

STANDARD REFERENCE:

EN 10083-3: 2006 (Hot-rolled products) | EN 10277-5: 2008 (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°			
39NiCrMo3	1.6510	39NiCrMo3	-	-	-	817M40	-

CHEMICAL COMPOSITION (CAST ANALYSIS) (%)

EUROPE	C	Si	Mn	P / max	S	Cr	Mo	Ni	Al	Pb
39NiCrMo3	0,35÷0,43	0,15÷0,40	0,50÷0,80	0,025	0,020÷0,035	0,60÷1,00	0,15÷0,25	0,70÷1,00	0,020÷0,050	-
39NiCrMo3Pb										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	KV (J) min
≤ 16	where the shearability is of importance, this steel should be ordered in the "soft annealed" condition	240	785	980÷1180	11	-
> 16 ≤ 40		240	735	930÷1130	11	30
> 40 ≤ 100		240	685	880÷1080	12	30
> 100 ≤ 160		240	635	830÷980	12	30
> 160 ≤ 250		240	540	740÷880	13	30

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	R _{p0,2} (MPa) min	R _m (MPa)	A ₅ (%) min	Hardness HB max
≥ 5 ≤ 10	-	-	-	-	735	980÷1180	8	295
> 10 ≤ 16	-	-	-	-	700	930÷1130	8	290
> 16 ≤ 40	240	735	930÷1130	11	700	930÷1130	9	285
> 40 ≤ 63	240	735	880÷1080	12	625	880÷1080	10	280
> 63 ≤ 100	240	735	880÷1080	12	600	880÷1080	10	280

*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	830÷860 → 650	640÷680	830÷850	550÷650

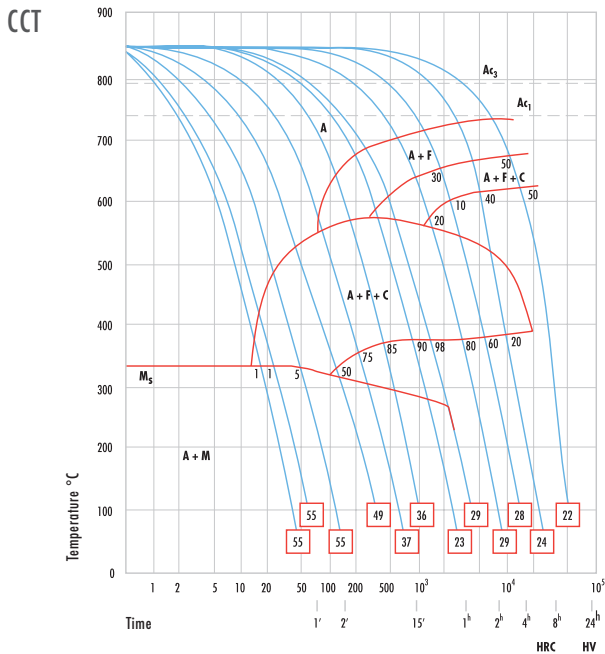
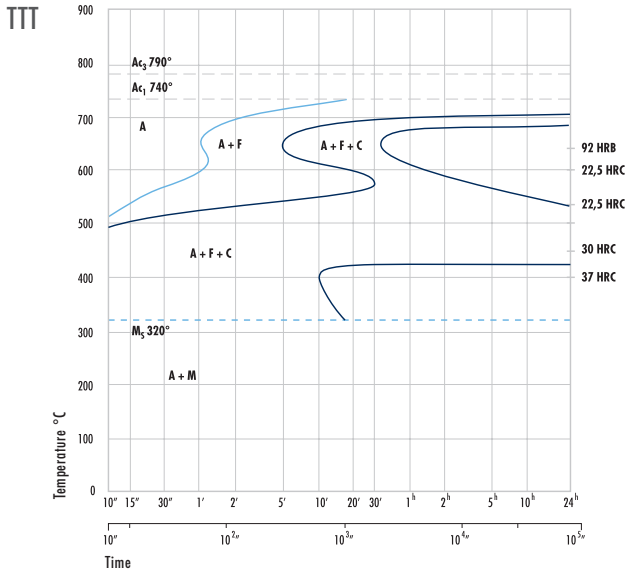
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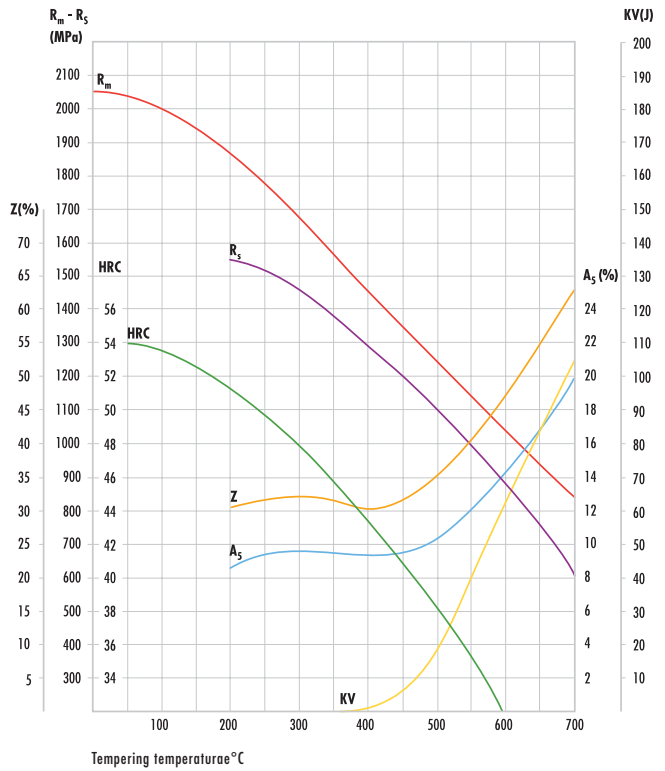
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HARDNESS LIMITS (JOMINY TEST)

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	60	60	59	58	58	57	57	56	55	52	51	49	48	46	45
	Min	52	51	50	49	48	46	44	43	39	36	34	33	32	31	30



TEMPERING CURVE



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