

**Corrispondenze  
Comparable standards**

SIAU	DIN	W.N.	AFNOR	BS	AISI/SAE
NCM2	(36CrNiMo4)	(1.6511)	(40NCD3)	-	(9840)

**Composizione  
Chemical analysis**

C	Mn	Si	Cr	Ni	Mo	P e S
.35±.43	.50±.80	.15±.40	.60±1.00	.70±1.00	.15±.25	≤ .035

**Temperature per la  
lavorazione a caldo  
ed il trattamento  
termico  
Hot work and heat  
treatment temperatures**

Punti critici Critical points	Fucinatura Forging	Normalizzazione Normalization	Ricottura subcritica Subcritical annealing	Ricottura isotermica Isothermal annealing	Tempra Hardening	Rinvenimento Tempering
Ac1 740					810÷880	830÷860
Ac3 790	1100÷900	850÷880	650÷700	↓	650x3h	550÷650
Ms 330					olio / oil	

**Caratteristiche meccaniche laminati UNI 7845 / Hot rolled bars mechanical properties UNI 7845**

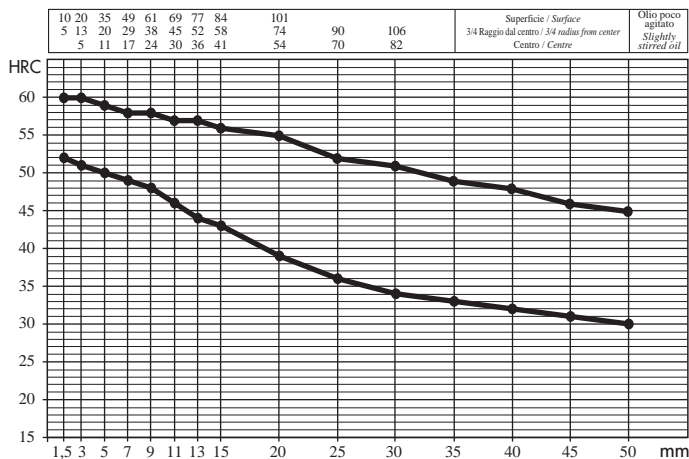
Stato Condition	Saggio Ø mm. Specimen Ø mm.	Re min. N/mm <sup>2</sup>	Rm N/mm <sup>2</sup>	A min. %	KCU min. J	Durezze HB allo stato HB hardness in the following conditions
Bonificato Hardened and tempered	16	785	980÷1180	11	30	Ricotto lavorabile / Soft-annealed ≤ 240
	> 16	735	930÷1130	11	30	Ricotto isoteramico / Isothermal annealed 180÷240
	> 40	685	880÷1080	12	30	Ricotto sferoidale / Spheroidal annealed ≤ 206
	> 100	635	830÷980	12	30	
	> 160 ≤ 250	540	740÷880	13	30	

**Caratteristiche meccaniche forgiati UNI 7874 / Forged bars mechanical properties UNI 7874**

Stato Condition	Saggio Ø mm. Specimen Ø mm.	Re min. N/mm <sup>2</sup>	Rm N/mm <sup>2</sup>	A min. %   ↑	KV min J   ↑
Bonificato Hardened and tempered	100 < d ≤ 250	540	685÷835	13 12	30 25
	250 < d ≤ 500	490	655÷805	15 14	30 25
	500 < d ≤ 1000	440	635÷785	16 15	25 20

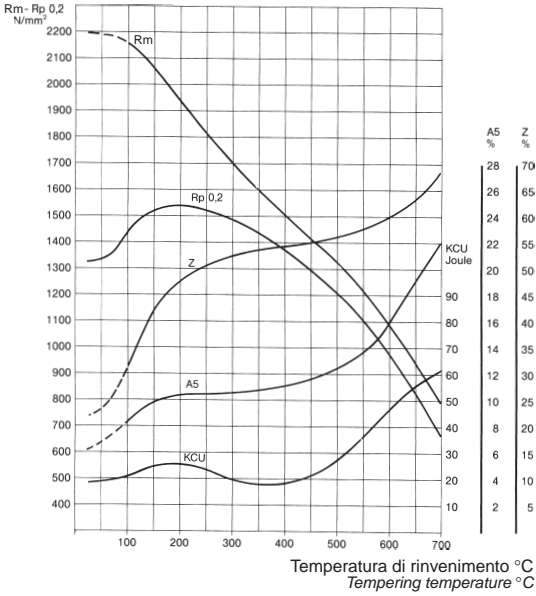
**Temperabilità  
Hardenability**

HRC / % Martensite	Diametro temprabile mm. / Hardenable diameter mm.
90%	olio / oil
50%	acqua / water
53	85
42	120


**Temperabilità Jominy  
Jominy hardenability**

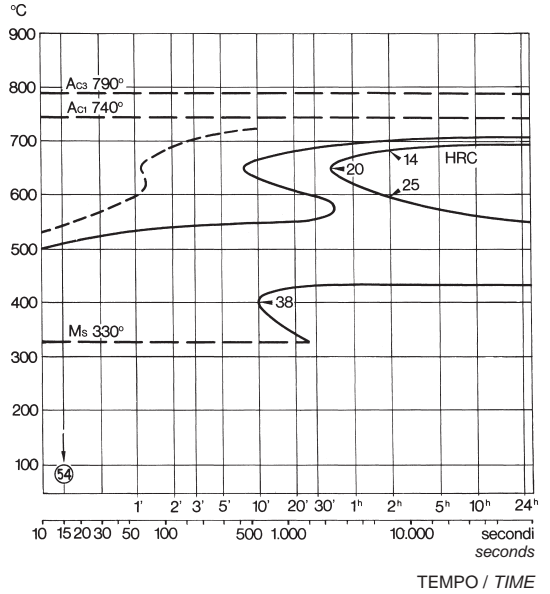
Distanza dall'estremità temprata Distance from quenched end	Durezza Rockwell Rockwell hardness
mm.	HRc min      HRc max
1,5	52      60
3	51      60
5	50      59
7	49      58
9	48      58
11	46      57
13	44      57
15	43      56
20	39      55
25	36      52
30	34      51
35	33      49
40	32      48
45	31      46
50	30      45

## Diagramma di Rinvenimento Tempering curve



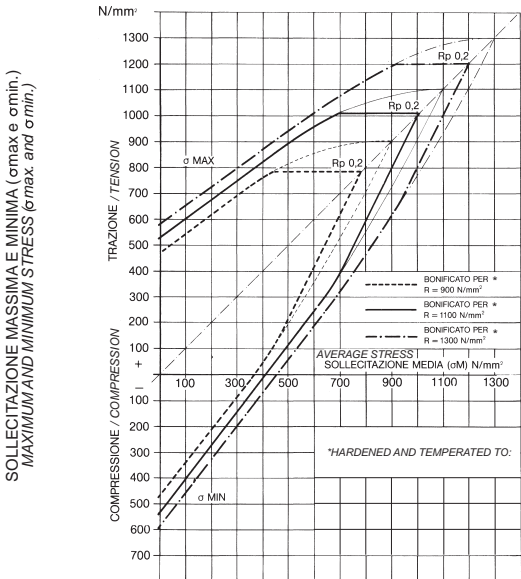
Tratt.: su  $\varnothing$  11 mm    Tempra: 850 °C olio    Rinv. per 2 ore  
 Treatment: on  $\varnothing$  11 mm    Hardening: 850 °C oil    Tempering for 2 hours

## Diagramma T.T.T. T.T.T. diagram



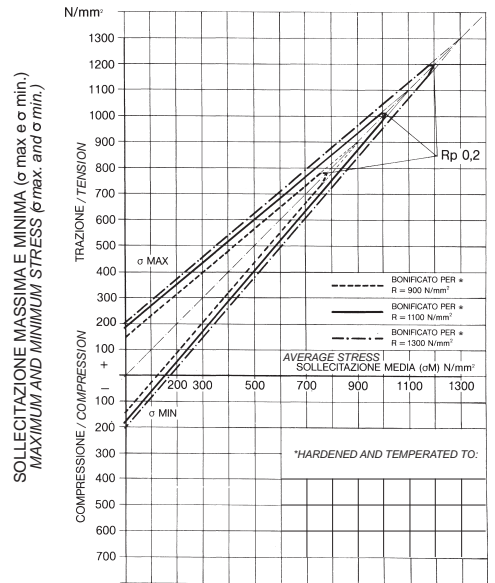
Quadro: 10 mm    Austenizzazione: 850 °C  
 Square: 10 mm    Austenitizing: 850 °C

## Diagramma di Goodman-Smith - Goodman-Smith diagram



Provette non tagliate  $\varnothing$  10 mm. con superficie speculare ( $R_a \leq 0.1$  micron)  
 10 mm  $\varnothing$  non-notched test specimens with mirror surface ( $r_a \leq 0.1$  micron)

## Diagramma di Goodman-Smith - Goodman-Smith diagram



Provette  $\varnothing$  10 mm. con intaglio profondo 0,92 mm e raggio di raccordo a fondo intaglio = 0,21 mm (corrispondente alla filettatura M 10 passo grosso)  
 sollecitazione unitaria calcolata sulla sezione di fondo intaglio.

10 mm diameter test specimens with 0.92 mm deep notch and radius at bottom of notch = 0.21 mm (corresponding to M 10 large pitch thread) unitary stress calculated on the bottom of notch section.