

**STANDARD REFERENCE:**

EN ISO 683-1: 2018 (Hot-rolled products) | EN 10277-2: 2008 (Bright products)

**RODACCIAI REFERENCES AND COMPARABLE STANDARDS**

EUROPE		ITALY	GERMANY		FRANCE	UK	USA
EN 10083-2: 2006 EN 10277-2: 2008		(UNI 7845-78)	(DIN 17200-86)		(NF A 35-552-86)	(BS 970 pt.3-96)	ASTM A 29
Grade	N°		Werkstoff	N°			
C55E	1.1203	C55	Ck 55	1.1203	XC 55	-	1055
C55R	1.0535		Cm 55	1.1209			

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

EUROPE	C	Si	Mn	P / max	S	Cr / max	Mo / max	Ni / max	Cu / max
C55E	0,52÷0,60	0,10÷0,40	0,60÷0,90	0,025	≤ 0,035	0,40	0,10	0,40	0,30
C55R					0,020÷0,040				

**MECHANICAL PROPERTIES - AS ROLLED CONDITION**

Size mm	HB max to condition		Quenched and tempered (+QT)					Normalized (+N)		
	Treated to improve shearability (+S)	Soft annealing (+A)	R <sub>p0,2</sub> (MPa) min	R <sub>m</sub> (MPa)	A <sub>5</sub> (%) min	Z (%) min	KV (J) min	R <sub>p0,2</sub> (MPa) min	R <sub>m</sub> (MPa)	A <sub>5</sub> (%) min
≤ 16	255	229	550	800÷950	12	30	-	370	680	11
> 16 ≤ 40	255	229	490	750÷900	14	35	-	330	640	12
> 40 ≤ 100	255	229	420	700÷850	15	40	-	330	640	12
> 100 ≤ 160	255	229	-	-	-	-	-	300	620	12
> 160 ≤ 250	255	229	-	-	-	-	-	300	620	12

**MECHANICAL PROPERTIES - BRIGHT PRODUCTS CONDITION**

Size mm	Rolled+Turned (+SH)		Cold Drawn (+C)		
	Hardness HB	R <sub>m</sub> (MPa)	R <sub>p0,2</sub> (MPa) min	R <sub>m</sub> (MPa)	A (%) min
≥ 5 ≤ 10	-	-	590	770÷1100	5
> 10 ≤ 16	-	-	520	730÷1080	6
> 16 ≤ 40	181÷269	610÷910	440	690÷1050	7
> 40 ≤ 63	181÷269	610÷910	390	650÷1030	8
> 63 ≤ 100	181÷269	610÷910	-	-	-



**HARDNESS LIMITS (JOMINY TEST)**

Limits of range		Hardness HRC at a distance from quenched end of test pieces (mm)															
		1	2	3	4	5	6	7	8	9	10	11	13	15	20	25	30
+H	Max	65	64	63	62	60	57	52	45	37	36	35	34	33	32	30	29
	Min	58	55	47	37	33	32	31	30	29	28	27	26	25	24	22	20

**WORKING TEMPERATURES RECOMMENDED**

Operation	Hot forgings deformation	Normalizing	Soft annealing	Quenching in oil	Tempering
°C	850÷1150	825÷865	650÷700	805÷845	550÷660

