HOT WORK TOOL STEELS

Application Segments

Hot Work

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
- Injection Molding
- Fasteners, Bolts, Nuts
- General Components for Mechanical Engineering
- High Pressure Die-Casting
- Tool Holders (milling, drilling, turning & chucks)

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

Heat treatment

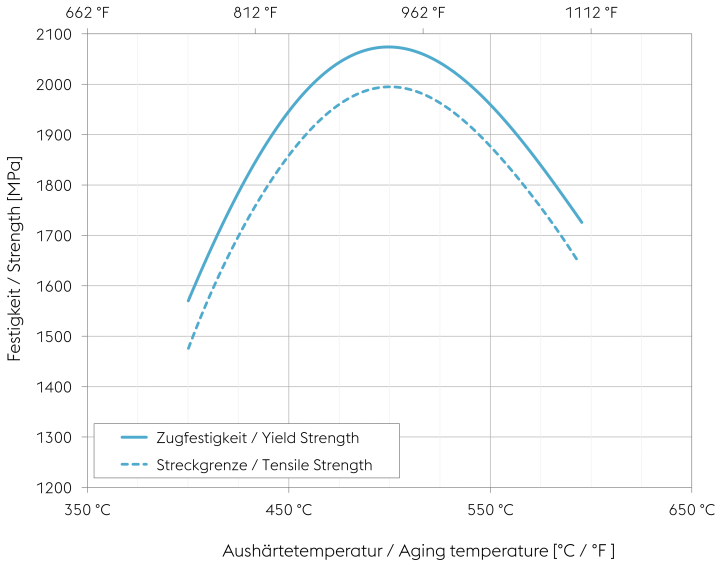
Solution annealing

Temperature	820 °C	1 hour air, gas

Precipitation hardening

Temperature	490 °C	6 hours air

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)	**20**
Density (kg/dm³)	8.1
Thermal conductivity (W/(m.K))	21
Specific heat (kJ/kg K)	0.42
Spec. electrical resistance (Ohm.mm²/m)	0.42
Modulus of elasticity (10³N/mm²)	200

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

Temperature (°C)	**100**	**200**	**300**	**400**	**500**
Thermal expansion (10^{-6} m/(m.K))	10.3	10.7	11	11.3	11.6

If other available product variants are listed in addition to long products, please note that these may differ in terms of melting process, technical data, delivery and surface condition as well as available product dimensions. For mandatory technical specifications, other requirements and dimensions, 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.

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ONE STEP AHEAD.