STANDARD REFERENCE:

UNI 7846: 78 ((Hot-rolled and hot-rolled + turned products) | **UNI 10233-5:93** (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°**			
-	-	20CrNi4	-	-	-	-	-

CHEMICAL COMPOSITION (CAST ANALYSIS) (%)

EUROPE	C	Si	Mn	P / max	S	Cr	Mo / max	Ni	Pb
20CrNi4	0,18÷0,23	0,15÷0,40	0,80÷1,10	0,035	0,020÷0,035	0,90÷1,20	0,10	0,90÷1,20	-
20CrNi4Pb									0,15÷0,30

MECHANICAL PROPERTIES - AS ROLLED CONDITION - Hardness (HB) in the condition

Soft annealed	Spherodizing	Annealing to obtain a particular structure	
≤ 240	≤ 225	≥ 155	≤ 207

MECHANICAL PROPERTIES - BRIGHT PRODUCT CONDITION

Size mm	Cold drawn products obtained from annealed hot rolled products		Annealed + Cold drawn or annealed + Turned products	
	Soft annealed HB max	Isothermal annealed HB max	Soft annealed HB max	Isothermal annealed HB
≥ 5 ≤ 10	275	265	240	155÷210
> 10 ≤ 16	265	255	240	155÷210
> 16 ≤ 40	260	250	235	155÷207
> 40 ≤ 100	255	245	235	155÷207

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	870÷900	850÷880	810÷840	150÷200

HARDNESS LIMITS (JOMINY TEST)

Limits of range		Hardness HRC at a distance from quenched end of test pieces (mm)														
		1,5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
+H	Max	50	49	48	47	45	44	42	41	38	35	33	32	31	30,5	30
	Min	40	38,5	36,5	34	32	29	27	25,5	23	21	19,5	18	17	16	15

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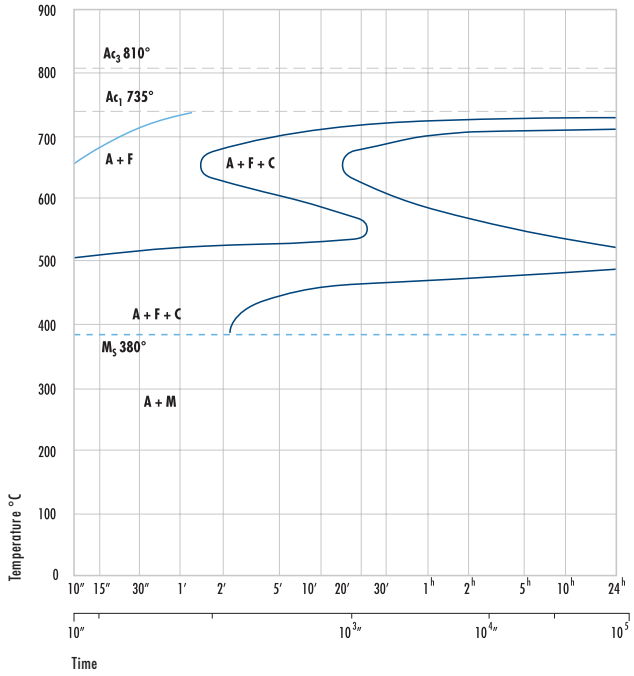
TTT



TEMPERING CURVE