

S460M steel plates

Thermomechanical rolled weldable fine grain structural steel

Products description

S460M – fine grain structural steel after thermomechanical rolling. This steel grade possesses good weldability features, high resistance to brittle cracking and good cold-forming properties. S460M steel plates meet requirements of EN 10025-4.

It is typically used for welded structures in shipbuilding and machine-building and for construction of bridges, steel structures and wind generators supports.

Available dimensions

S460 steel plates of quality categories M and ML are available with thicknesses of 8-50 mm. Rolled product widths can be up to 3200 mm, lengths up to 12200 mm max. With plate thickness of 50 mm and width of 3200 mm, the maximum length is 7500 mm. The maximum plate weight is 9.5 tons. Plates are supplied with edges trimmed.

Mechanical properties according to DSTU EN 10025-4

Thickness (t), mm	Yield strength, min MPa	Tensile strength, MPa	Elongation, min %
≤ 16	460	540-720	17
16 < t ≤ 40	440	540-720	17
40 < t ≤ 50	430	530-710	17

Steel grade	Impact energy KV, min J						
	+20	0	-10	-20	-30	-40	-50
S460M	55	47	43	40	-	-	-
S460ML	63	55	51	47	40	31	27

Chemical composition

According to DSTU EN 10025-4 (max %)

Grade	C	Si	Mn	P	S	Nb	V	Ti	Cr	Ni	Mo	Cu	Al (min)	N
S460M	0.16	0.60	1.70	0.030	0.025	0.05	0.12	0.05	0.30	0.80	0.20	0.55	0.02	0.025
S460ML				0.025	0.020									

Metinvest's products

Grade	C	Si	Mn	P	S	Nb	V	Ti	Cr	Ni	Mo	Cu	Al (min)	N
S460M	0.12	0.28	1.59	0.009	0.004	0.034	0.054	0.005	0.03	0.04	0.01	0.02	0.030	0.009
S460ML														

Carbon equivalent

Thickness (t), mm	CEV	
	DSTU EN 10025-4	Metinvest's products
≤ 16	0.45	0.41
16 < t ≤ 40	0.46	0.43
40 < t ≤ 50	0.47	0.45

$$CEV = C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Cu+Ni}{15}$$

Welding

Due to their low carbon content and low carbon equivalent, these steels are suitable for both manual and automatic welding as per all known welding procedures.

Due to good cracking resistance properties, pre-heating before welding is unnecessary. However, the quality of joint weld depends on the welding procedure, its conditions and range of suitable additives. Use of gas welding is not recommended.

It is necessary to use welding wire and welding electrodes as additives suitable for the strength category. Electrodes with basic coating are recommended for manual welding. The grades are not suitable for heat treatment at temperatures higher than 580°C. Stress relieving (530-580°C) is only required when prescribed.

The company that works with these steel grades should make sure that its calculations, design and methods of treatment are suitable for this material.

Contacts

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