

STANDARD REFERENCE:
UNI 7846: 78 (Hot-rolled and hot-rolled + turned products) | **UNI 10233-5: 93** (Bright products)

RODACCIAI REFERENCES AND COMPARABLE STANDARDS

	EUROPE		ITALY	GERMANY		FRANCE	UK	USA
	UNI EN 10084: 2008 UNI EN 10277-4: 2008		(UNI 7846-78)	(DIN 17210-84)		(NF A 35-551-86)	(BS 970 pt.3-91)	ASTM A 29
RNO RNOpb	Grade	N°		Werkstoff	N°			
	-	-	12NiCr3	-	-	-	-	-

CHEMICAL COMPOSITION (CAST ANALYSIS) (%)

	Italy	C	Si	Mn	P / max	S	Cr	Mo / max	Ni	Al	Pb
RNO RNOpb	12NiCr3	0,09÷0,15	0,15÷0,40	0,30÷0,60	0,035	0,020÷0,035	0,40÷0,70	0,10	0,50÷0,80	0,020÷0,050	0,15÷0,30

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

Soft annealed	Spheroidizing	Annealing to obtain a particular structure
≤ 179	≤ 161	≥ 131 ≤ 200

MECHANICAL PROPERTIES - BRIGHT PRODUCT CONDITION

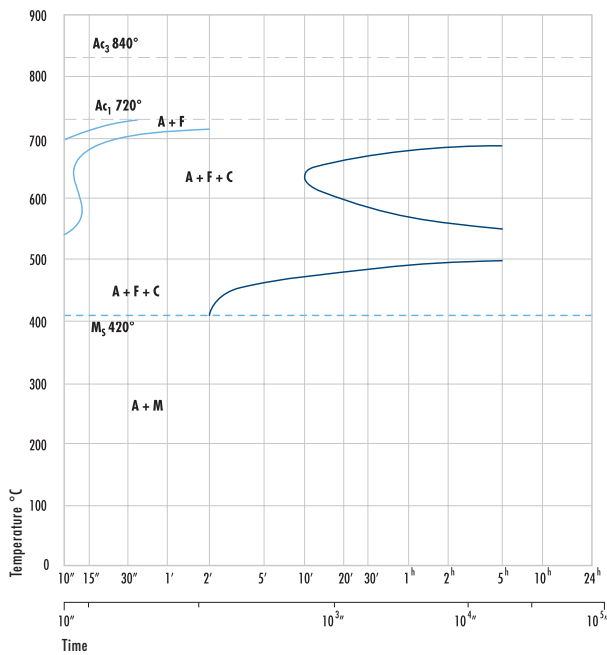
Size mm	Cold drawn products obtained from annealed hot rolled products		Annealed + Cold drawn or annealed + Turned products	
	Soft annealed HB max	Isothermal annealed HB max	Soft annealed HB max	Isothermal annealed HB
≥ 5 ≤ 10	245	245	182	135÷203
> 10 ≤ 16	235	235	182	135÷203
> 16 ≤ 40	230	230	179	131÷200
> 40 ≤ 100	230	230	179	131÷200

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

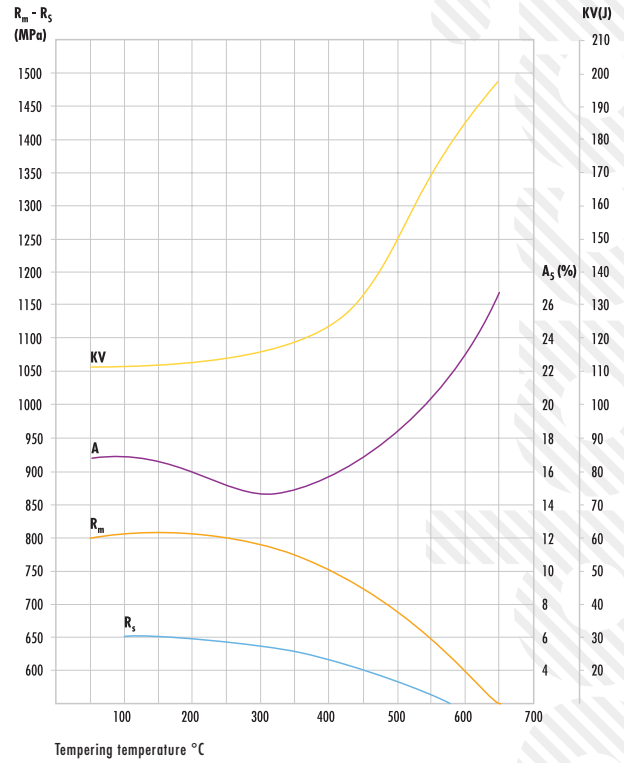
WORKING TEMPERATURES RECOMMENDED

Operation	Hot forgings deformation	Carburizing temperature	Core quenching temperature	Case quenching temperature	Tempering
°C	900÷1150	870÷900	850÷880	780÷820	150÷200

TTT



TEMPERING CURVE



rev. 04/2013