

Material information sheet

Material number: 1.2242

Material: 59 Cr V4

Steelgroup: alloyed tool steels, Cr-V, Cr-V-Mn, Cr-V-Si - steels

Usage: tool steels for cold working:
Cold piercing punch for making holes in steel plates, rails etc. as well as machine- and shear blades, chisel and similar tools

Tool steels for hot working:
Tools for low-melting steel alloys, like pattern slides, manifold studs, core and similar tools

Chemical composition:

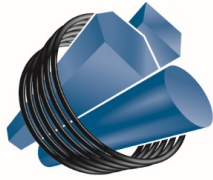
	C	Si	Mn	P	S	Cr	V
Minimum	0,55	0,15	0,80	0,00	0,00	0,90	0,07
Maximum	0,62	0,35	1,10	0,035	0,035	1,20	0,12

Heat treatment:

Hot-forming	Soft-annealing (+A)	Hardening in oil	tempering	
			Cold work	Hot-work
850 - 1050 °C	710 - 750 °C	820 - 850 °C	180 - 300 °C	400 - 600 °C

Mechanical characteristics:

Tensile strength of tools in action	$R_m = 1080 - 1670 \text{ MPa}$
Hardness after tempering	$R_m \leq 750 \text{ MPa}$
Surface hardness after hardening	~ 61 HRC
Quenching and tempering values:	
Tempered at ~ 100 °C	~ 61 HRC
Tempered at ~ 200 °C	~ 59 HRC
Tempered at ~ 300 °C	~ 56 HRC $\approx R_m = 2050 \text{ MPa}$
Tempered at ~ 400 °C	~ 52 HRC $\approx R_m = 1720 \text{ MPa}$
Tempered at ~ 450 °C	~ 46 HRC $\approx R_m = 1470 \text{ MPa}$
Tempered at ~ 500 °C	~ 44 HRC $\approx R_m = 1370 \text{ MPa}$
Tempered at ~ 550 °C	~ 38 HRC $\approx R_m = 1230 \text{ MPa}$
Tempered at ~ 600 °C	~ 34 HRC $\approx R_m = 1080 \text{ MPa}$



Stocks:

Bars:

- Bar length: 3 – 4 m
- Tolerance data: EN 10278
- Technical delivery conditions: EN 10277, surface quality class 2

execution	Cross-section design (data in mm)				
	round	4-edge	6-edge	8-edge	Flat-oval
Tolerance	h9	h11	h11	h11	
+AC+C+A+C	3 – 8		2 -7,14		
+AC+C	4,5 – 40		5 -36	10 – 22	
+A+CR+A+CR		8 +9			X ¹⁾
+AC+SH	27 - 44				

¹⁾: following dimensions:

- 17 x 11 mm
- 20 x 12 mm
- 23 x 13 mm
- 26 x 7 mm
- 26 x 13 mm
- 28 x 7 mm

Rings:

- Coil weight: 100 – 400 kg
- Tolerance data: EN 10278
- Technical delivery conditions: EN 10277, surface quality class 2

execution	Cross-section design (data in mm)				
	round	4-edge	6-edge	8-edge	Flat-oval
+AC+C+A+C	2,2 - 8		1,19 - 8		