum service temperature (short)	815°C
<b>Electrical Properties</b>	
Resistivity	0.57 x 10 <sup>-4</sup> Ohm.cm

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