



STEELS TABLE

CHEMICAL/PHYSICAL FEATURES

The various steel grades differ one another from their chemical composition and mechanical properties, these parameters determine also the different possibilities of application for each steel grade.

The tables on the following pages describe the chemical and mechanical limits fixed by the norm for the steel grades that are mainly employed for mechanical applications.

NON-ALLOY QUALITY STEELS:

Standard steels with low carbon content.

CHEMICAL ANALYSIS FOR NON-ALLOY QUALITY STEELS

Steel grade	CHEMICAL ELEMENTS (% on mass)								
	C		Si		Mn		P	S	Al
	Min.	Max.	Min.	Max.	Min.	Max.	Max.	Max.	Min.
E235	-	0.17	-	0.35	-	1.20	0.030	0.035	-
E275	-	0.21	-	0.35	-	1.40	0.030	0.035	-
E315	-	0.21	-	0.30	-	1.50	0.030	0.035	-
*E355	-	0.22	-	0.55	-	1.60	0.030	0.035	-
*S355J2H (EN 10210)	-	0.22	-	0.55	-	1.60	0.030	0.030	0.020
*P355N¹ (EN 10216-3)	-	0.20	-	0.50	0.90	1.70	0.025	0.020	0.020
*E470²	0.16	0.22	0.10	0.50	1.30	1.70	0.030	0.035	0.010

¹Cr ≤ 0.30%; Mo ≤ 0.08%; Ni ≤ 0.50%; Cu ≤ 0.30%; N ≤ 0.020%; Nb ≤ 0.05%; Ti ≤ 0.040%; V ≤ 0.10%; Cr + Cu + Mo ≤ 0.45%; Nb + Ti + V ≤ 0.12%; Al/N ≥ 2.

²N ≤ 0.020%; Nb ≤ 0.07%; 0.08% ≤ V ≤ 0.15%

MECHANICAL PROPERTIES FOR NON-ALLOY QUALITY STEELS

Steel grade	Delivery condition	Yield strength min. (ReH) (N/mm ² =Mpa)						Tensile strength min. (Rm) (N/mm ² =Mpa)				Longitudinal elongation min. %	Longitudinal impact properties at -20°C (J min.)		
		For nominal w.t. in mm													
		≤ 16	> 16 ≤ 40	> 40 ≤ 65	> 65 ≤ 80	> 80 ≤ 100	> 100 ≤ 120	≤ 16	> 16 ≤ 40	> 40 ≤ 65	> 65 ≤ 100				
E235	+AR	235	225	215	205	195	-	360	360	360	340	25	-		
E275	+AR	275	265	255	245	235	-	410	410	410	380	22	-		
E315	+AR	315	305	295	280	270	-	450	450	450	420	21	-		
*E355	+AR	355	345	335	315	295	-	490	490	490	470	20	-		
*E470	+AR	470	430	-	-	-	-	650	600	-	-	17	-		
		For nominal w.t. in mm						For nominal w.t. in mm							
		≤ 16	> 16 ≤ 40	> 40 ≤ 63	> 63 ≤ 80	> 80 ≤ 100	> 100 ≤ 120	≤ 3	> 3 ≤ 100	> 100 ≤ 120	≤ 40	> 40 ≤ 63	> 63 ≤ 100	> 100 ≤ 120	
*S355J2H (EN 10210)	+AR	355	345	335	325	315	295	from 510 to 680	from 470 to 630	from 450 to 600	22	21	20	18	27
		For nominal w.t. in mm													
		≤ 20	> 20 ≤ 40	> 40 ≤ 50	> 50 ≤ 65	> 65 ≤ 80	> 80 ≤ 100	≤ 20	> 20 ≤ 65	> 65 ≤ 100					
*P355N (EN 10216-3)	+N	355	345	335	325	315	305	from 490 to 650	from 490 to 630	from 450 to 590	22			27	

*Standard stock

☐ Tubes are available with triple marking E355-EN10297-1 / S355J2H-EN10210-1/2 / P355N(TC1)-EN10216-3, for other features please check catalogue "Structural tubes and bars".