

## Material specification sheet

### Saarstahl - 51CrV4 (50CrV4)

Material No.:	Former brand name:	International steel grades:
<b>1.8159</b>	<b>F2K</b>	<b>BS:</b> 735A51, 735M50, 735H51 <b>AFNOR:</b> 50CrV4, 51CV4 <b>SAE:</b> 6150

**Material group:** Steel for quenching and tempering according to DIN EN 10083

Chemical composition: (Typical analysis in %)	C	Si	Mn	Cr	V	other
		0,50	0,25	0,90	1,10	0,12

**Application:** Alloyed heat treatable steel with a typical tensile strength of 900 - 1200 N/mm<sup>2</sup>. For automotive and mechanical engineering components as gear parts, pinions, shafts.

<b>Hot forming and heat treatment:</b>	Forging or hot rolling:	1050 - 850°C
	Normalising:	870 - 900°C/air
	Soft annealing:	680 - 720°C/furnace
	Hardening:	820 - 860°C/oil
	Tempering:	540 - 680°C/air

**Mechanical Properties:** Treated for cold shearability +S: See condition A  
Soft annealed +A: max. 248 HB

Quenched and tempered, +QT:

	< 16	>16 – 40	>40 – 100	>100 – 160	>160 – 250
<b>Diameter d [mm]</b>	< 16	>16 – 40	>40 – 100	>100 – 160	>160 – 250
<b>Thickness t [mm]</b>	< 8	8<t<20	20<t<60	60<t<100	100<t<160
<b>0,2% proof stress R<sub>p0,2</sub> [N/mm<sup>2</sup>]</b>	min. 900	min. 800	min. 700	min. 650	min. 600
<b>Tensile strength R<sub>m</sub> [N/mm<sup>2</sup>]</b>	1100 - 1300	1000 - 1200	900 - 1100	850 - 1000	800 - 950
<b>Fracture elongation A<sub>5</sub> [%]</b>	min. 9	min. 10	min. 12	min. 13	min. 13
<b>Reduction of area Z [%]</b>	min. 40	min. 45	min. 50	min. 50	min. 50
<b>Notch impact energy ISO-V [J]</b>	min. 30	min. 30	min. 30	min. 30	min. 30