

1 Main characteristics and applications

It is a Chromium – Molybdenum steel that gives good hardness penetration for smaller sizes; uniform hardness, high strength and good toughness. The Sulphur content improves machinability, steel not to be used for high surface requirements.

2 Comparable standards

UNI	W.Nr	DIN	AFNOR	AISI/SAE	BS
~42CrMo4	1.7225	~42CrMo4	~42CD4	-	~708A42

3 Chemical composition (typical; in weight %)

C	Mn	Si	P	S	Cr	Mo
0.38	0.8	0.30	0.025	0.03	1	0.20

4 Critical points

Ac1	745 °C
Ac3	790 °C
Ms	300 °C

5 Production technology

EAF – LF – VD - Forging – Heat treatment +A/+QT

6 US specification

In according to standard EN10160 Class S3E3 and standard SEP 1921 Class C/c

7 Delivery condition

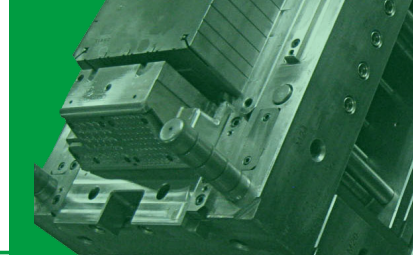
VR HOLDER is delivered in annealed condition, with hardness max 245 HB or quenched and tempered condition, with hardness range 262 - 321 HB (22 - 31 HRC).

8 Physical properties (reference values)

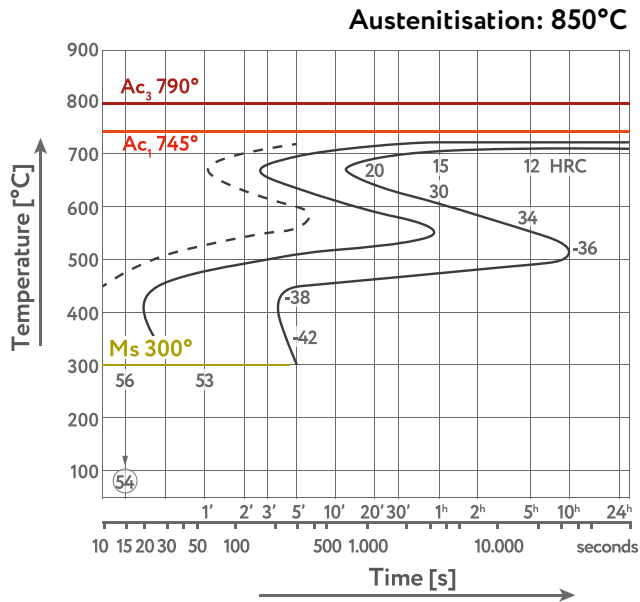
	20°C	100°C	250°C	500°C
Thermal expansion coefficient (10 ⁻⁶ /K)	12.1	12.7	12.9	13.9
Thermal conductivity (W/mk)	40	39.8	38.9	36.9
Young modulus (Kn/mm ²)	212	207	200	175

9 Heat treatment

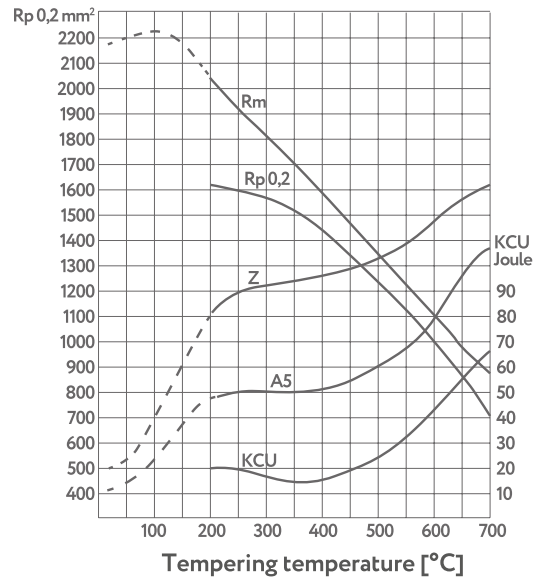
TREATMENT	TEMPERATURE	HOLDING TIME (HT)	COOLING	COMMENTS
Annealing	Heat to 700 - 720 °C	Min. H.T. for 2 minute /mm	Furnace	-
Hardening	Heat to 850 - 880 °C	Min. H.T. for 1 minute /mm	Polymer quenching	-
Tempering	-	-	-	To be carried out after hardening



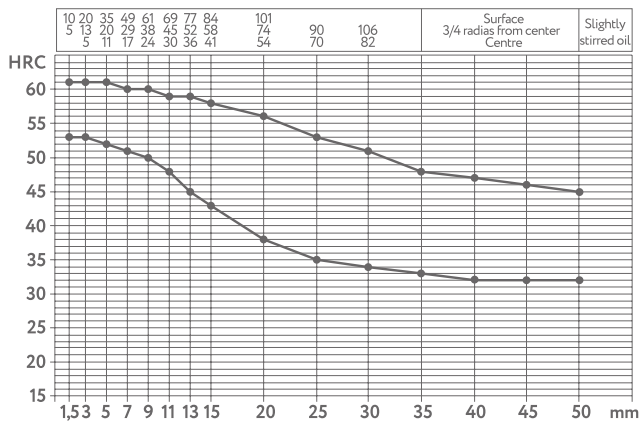
10 C.C.T. curve



11 Tempering curve



12 Jominy hardenability



Distance from quenched end	Rockwell hardness	
	HRc min	HRc max
mm. 1,5	53	61
3	53	61
5	52	61
7	51	60
9	50	60
11	48	59
13	45	59
15	43	58
20	38	56
25	35	53
30	34	51
35	33	48
40	32	47
45	32	46
50	32	45

