

**STANDARD REFERENCE:**

EN ISO 683-4: 2018 (Hot-rolled products) | EN 10277: 2018 (Bright products)

**RODACCIAI REFERENCES AND COMPARABLE STANDARDS**

EUROPE		ITALY	GERMANY		FRANCE	UK	USA
EN 10087: 1998 EN 10277-3: 2008		(UNI 4838-80)	(DIN 1651-88)		(NF A 35-562-86)	(BS 970 pt.3-91)	ASTM A 29
Grade	N°		Werkstoff	N°			
35S20	1.0726	-	35 S 20	1.0726	-	-	-

**CHEMICAL COMPOSITION (CAST ANALYSIS) (%)**

C	Si / max	Mn	P / max	S
0,32÷0,39	0,40	0,70÷1,10	0,060	0,15÷0,25

**MECHANICAL PROPERTIES - AS ROLLED CONDITION**

Size mm	as Rolled and/or as Rolled + Turned (+SH)		as Rolled and/or as Rolled + Turned + Quenched + Tempered (+SH +QT)		
	Hardness HB max	R <sub>m</sub> (MPa)	R <sub>p0,2</sub> (MPa) min	R <sub>m</sub> (MPa)	A <sub>5</sub> (%) min
≥5 ≤10	210*	550÷720*	430	630÷780*	15*
>10 ≤16	204*	550÷700*	430	630÷780*	15*
>16 ≤40	198	520÷680	380	600÷750	16
>40 ≤63	196	520÷670	320	550÷700	17
>63 ≤100	190	500÷650	320	550÷700	17

\*Values valid only for hot rolled products

For size &lt;5 mm the mechanical properties may be agreed at the time of enquiry and order

**MECHANICAL PROPERTIES OF BRIGHT STEEL**

Size mm	Cold Drawn (+C)			Quenched + Tempered + Peeled (+QT +SH)*			Quenched + Tempered + Cold Drawn (+QT +C)		
	R <sub>p0,2</sub> (MPa) min	R <sub>m</sub> (MPa)	A <sub>5</sub> (%) min	R <sub>p0,2</sub> (MPa) min	R <sub>m</sub> (MPa)	A <sub>5</sub> (%) min	R <sub>p0,2</sub> (MPa) min	R <sub>m</sub> (MPa)	A <sub>5</sub> (%) min
≥5 ≤10	480	640÷880	6	-	-	-	490	700÷900	9
>10 ≤16	400	590÷830	7	-	-	-	490	700÷900	11
>16 ≤40	360	560÷800	8	380	600÷750	16	455	650÷850	12
>40 ≤63	340	530÷760	9	320	550÷700	17	400	570÷770	13
>63 ≤100	300	510÷680	9	320	550÷700	17	385	570÷750	14

\* This values are valid also for Cold Drawn - Quenched + Tempered Condition (+C +QT)

For size &lt;5 mm the mechanical properties may be agreed at the time of enquiry and order

**WORKING TEMPERATURES RECOMMENDED**

Operation	Hot forgings deformation	Normalizing	Soft annealing	Quenching in oil or water	Tempering
°C	950÷1200	870÷900	670÷700	860÷890	540÷680

Mark Rodacciai

Download APP

**FREE-CUTTING STEELS**  
 DIRECT-HARDENING

**35S20**
