

NORME DI RIFERIMENTO:
UNI EN 10087: 1998 (Hot-rolled products) | UNI EN 10277-3: 2008 (Bright products)
RODACCIAI REFERENCES AND COMPARABLE STANDARDS

EUROPE		ITALY	GERMANY		FRANCE	UK	USA
EN 10087: 1998 EN 10277-3: 2008		(UNI 4838-80)	(DIN 1651-88)		(NF A 35-562-86)	(BS 970 pt.3-91)	ASTM A 29
Grade	N°		Werkstoff	N°			
(38SMn28+Se)	(1.0760)	-	-	-	-	-	-

CHEMICAL COMPOSITION (CAST ANALYSIS) (%)

C	Si / max	Mn	P / max	S	Se
0,35÷0,40	0,40	1,20÷1,50	0,06	0,24÷0,33	0,010÷0,020

MECHANICAL PROPERTIES - AS ROLLED CONDITION

Size mm	as Rolled and/or as Rolled + Turned (+SH)		as Rolled and/or as Rolled + Turned + Quenched + Tempered (+SH +QT)		
	Hardness HB*	R _m (MPa)	Rp _{0,2} (MPa) min	R _m (MPa)	A ₅ (%) min
≥5 ≤10	-	580÷780**	480	700÷850	15
>10 ≤16	-	580÷750**	460	700÷850	15
>16 ≤40	166÷216	560÷730	420	700÷850	15
>40 ≤63	166÷216	560÷730	400	700÷850	16
>63 ≤100	163÷207	550÷700	380	630÷800	16

* For reference only **Values valid only for hot rolled products
For size <5 mm the mechanical properties may be agreed at the time of enquiry and order

MECHANICAL PROPERTIES - COLD DRAWN CONDITION

Size mm	Cold Drawn (+C)			Cold Drawn + Quenched + Tempered (+C +QT)			Quenched + Tempered + Cold Drawn (+QT +C)		
	Rp _{0,2} (MPa) min	R _m (MPa)*	A ₅ (%) min	Rp _{0,2} (MPa) min	R _m (MPa)	A ₅ (%) min	Rp _{0,2} (MPa) min*	R _m (MPa)	A ₅ (%) min
≥5 ≤10	550	700÷960	6	-	-	-	595	850÷1000	9
>10 ≤16	500	660÷930	6	-	-	-	545	775÷925	10
>16 ≤40	420	610÷900	7	420	700÷850	15	490	700÷900	12
>40 ≤63	400	600÷840	7	400	700÷850	16	490	700÷900	13
>63 ≤100	350	580÷820	8	380	630÷800	16	440	625÷850	14

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

WORKING TEMPERATURES RECOMMENDED

Operation	Hot forgings deformation	Normalizing	Soft annealing	Quenching in oil or water	Tempering
°C	930÷1200	860÷890	650÷700	850÷880	540÷680

rev. 04/2013

FREE-CUTTING STEELS
DIRECT-HARDENING

Rodacciai name

PR40
1303