

HOT WORK TOOL STEELS

Available Product Variants

Long Products

Product Description

BÖHLER W460 VMR is a double vacuum arc remelted (VAR) material that has been specially adapted for use in the motorsport sector. The steel purity achieved by this special manufacturing technology, combined with the high strength, ensures that a very high fatigue strength can be guaranteed. The high purity also results in very good polishability, which makes the steel a good choice as a tool material for minting coins.

Process Melting

Airmelted + VAR + VAR

Properties

- Super-high strength to avoid plastic deformation and ensure an optimized fatigue strength
- High stiffness: relation between density and strength
- High tempering temperatures allow for a comprehensive range of surface treatments

Applications

> Motorsport industry > Coining > General Components for Mechanical Engineering

Technical data

Material designation	
BÖHLER patent	Market grade

Chemical composition (wt. %)

C	Si	Mn	Cr	Mo	V
0.50	0.20	0.45	4.60	3.00	0.75

Delivery condition

Annealed	
Hardness (HB)	max. 205

Heat treatment

Annealing		
Temperature	750 to 800 °C	Holding time 6 to 8 hours. Slow, controlled furnace cooling at 10 to 20°C/h (50 to 68 °F/hr) to approx. 600°C (1112°F), further cooling in air.
Stress relieving		
Temperature	650 to 700 °C	For stress relief after extensive machining or for complicated tools. Holding time depending on tool size after complete heating 2 - 6 hours in neutral atmosphere. Slow furnace cooling.
Hardening and Tempering		
Temperature	1,050 to 1,070 °C	Holding time after temperature equalization: 15 to 30 minutes; Quenching: Oil, salt bath (500 - 550°C [932-1022°F]), air, vacuum; After hardening, tempering to the desired working hardness (see tempering chart).

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

Temperature (°C)	100	200	300	400	500	600	700
Thermal expansion (10 ⁻⁶ m/(m.K))	11.1	11.5	11.9	12.3	12.8	13.2	13.6

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.