

HOT WORK TOOL STEELS

Available Product Variants

Long Products

Product Description

BÖHLER W722 VMR is not a classic hot work tool steel, but an ultra-high strength maraging steel. Compared to quenched and tempered steels, the material generates its high strength not through a hardened and tempered martensitic structure with a high carbon content and secondary hardening carbides, but through the precipitation of intermetallic phases from a tough nickel martensitic matrix. BÖHLER W722 VMR corresponds to material number 1.2709 (X3NiCoMoTi18-9-5) and has proven to be ideally suited for many tool steel applications in cold and hot work up to 450 °C. The Steel also is available as powder material for metal-3D-printing under the brand name BÖHLER W722 AMPO.

Process Melting

VIM + VAR

Applications

- > Extrusion
- > Fasteners, Bolts, Nuts
- > High Pressure Die-Casting
- > Injection Molding
- > General Components for Mechanical Engineering

Technical data

Material designation	
	1.2709 SEL

Chemical composition (wt. %)

C	Si	Mn	Mo	Ni	Co	Ti
≤ 0,03	≤ 0,10	≤ 0,15	4.90	18.00	9.30	1.10

Delivery condition

Solution annealed

Hardness (HB)	max. 353
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Heat treatment

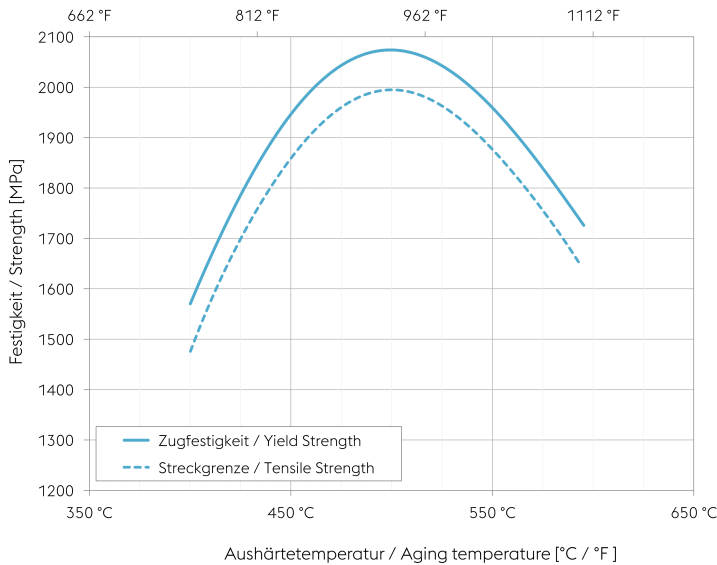
Solution annealing

Temperature	820 °C 1,508 °F	1 hour air, gas
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Precipitation hardening

Temperature	490 °C 914 °F	6 hours air
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Ageing chart



Aging:

Solution annealed 820°C (1508°F) / 1 hour / air
Aging time: 3 hours

For maximum hardness there is also the possibility to age 6 hours at 490°C (914°F).

Physical Properties

Temperature (°C °F)	20 68
Density (kg/dm ³ lb/in ³)	8.1 0.29
Thermal conductivity (W/(m.K) BTU/ft h °F)	21 12.13
Specific heat (kJ/kg K BTU/lb °F)	0.42 0.1003
Spec. electrical resistance (Ohm.mm ² /m 10 ⁻⁴ Ohm.inch ² /ft)	0.42 1.98
Modulus of elasticity (10 ³ N/mm ² 10 ³ ksi)	200 29.01

Thermal Expansions between 20°C | 68°F and ...

Temperature (°C °F)	100 212	200 392	300 572	400 752	500 932
Thermal expansion (10 ⁻⁶ m/(m.K) 10 ⁻⁶ inch/inch.°F)	10.3 5.7	10.7 5.9	11 6.1	11.3 6.3	11.6 6.4

For additional specifications and technical requirements, please contact our regional voestalpine BÖHLER sales companies.

The data contained in this brochure is merely for general information and therefore shall not be binding on the company. We may be bound only through a contract explicitly stipulating such data as binding. Measurement data are laboratory values and can deviate from practical analyses. The manufacture of our products does not involve the use of substances detrimental to health or to the ozone layer.

voestalpine BÖHLER Edelstahl GmbH & Co KG
 Mariazeller Straße 25
 8605 Kapfenberg, AT
 T. +43/50304/20-0
 E. info@boehler-edelstahl.at
<https://www.voestalpine.com/boehler-edelstahl/de/>

voestalpine
 ONE STEP AHEAD.