

## Material specification sheet

### Saarstahl - 13NiCr6 (13NiCr6Pb) - 16NiCrS4

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

**Material group:** Alloyed case hardening steel

<b>Chemical composition:</b> (Typical analysis in %)	<b>C</b>	<b>Si</b>	<b>Mn</b>	<b>Cr</b>	<b>Ni</b>	<b>other</b>
	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/mm<sup>2</sup>. For automotive and gearing components as driving gears, crown wheels, shafts, gears, bolts, mechanical transmission shafts.

<b>Hot forming and heat treatment:</b>	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

<b>Mechanical Properties:</b>	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

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Core properties after case hardening :

Diameter d [mm]	d ≤ 16	16 < d ≤ 40	40 < d ≤ 100
<b>0,2% proof stress</b> R <sub>p0,2</sub> [N/mm <sup>2</sup> ]	min. 835	min. 735	min. 590
<b>Tensile strength R<sub>m</sub> [N/mm<sup>2</sup>]</b>	1080 - 1370	980 - 1270	780 - 1080
<b>Fracture elongation A<sub>5</sub> [%]</b>	min. 9	min. 10	min. 11
<b>Reduction of area Z [%]</b>	min. 35	min. 40	min. 40
<b>Notch impact energy ISO-V [J]</b>	min. 33	min. 42	min. 42
<b>Surface hardness [HRC]</b>	max. 59	max. 59	max. 59