

## Material specification sheet

### Saarstahl - C35R (Cm35)

Material No.:	Former brand name:	International steel grades:
1.1180	R3	<b>BS:</b> C50R, 080A35 <b>AFNOR:</b> C50R, 3C35, XC32 <b>SAE:</b> 1035

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

Chemical composition: (Typical analysis in %)	C	Si	Mn	S	other
	0,35	0,25	0,65	0,020 0,035	(Pb)

**Application:** Plain carbon steel for mechanical engineering and automotive components

<b>Hot forming and heat treatment:</b>	Forging or hot rolling:	1100 - 850°C
	Normalising:	860 - 900°C/air
	Soft annealing:	680 - 710°C/furnace
	Hardening:	840 - 880°C/water, oil
	Tempering:	550 - 660°C/air

<b>Mechanical Properties:</b>	Treated for cold shearability +S:	Shearable in as rolled condition
	Soft annealed +A:	-

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. 430	min. 380	min. 320	-	-
<b>Tensile strength R<sub>m</sub> [N/mm<sup>2</sup>]</b>	630 - 780	600 - 750	550 - 700	-	-
<b>Fracture elongation A<sub>s</sub> [%]</b>	Min. 17	min. 19	min. 20	-	-
<b>Reduction of area Z [%]</b>	Min. 40	min. 45	min. 50	-	-
<b>Notch impact energy ISO-V [J]</b>	min. 35	min. 35	min. 35	-	-

Normalised, +N:

<b>Diameter d [mm]</b>	< 16	>16 – 100	>100 – 250		
<b>Thickness t [mm]</b>	< 16	16<t<100	100<t<250		
<b>0,2% proof stress R<sub>p0,2</sub> [N/mm<sup>2</sup>]</b>	min. 300	min. 270	min. 245		
<b>Tensile strength R<sub>m</sub> [N/mm<sup>2</sup>]</b>	min. 550	min. 520	min. 500		
<b>Fracture elongation A<sub>5</sub> [%]</b>	min. 18	min. 19	min. 19		