

STANDARD REFERENCE:

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

RODACCIAI REFERENCES AND COMPARABLE STANDARDS

EUROPE		ITALY	GERMANY		FRANCE	UK	USA
EN 10083-3: 2006 EN 10277-5: 2008		(UNI 7845-78)	(DIN 17200-86)		(NF A 35-552-86)	(BS 970 pt.3-96)	ASTM A 29
Grade	N°		Werkstoff	N°			
25CrMo4	1.7218	25CrMo4	25CrMo4	1.7218	25 CD 4	-	-
25CrMoS4	1.7213		25CrMoS4	1.7213			

CHEMICAL COMPOSITION (CAST ANALYSIS) (%)

C	Si	Mn	P / max	S	Cr	Mo	Cu / max	Al	Pb
0,22÷0,29	0,10÷0,40	0,60÷0,90	0,025	≤ 0,035 0,020÷0,040	0,90÷1,20	0,15÷0,30	0,40	0,020÷0,050	-
				0,020÷0,040					0,15÷0,30

MECHANICAL PROPERTIES - AS ROLLED CONDITION

Size mm	HB max to condition		Quenched and tempered (+QT)				
	Treated to improve shearability (+S)	Soft annealing (+A)	R _{p0,2} (MPa) min	R _m (MPa)	A ₅ (%) min	Z (%) min	KV (J) min
≤ 16	255	212	700	900÷1100	12	50	-
> 16 ≤ 40	255	212	600	800÷950	14	55	50
> 40 ≤ 100	255	212	450	700÷850	15	60	50
> 100 ≤ 160	255	212	400	650÷800	16	60	45

MECHANICAL PROPERTIES - BRIGHT PRODUCTS CONDITION

Size mm	as Rolled + Turned (+A+SH)	Quenched+Tempered + Turned (+QT+SH)*				Quenched+Tempered + Cold Drawn (+QT+C)			as Rolled+Cold Drawn (+A+C)
	Hardness HB max	R _{p0,2} (MPa) min	R _m (MPa)	A ₅ (%) min	KV (J) min	R _{p0,2} (MPa) min	R _m (MPa)	A ₅ (%) min	Hardness HB max
≥ 5 ≤ 10	-	-	-	-	-	700	900÷1100	9	270
> 10 ≤ 16	-	-	-	-	-	700	900÷1100	9	260
> 16 ≤ 40	212	600	800÷950	14	50	600	800÷1000	10	255
> 40 ≤ 63	212	450	700÷850	15	50	520	700÷900	11	250
> 63 ≤ 100	212	450	700÷850	15	50	450	700÷900	12	250

*This values are valid also for Cold Drawn - Quenched + Tempered Condition (+C +QT)
 For size <5 mm the mechanical properties may be agreed at the time of enquiry and order

WORKING TEMPERATURES RECOMMENDED

Operation	Hot forgings deformation	Isothermal annealing	Soft annealing	Quenching in water or oil	Tempering
°C	850÷1150	850÷880 → 650	680÷720	840÷870	550÷650

Mark Rodacciai

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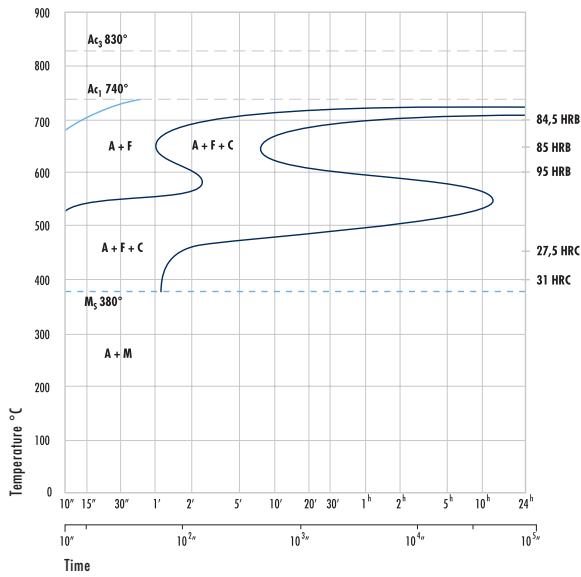
QUENCHING AND TEMPERING
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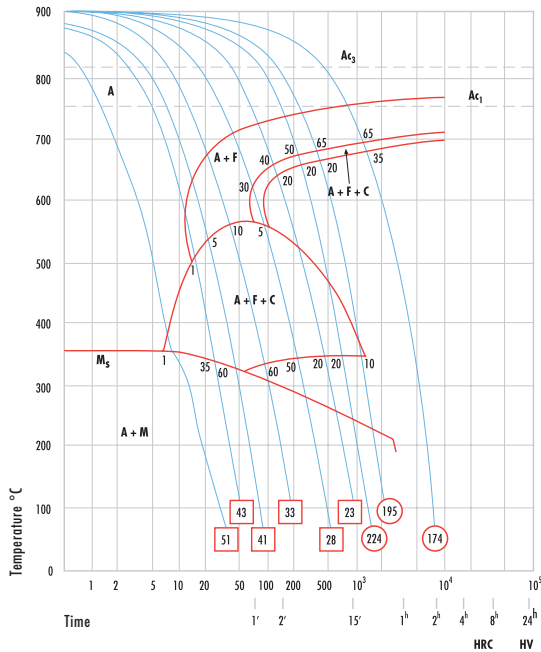

HARDNESS LIMITS (JOMINY TEST)

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	52	52	51	50	48	46	43	41	37	35	33	32	31	31	31
	Min	44	43	40	37	34	32	29	27	23	21	20	-	-	-	-
+HH	Max	52	52	51	50	48	46	43	41	37	35	33	32	31	31	31
	Min	47	46	44	41	39	37	34	32	28	26	24	23	22	22	22
+HL	Max	49	49	47	46	43	41	38	36	32	30	29	28	27	27	27
	Min	44	43	40	37	34	32	29	27	23	21	20	-	-	-	-

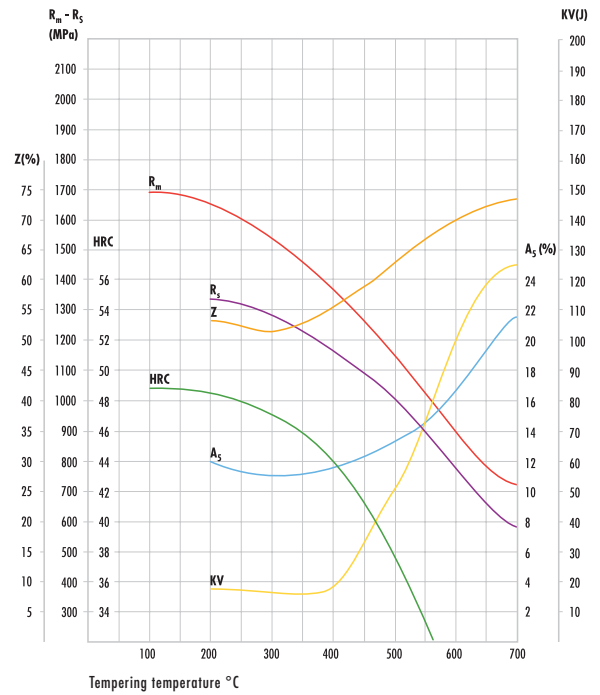
TTT



CCT



TEMPERING CURVE



rev. 10/2018

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