DIN - Material - No. 1.3247

Code S 2-10-1-8

Comparable standards AISI: M42, EU: HS2-9-1-8

Chemical composition (Typical analysis %)

C	Cr	Mo	V	W	Co
1.1	3.9	9.3	1.2	1.5	8.0

Steel properties

Molybdenum high - speed tool steel with cobalt and higher carbon content. Highest resistance to softening, high hot hardness. Very high resistance to wear. Good toughness. Deep hardening response. Good grindability due to lower V - content.

Physical properties

Thermal conductivity W/(m.K) at 20°C: 19

Density g/cm³ at 20°C: 8.01

Coefficient of linear thermal expansion 10^{-6} °C^{-1}

20-100	20-200	20-300	20-400	20-500	20-600	20-700	20-800°C
9.8	10.8	11.1	11.6	11.9	12.2	12.5	12.6

Applications

Die Sinking cutters, Die block - and engraving milling cutters, tool bits for free - cutting, cold forming tools. Cold extrusion rams and tools for machining materials for the aviation industry such as titanium alloys.

Stress Relieving

Holding at approx 650°C for one hour.

Heat treatment

Soft annealing °C	Cooling	Hardness HB
820 - 880	furnace	230 - 300

Heat up °C	Preheating 1. step °C	Preheating 2. step °C	Hardening from °C	in	Temparing °C	As tempered hardness HRC
450 - 600	850	1050	1160 - 1210	oil, air, thermal bath 550°C	3 x 1h 540 - 560	66 - 68

Tempering °C	200	300	400	500	520	540	560	580	600	650	700
HRC	62.5	61	61.5	66.5	68	68	67	65.5	64	50	42

Transformation Temperatures
Ac_1 = 780 C, Ac_3 = 855 C

Tempering Diagram