

STANDARD REFERENCE:

EN ISO 683-3: 2018 (Hot-rolled) | EN 10277: 2018 (Bright products)

RODACCIAI REFERENCES AND COMPARABLE STANDARDS

EUROPE		ITALY	GERMANY		FRANCE	UK	USA
EN 10084: 2008 EN 10277-4: 2008		(UNI 7846-78)	(DIN 17210-84)		(NF A 35-551-86)	(BS 970 pt.3-91)	ASTM A 29
Grade	N°		Werkstoff	N°			
C15E	1.1141	C15	Ck15	1.1141	XC 12	(080M15)	1015

CHEMICAL COMPOSITION (CAST ANALYSIS) (%)

EUROPE	C	Si	Mn	P / max	S	Cr / max	Mo / max	Ni / max	Cu / max	Al	Pb
C15E	0,12±0,18	0,15±0,40	0,30±0,60	0,025	≤ 0,035	0,40	0,10	0,40	0,30	0,020±0,050	-
C15RPb					0,020±0,040						0,15±0,30

MECCANICAL PROPERTIES - AS ROLLED CONDITION

Size	Annealed to maximum hardness requirement (+A)	Normalized (+N)
≤100	≤143	95÷150

MECHANICAL PROPERTIES - BRIGHT PRODUCTS CONDITION

Size mm	as Rolled + Turned (+SH)		Cold drawn (+C)			+A**+ Turned (+A+SH)	+A**+ Cold drawn (+A+C)
	Hardness (HB)*	R _m (MPa)	R _{p0,2} (MPa) min	R _m (MPa)	A ₅ (%) min	Hardness (HB) max	Hardness (HB) max
≥ 5 ≤ 10	-	-	380	500÷800	7	-	238
> 10 ≤ 16	-	-	340	480÷780	8	-	231
> 16 ≤ 40	98±178	330±600	280	430÷730	9	143	216
> 40 ≤ 63	98±178	330±600	240	380÷670	11	143	198
> 63 ≤ 100	98±178	330±600	215	340±600	12	143	178

* Hardness values valid also in as rolled condition **+A = annealed to maximum hardness requirement
 For size <5 mm the mechanical properties may be agreed at the time of enquiry and order

WORKING TEMPERATURES RECOMMENDED

Operation	Hot forgings deformation	Carburizing temperature	Core quenching temperature	Case quenching temperature	Tempering
°C	900±1150	880±980	880±920	780±820	150±200

