

Material properties

Material	Ck 35 (Germany / DIN)
Group	Structural and constructional steels
Subgroup	DIN 17200 Quenched and tempered steels
Comment	Quality specifications; DIN 17200 was superseded by EN 10083-1 and EN 10083-2

Application -

Yield Stress[MPa]			
Dimension	Min	Max	Approx
Quenched and tempered; <= 16 mm	430	-	-
Quenched and tempered; > 16 <= 40 mm	370	-	-
Quenched and tempered; > 40 <= 100 mm	330	-	-
Normalized; > 16 <= 100 mm	280	-	-

Tensile Stress[MPa]			
Dimension	Min	Max	Approx
Quenched and tempered; <= 16 mm	630	780	-
Quenched and tempered; > 16 <= 40 mm	590	740	-
Quenched and tempered; > 40 <= 100 mm	550	700	-
Normalized; > 16 <= 100 mm	500	650	-

Elongation A5 [%]			
Dimension	Min	Max	Approx
Quenched and tempered; <= 16 mm Note: Lo = 5 x do; (long.)	17.0	-	-
Quenched and tempered; > 16 <= 40 mm Note: Lo = 5 x do; (long.)	19.0	-	-
Quenched and tempered; > 40 <= 100 mm Note: Lo = 5 x do; (long.)	20.0	-	-
Normalized; > 16 <= 100 mm Note: Lo = 5 x do; (long.)	21.0	-	-

Impact [J]			
Dimension	Min	Max	Approx
Quenched and tempered; <= 16 mm Impact Test: DVM	60	-	-

Impact [J]			
Dimension	Min	Max	Approx
Quenched and tempered; > 16 <= 40 mm Impact Test: DVM	60	-	-
Quenched and tempered; > 40 <= 100 mm Impact Test: DVM	60	-	-

Hardness	
Dimension	Hardness
Soft annealed (G)	<= 183 HB 30
Heat treated to achieve a given tensile strength (BF)	>= 143 <= 197 HB 30

Chemical Composition [%]			
Criterion	Min	Max	Approx
C	0.3200	0.3900	-
Si	0.1500	0.3500	-
Mn	0.5000	0.8000	-
P	-	0.0350	-
S	-	0.0350	-

Heat Treatment

Hot working: 1100-850 C;
Soft annealing: 650-700 C;
Normalizing: 860-890 C;
Hardening in water: 840-870 C;
Hardening in oil: 850-880 C;
Tempering: 550-660 C