

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.1-96)	ASTM A 29
Grade	N°		Werkstoff	N°			
16NiCr4	1.5714	16CrNi4	-	-	-	637M17	-
16NiCrS4	1.5715						

CHEMICAL COMPOSITION (CAST ANALYSIS) (%)

EUROPE	C	Si	Mn	P / max	S	Cr	Ni	Cu / max	Al	Pb
16NiCr4					≤ 0,035					-
16NiCrS4	0,13÷0,19	0,15÷0,40	0,70÷1,00	0,025	0,020÷0,040	0,60÷1,00	0,80÷1,10	0,40	0,020÷0,050	-
16NiCrS4Pb					0,020÷0,040					0,15÷0,30

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

Treated to improve sheraibility (+S)	Annealed to maximum hardness requirements (+A)	Treated to hardness range (+TH)		Treated to ferrite-pearlite structure and hardness range (+FP)	
≤ 255	≤ 217	≥ 166	≤ 217	≥ 156	≤ 207

MECHANICAL PROPERTIES - BRIGHT PRODUCT CONDITION

Size mm	+A* + Turned (+A +SH)	+A* + Cold drawn (+A+C)	FP** + Turned (+FP +SH)	FP** + Cold drawn (+FP +C)
	Hardness HB max	Hardness HB max	Hardness HB	Hardness HB
≥ 5 ≤ 10	-	270	-	-
> 10 ≤ 16	-	260	-	-
> 16 ≤ 40	217	255	156÷207	156÷245
> 40 ≤ 63	217	255	156÷207	156÷240
> 63 ≤ 100	217	255	156÷207	156÷240

*+A = annealed to maximum hardness requirement

**+FP = treated to ferrite-perlite structure and hardness range

For size <5 mm the mechanical properties may be agreed at the time of enquiry and order

WORKING TEMPERATURES RECOMMENDED

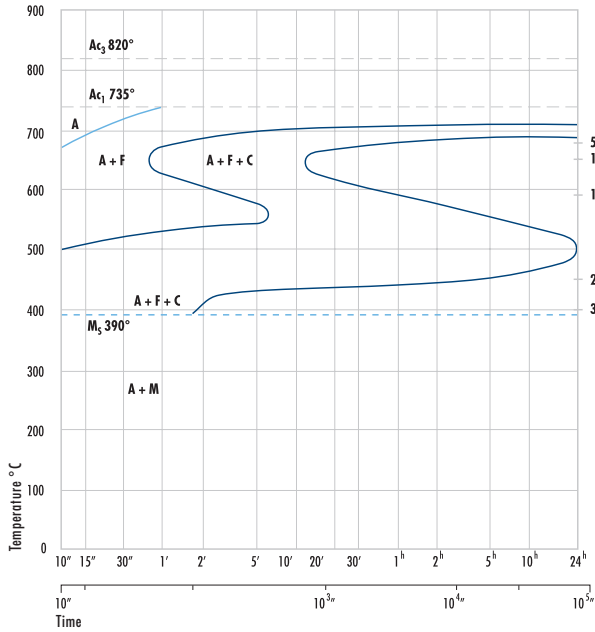
Operation	Hot forgings deformation	Carburizing temperature	Core quenching temperature	Case quenching temperature	Tempering
°C	900÷1150	880÷980	850÷890	780÷820	150÷200



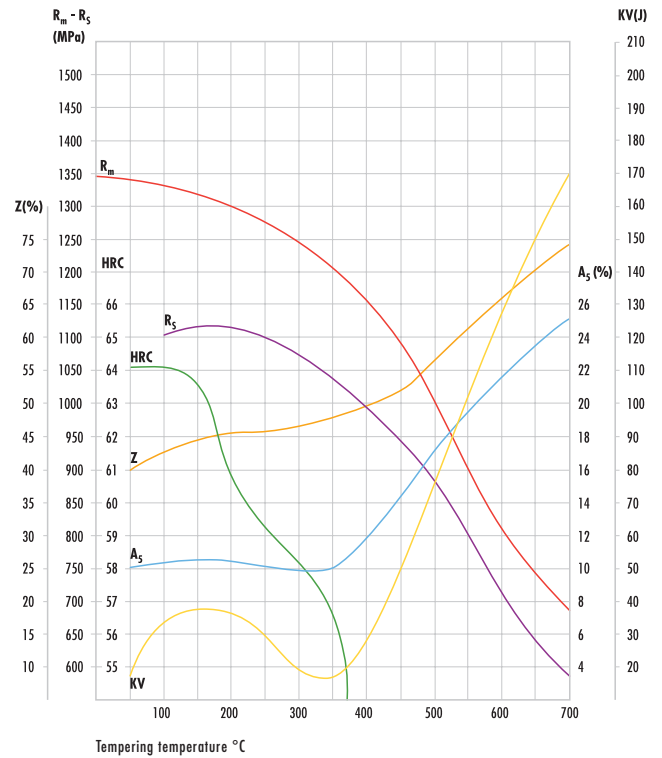
HARDNESS LIMITS (JOMINY TEST)

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	
+H	Max	47	46	44	42	40	38	36	34	32	30	29	28	28
	Min	39	36	33	29	27	25	23	22	20	-	-	-	-
+HH	Max	47	46	44	42	40	38	36	34	32	30	29	28	28
	Min	42	39	37	33	31	29	27	26	24	22	21	20	20
+HL	Max	44	43	40	38	36	34	32	30	28	26	25	24	24
	Min	39	36	33	29	27	25	23	22	20	-	-	-	-

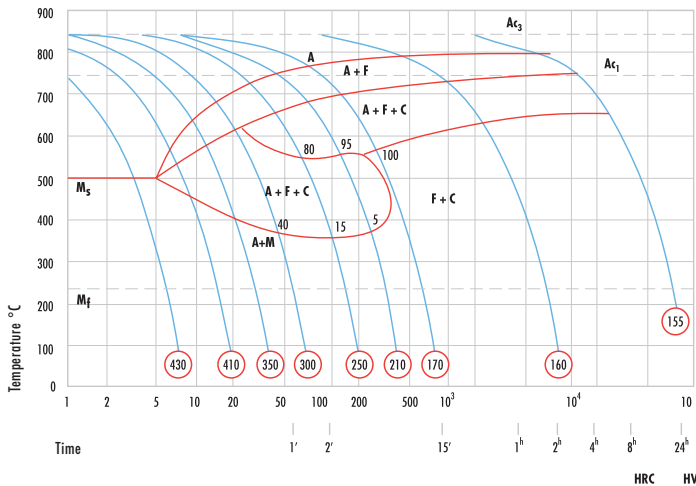
TTT



TEMPERING CURVE



CCT



rev. 10/2018

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CASE-HARDENING STEELS
ALLOYED

RN2 - RN2PB

