



AISI M42 M42 DIN 3247

X100CrMoV5

C 1.08 Cr 4.15 Mo 9.40 V 1.20 W 1.60 Co 8.05

Steel properties

High-carbon, high-speed steel based on molybdenum. Characterized by high wear resistance, red hardness and toughness. As a result of its low vanadium content, this grade exhibits good grindability.

Standards

AISI M42

AFNOR Z85WDCV06-05-04-02

Applications

For tools subject to severe mechanical wear (e.g. in case of small cross-section cuts at high cutting speeds). Particularly suitable for die-sinking cutters, milling cutters and engraving machines including gravers as well as for tool bits in automatic lathes. Also suitable for non-cutting shaping (e.g. cold extrusion rams and tools employed in machining materials for the aviation industry such as titanium alloys).

Heat treatment

Soft annealing °C

830 – 760

Cooling

Furnace

Hardness HB

max. 280

Stress-relief annealing °C

620-650

Cooling

Furnace

1st pre-heating °C	2nd and 3rd pre-heating °C	Hardening ¹ °C	Quenching	Tempering °C	Hardness after tempering HRC
up to approx. 400 in an air-circulating furnace	a) 850 b) 880 and 1080	1150 – 1190	a) Saltbath, 550 °C b) Oil c) Air	at least three times 540 – 560	65 – 69

¹ For cold-forming tools with a complex geometry a hardening temperature at the lower end of the quoted range is recommended. The stated hardening temperatures apply to saltbath hardening only. For vacuum hardening, we suggest a reduction of 10 °C to 30 °C.

Tempering Chart

