

## Material specification sheet

### Saarstahl - 20MnCr5 - 20MnCrS5

Material No.:	Former brand name:	International steel grades:
1.7147	EC 100	BS: AFNOR: 20MC5 SAE: 5120
1.7149		

**Material group:** Case hardening steels according to DIN EN 10084

Chemical composition: (Typical analysis in %)	Steel	C	Si	Mn	Cr	S	other
	20MnCr5	0,20	0,25	1,25	1,15	<0,035	(Pb)
	20MnCrS5	0,20	0,25	1,25	1,15	0,020 0,035	(Pb)

**Application:** Alloyed case hardening steel for parts with a required core tensile strength of 1000 - 1300 N/mm<sup>2</sup> and good wearing resistance as boxes, piston bolts, spindles, camshafts, gears, shafts and other mechanical controlling parts.

<b>Hot forming and heat treatment:</b>	Forging or hot rolling:	1100 - 850°C
	Normalising:	840 - 870°C/air
	Soft annealing:	650 - 700°C/furnace
	Carburising:	880 - 980°C
	Core hardening:	860 - 900°C/oil
	Intermediate annealing:	650 - 700°C
	Case hardening:	780 - 820°C/oil
	Tempering:	150 - 200°C

<b>Mechanical Properties:</b>	Treated for cold shearability, +S:	max. 255 HB
	Soft annealed, +A:	max. 217 HB
	Treated for strength, +TH:	170 - 217 HB
	Treated for ferrite and pearlite structure and hardness range, +FP:	152 - 201 HB

after hardening and tempering at 200°C:

Diameter d [mm]	d ≤ 16	16 < d ≤ 40	40 < d ≤ 100
Tensile strength R <sub>m</sub> [N/mm <sup>2</sup> ]	min. 1200	min. 1000	min. 800