

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°			
34Cr4	1.7033		34 Cr 4	1.7033	32 C 4	-	5135
34CrS4	1.7037		34 CrS 4	1.7037			

CHEMICAL COMPOSITION (CAST ANALYSIS) (%)

EUROPE	C	Si	Mn	P / max	S	Cr	Cu / max	Al
34Cr4	0,30÷0,37	0,10÷0,40	0,60÷0,90	0,025	≤ 0,035	0,90÷1,20	0,40	0,020÷0,050
34CrS4					0,020÷0,040			

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	223	700	900÷1100	12	35	-
> 16 ≤ 40	255	223	590	800÷950	14	40	40
> 40 ≤ 100	255	223	460	700÷850	15	45	40

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	8	285
> 10 ≤ 16	-	-	-	-	-	700	900÷1100	9	275
> 16 ≤ 40	223	590	800÷950	14	40	580	800÷1000	9	270
> 40 ≤ 63	223	460	700÷850	15	40	510	700÷900	10	265
> 63 ≤ 100	223	460	700÷850	15	40	480	700÷900	11	265

*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 oil	Tempering
°C	850÷1150	850÷880 → 675	680÷720	840÷870	540÷660

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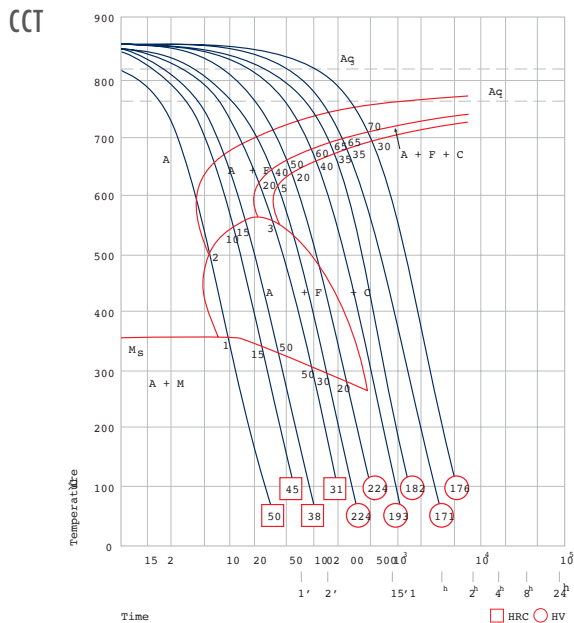
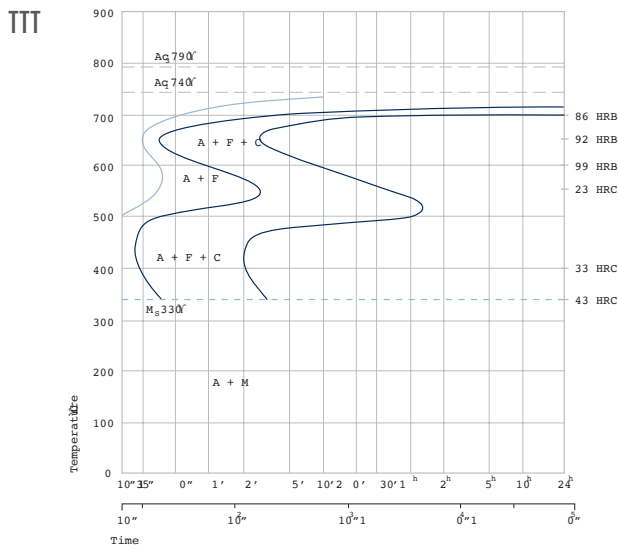
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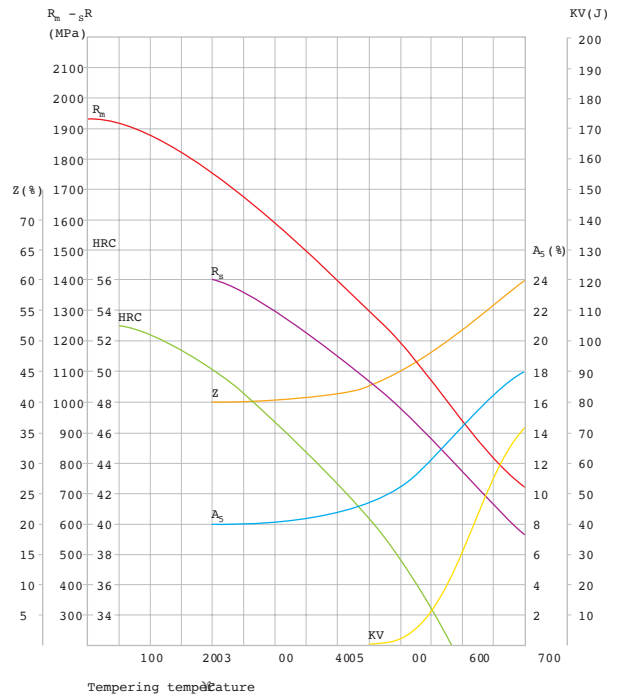
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HARDNESS LIMITS (JOMINY TEST)

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	57	57	56	54	52	49	46	44	39	37	35	34	33	32	31
	Min	49	48	45	41	35	32	29	27	23	21	20	-	-	-	-
+HH	Max	57	57	56	54	52	49	46	44	39	37	35	34	33	32	31
	Min	52	51	49	45	41	38	35	33	28	26	25	24	23	22	21
+HL	Max	54	54	52	50	46	43	40	38	34	32	30	29	28	27	26
	Min	49	48	45	41	35	32	29	27	23	21	20	-	-	-	-



TEMPERING CURVE



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