

Material specification sheet

Saarstahl - C50E (Ck50)

Material No.: 1.1206	Former brand name:	International steel grades: BS: 080M50 AFNOR: 2C50, XC48H1, XC50H1 SAE: 1049, 1050
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Material group: Steel for quenching and tempering according to DIN EN 10083

Chemical composition: (Typical analysis in %)	C	Si	Mn	S	other
	0,50	0,25	0,75	<0,03	(Pb)

Application: Plain carbon steel for mechanical engineering and automotive components.

Hot forming and heat treatment:	Forging or hot rolling:	1100 - 850°C
	Normalising:	830 - 870°C/air
	Soft annealing:	680 - 710°C/furnace
	Hardening:	810 - 850°C/oil, water
	Tempering:	550 - 660°C/air

Mechanical Properties: Treated for cold shearability +S: max. 255 HB
Soft annealed +A: max. 217 HB

Quenched and tempered, +QT:

	< 16	>16 – 40	>40 – 100	>100 – 160	>160 – 250
Diameter d [mm]	< 16	>16 – 40	>40 – 100	>100 – 160	>160 – 250
Thickness t [mm]	< 8	8<t<20	20<t<60	60<t<100	100<t<160
0,2% proof stress R_{p0,2} [N/mm²]	min. 520	min. 460	min. 400	-	-
Tensile strength R_m [N/mm²]	750 - 900	700 - 850	650 - 800	-	-
Fracture elongation A₅ [%]	Min. 13	min. 15	min. 16	-	-
Reduction of area Z [%]	min. 30	min. 35	min. 40	-	-
Notch impact energy ISO-V [J]	-	-	-	-	-

Normalised, +N:

Diameter d [mm]	< 16	>16 – 100	>100 – 250		
Thickness t [mm]	< 16	16<t<100	100<t<250		
0,2% proof stress R_{p0,2} [N/mm²]	min. 355	min. 320	min. 290		
Tensile strength R_m [N/mm²]	min. 650	min. 610	min. 590		
Fracture elongation A₅ [%]	min. 12	min. 14	min. 14		