



The chromed bars could be manufactured starting from solid bars in different steel grades: for example with low carbon content, steel grades for quenching and tempering with high carbon content or alloyed steel grades for quenching and tempering. Different steel grades allow to choose the product with the most suitable mechanical properties for the specific application (see also “stock facility” section at page 10 to know steel grades always available ready-on-stock).

## CHEMICAL ANALYSIS

Reference norm	Steel grade	Chemical elements (% on mass)															
		C		Si		Mn		P	S		Cr		Mo		Ni	V	
		min.	max.	min.	max.	min.	max.	max.	min.	max.	min.	max.	min.	max.	max.	min.	max.
EN 10083-2 EN 10277-5	C45 <sup>2</sup>	0.42	0.50	-	0.40	0.50	0.80	0.045	-	0.045	-	0.40	-	0.10	0.40	-	-
	C45E <sup>2</sup>	0.42	0.50	-	0.40	0.50	0.80	0.030	-	0.035	-	0.40	-	0.10	0.40	-	-
	C45R <sup>2</sup>	0.42	0.50	-	0.40	0.50	0.80	0.030	0.020	0.040	-	0.40	-	0.10	0.40	-	-
NA <sup>1</sup>	20MnV6	0.16	0.22	0.10	0.50	1.30	1.70	0.035	-	0.035	-	-	-	-	-	0.10	0.20
EN 10083-3	42CrMo4	0.38	0.45	-	0.40	0.60	0.90	0.025	-	0.035	0.90	1.20	0.15	0.30	-	-	-

<sup>2</sup> Cr + Ni + Mo ≤ 0.63%.

## MECHANICAL PROPERTIES

Reference norm	Steel grade	Delivery condition	Yield strength min. ReH (N/mm <sup>2</sup> =Mpa)					Tensile strength min./max. Rm (N/mm <sup>2</sup> =Mpa)					Longitudinal elongation min. %					
			For diameters in mm															
			≤16	>16 ≤40	>40 ≤100	>100 ≤160	>160 ≤250	≤16	>16 ≤40	>40 ≤100	>100 ≤160	>160 ≤250	≤16	>16 ≤40	>40 ≤100	>100 ≤160	>160 ≤250	
EN 10083-2 EN 10277-5	C45 C45E C45R	+N*	340	305	305	275	275	620	580	580	560	560	14	16	16	16	16	
		+QT*	490	430	370	-	-	700 850	650 800	630 780	-	-	14	16	17	-	-	
NA <sup>1</sup>	20MnV6	+AR	450	440	400	-	-	600 750	560 710	530 680	-	-	19	19	19	-	-	
EN 10083-3	42CrMo4	+QT	900	750	650	550	500	1100 1300	1000 1200	900 1100	800 950	750 900	10	11	12	13	14	

<sup>1</sup>This steel grade is not regulated by a norm, chemical and mechanical properties indicated in this catalogue are not compulsory, but they could be subjected to minimum changes.

**\*NOTE for steel grades for quenching and tempering C45, C45E and C45R the standard product is supplied in untreated condition (+AR), but relevant norms foresee limit values only for normalized (+N) and quenched and tempered (+QT) delivery conditions. For this reason the results of mechanical properties on certificates, as specified on documents themselves, are referred to sample in the same condition of the product, for information purposes only. Otherwise are referred to samples previously subjected to heat treatment.**