

European Standard

EN 10025-2:2004

Chemical composition of the ladles analysis for flat and long products of steel grades and quantities with values for the impact strength

Designation		Method of de-oxidation	C in % max, for nominal product thickness in mm			Si % max	Mn % max	P % max	S % max	N % max	Cu % max
Acc. EN	Acc. EN		≤ 16	> 16	> 40						
10027-1 and CR 10260	10027-2			≤ 40							
S235JR	1.0038	FN	0.17	0.17	0.20	-	1.40	0.035	0.035	0.012	0.55
S235J0	1.0114	FN	0.17	0.17	0.17	-	1.40	0.030	0.030	0.012	0.55
S235J2	1.0117	FF	0.17	0.17	0.17	-	1.40	0.025	0.025	-	0.55
S275JR	1.0044	FN	0.21	0.21	0.22	-	1.50	0.035	0.035	0.012	0.55
S275J0	1.0143	FN	0.18	0.18	0.18	-	1.50	0.030	0.030	0.012	0.55
S275J2	1.0145	FF	0.18	0.18	0.18	-	1.50	0.025	0.025	-	0.55
S355JR	1.0045	FN	0.24	0.24	0.24	0.55	1.60	0.035	0.035	0.012	0.55
S355J0	1.0553	FN	0.20	0.20	0.22	0.55	1.60	0.030	0.030	0.012	0.55
S355J2	1.0577	FF	0.20	0.20	0.22	0.55	1.60	0.025	0.025	-	0.55
S355K2	1.0596	FF	0.20	0.20	0.22	0.55	1.60	0.025	0.025	-	0.55
S450J0	1.0590	FF	0.20	0.20	0.22	0.55	1.70	0.030	0.030	0.025	0.55

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Mechanical properties at ambient temperature for flat and long products of steel

Designation		Minimum yield strength R_{eH} ^a MPa ^b									Tensile strength R_m ^a MPa ^b				
According to EN 10027-1 and CR 10260	According to EN 10027-2	Nominal thickness mm									Nominal thickness mm				
		≤ 16	> 16 ≤ 40	> 40 ≤ 63	> 63 ≤ 80	> 80 ≤ 100	> 100 ≤ 150	> 150 ≤ 200	> 200 ≤ 250	> 250 ≤ 400 ^c	< 3	≥ 3 ≤ 100	> 100 ≤ 150	> 150 ≤ 250	> 250 ≤ 400 ^c
S235JR	1.0038	235	225	215	215	215	195	185	175	-	360 to 510	360 to 510	350 to 500	340 to 490	-
S235J0	1.0114	235	225	215	215	215	195	185	175	-	360 to 510	360 to 510	350 to 500	340 to 490	-
S235J2	1.0117	235	225	215	215	215	195	185	175	165	360 to 510	360 to 510	350 to 500	340 to 490	330 to 480
S275JR	1.0044	275	255	255	245	235	225	215	205	-	430 to 580	410 to 560	400 to 540	380 to 540	-
S275J0	1.0143	275	265	255	245	235	225	215	205	-	430 to 580	410 to 560	400 to 540	380 to 540	-
S275J2	1.0145	275	265	255	245	235	225	215	205	195	430 to 580	410 to 560	400 to 540	380 to 540	380 to 540
S355JR	1.0045	355	345	335	325	315	295	285	275	-	510 to 680	470 to 630	450 to 600	450 to 600	-
S355J0	1.0553	355	345	335	325	315	295	285	275	-	510 to 680	470 to 630	450 to 600	450 to 600	-
S355J2	1.0577	355	345	335	325	315	295	285	275	265	510 to 680	470 to 630	450 to 600	450 to 600	450 to 600
S355K2	1.0596	355	345	335	325	315	295	285	275	265	510 to 680	470 to 630	450 to 600	450 to 600	450 to 600
S450J0 ^d	1.0590	450	430	410	390	380	360	-	-	-	-	550 to 720	530 to 700	-	-

^a For plate, strip and wide flats with widths ≥ 600 mm the direction transverse (l) to the rolling direction applies. For all other products the values apply for the direction parallel (l) to the rolling direction.

^b 1 MPa = 1 N/mm².

^c The values apply to flat products.

^d Applicable for long products only.

(To be continued)

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Mechanical properties at ambient temperature for flat and long products of steel grades and qualities with values for the impact strength (concluded)

Designation		Position of test pieces	Minimum percentage elongation after fracture *										
According EN 10027-1 and CR 10260	According EN 10027-2		$L_0 = 80$ mm Nominal thickness mm					%					
			≤ 1	> 1 $\leq 1,5$	$> 1,5$ ≤ 2	> 2 $\leq 2,5$	$> 2,5$ < 3	≥ 3 ≤ 40	> 40 ≤ 63	> 83 ≤ 100	> 100 ≤ 150	> 150 ≤ 250	$> 250^c$ ≤ 400 only for J2 and K2
S235JR	1.0038	l	17	18	19	20	21	26	25	24	22	21	-
S235J0	1.0114	l	15	16	17	18	19	24	23	22	22	21	-
S235J2	1.0117	l	15	16	17	18	19	24	23	22	22	21	21 (l and t)
S275JR	1.0044	l	15	16	17	18	19	23	22	21	19	18	-
S275J0	1.0143	l	13	14	15	16	17	21	20	19	19	18	-
S275J2	1.0145	l	13	14	15	16	17	21	20	19	19	18	18 (l and t)
S355JR	1.0045	l	14	15	16	17	18	22	21	20	18	17	-
S355J0	1.0553	l	12	13	14	15	16	20	19	18	18	17	-
S355J2	1.0577	l	12	13	14	15	16	20	19	18	18	17	17 (l and t)
S355K2	1.0596	l	12	13	14	15	16	20	19	18	18	17	17 (l and t)
S450J0 ^d	1.0590	l	-	-	-	-	-	17	17	17	17	-	-

* For plate, strip and wide flats with widths ≥ 600 mm the direction transverse (t) to the rolling direction applies. For all other products the values apply for the direction parallel (l) to the rolling direction.

^c The values apply to flat products.

^d Applicable for long products only.

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Mechanical properties – impact strength KV longitudinal for flat and long products

Designation		Temperature °C	Minimum energy (J) Nominal thickness in mm		
According EN 10027-1 and CR 10260	According EN 10027-2		≤ 150 ^{a b}	> 150 ≤ 250 ^b	> 250 ≤ 400 ^c
S235JR	1.0038	20	27	27	-
S235J0	1.0114	0	27	27	-
S235J2	1.0117	-20	27	27	27
S275JR	1.0044	20	27	27	-
S275J0	1.0143	0	27	27	-
S275J2	1.0145	-20	27	27	27
S355JR	1.0045	20	27	27	-
S355J0	1.0553	0	27	27	-
S355J2	1.0577	-20	27	27	27
S355K2	1.0596	-20	40 ^d	33	33
S450J0 ^d	1.0590	0	27	-	-