

Material specification sheet

Saarstahl - 13NiCr6 (13NiCr6Pb) - 16NiCrS4

Material No.:	Former brand name:	International steel grades:
1.5713	RAE 1	BS:
1.5715		AFNOR: 10NC6
		SAE: 3115

Material group: Alloyed case hardening steel

Chemical composition: (Typical analysis in %)	C	Si	Mn	Cr	Ni	other
	0,16	0,25	0,80	1,05	1,45	(Pb)

Application: Alloyed case hardening steel for highly strained components and high claims on toughness at core tensile strength in a range of 1000-1200 N/mm². For automotive and gearing components as driving gears, crown wheels, shafts, gears, bolts, mechanical transmission shafts.

Hot forming and heat treatment:	Forging or hot rolling:	1100 - 850°C
	Normalising:	850 - 880°C/air
	Soft annealing:	620 - 650°C/furnace
	Carburising:	870 - 930°C
	Core hardening:	840 - 870°C/oil
	Intermediate annealing:	620 - 650°C
	Case hardening:	800 - 820°C/oil
	Tempering:	170 - 210°C

Mechanical Properties:	Soft annealed, +A:	max. 190 HB
	Treated for strength, +TH:	175 - 220 HB
	Treated for ferrite and pearlite structure and hardness range, +FP:	160 - 200 HB

Core properties after case hardening :

Diameter d [mm]	d ≤ 16	16 < d ≤ 40	40 < d ≤ 100
0,2% proof stress R _{p0,2} [N/mm ²]	min. 835	min. 735	min. 590
Tensile strength R_m [N/mm²]	1080 - 1370	980 - 1270	780 - 1080
Fracture elongation A₅ [%]	min. 9	min. 10	min. 11
Reduction of area Z [%]	min. 35	min. 40	min. 40
Notch impact energy ISO-V [J]	min. 33	min. 42	min. 42
Surface hardness [HRC]	max. 59	max. 59	max. 59