

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:

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

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

Mechanical Properties	
State	Hardened, stress relieved
Density	7.74.0 g/cm ³
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
Thermal Properties	
Coefficient of thermal expansion	9.9 x 10 ⁻⁶ /°C (20-100°C)
Coefficient of linear expansion	11 x 10 ⁻⁶ /°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
Electrical Properties	
Resistivity	0.57 x 10 ⁻⁴ Ohm.cm

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