

Material specification sheet

Saarstahl - 20MnCrB5

Material No.:	Former brand name:	International steel grades:
1.7168	EC 100 B	BS: AFNOR: SAE:

Material group: Boron alloyed case hardening steel

Chemical composition: (Typical analysis in %)	C	Si	Mn	Cr	other
	0,20	0,25	1,15	1,15	+B (+Pb)

Application: Boron alloyed case hardening steel for parts with a required core tensile strength of 1000 - 1300 N/mm² and good wearing resistance as bushes, piston bolts, camshafts, spindles, gears, shafts and other mechanical controlling and gearing components. Boron increases the hardenability and the toughness of case hardened parts.

Hot forming and heat treatment:	Forging or hot rolling:	1100 - 850°C
	Normalising:	840 - 870°C/air
	Soft annealing:	650 - 700°C/furnace
	Carburising:	870 - 930°C/oil
	Core hardening:	850 - 880°C
	Intermediate annealing:	650 - 700°C
	Case hardening:	810 - 840°C/oil
	Tempering:	170 - 210°C

Mechanical Properties:	Treated for hardness range - BF (+TH):	170 - 217 HB
	Treated for ferrite and pearlite structure and hardness range, +FP:	152 - 201 HB
	Soft annealed, +A:	max. 217 HB

Condition of heat treatment: blank hardened

Diameter d [mm]	< 11	>11 – 30	>30 – 63
0,2% proof stress R_{p0,2} [N/mm²]	min. 730	min. 680	min. 550
Tensile strength R_m [N/mm²]	1100 - 1400	1000 - 1300	800 - 1100
Fracture elongation A₅ [%]	min. 7	min. 8	min. 10
Reduction of area Z [%]	min. 30	min. 35	min. 35
Notch impact energy ISO-V [J]	min. 15	min. 20	min. 20