

Domex 1200

Hot rolled ultra high strength structural steel

Product

Domex 1200 is a quenched and tempered structural steel with minimum yield strength of 1200 MPa.

Applications

Domex 1200 is developed with weight sensitive load carrying structures in mind. The material shows its true value in applications where the extreme strength of the material can be used to increase the payload, or reduce the weight of the application itself. Typical applications are cranes, lifting devices and other structures having very high demands on low weight.

Mechanical properties

Yield Strength $R_{p0.2}$ MPa (N/mm ²) min	Ultimate Tensile Strength R_m MPa (N/mm ²) min	Elongation A_5 % min
1200	1350	8

The mechanical properties are tested transverse the rolling direction.

Testing

The testing of the material conforms to EN 10025.

Delivery condition

Domex 1200 is delivered as quenched and tempered.

Dimensions

Thickness mm	Width mm	Length mm
4,00 - 8,00*	1500 - 1600	3000 - 12000

*) Thickness 8 mm under development

Impact toughness

The impact toughness is tested as Charpy V-notch test, transverse test specimen according to EN 10025 option 30. The test is carried out in accordance with EN 10045-1, for thicknesses from 6 mm and upward.

Thickness mm	Test temperature Degrees Celsius	Impact energy min Joule/cm ²
t < 6		Not impact tested
t ≥ 6	-40°C	34

Note: 34 Joule/cm² corresponds to 27 Joule for a full size Charpy V-notch test specimen.

Bending

Minimum permissible inner bending radius is 3,0 x thickness for a 90° bend. When bending Domex 1200 it is important to have a punch radius equal to, or larger than, minimum permissible bending radius.

Heat treatment and fabrication

Domex 1200 has obtained its mechanical properties by a quenching process and is not suited for applications requiring hot working or heat treatments at temperatures above 200°C since the material then may lose its guaranteed properties. The material is not suited for pickling since this may cause hydrogen embrittlement.

Tolerances

The tolerances conform to EN 10051. More narrow tolerances are available on request.

Surface condition

Domex 1200 is supplied shot blasted and primer coated.

Chemical composition

C	Si	Mn	P	S	B	Nb	Cr	V	Cu	Ti	Al	Mo	Ni	N
%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
max	max	max	max	max	max	max	max	max	max	max	min	max	max	max
0,21	0,50	1,40	0,020	0,005	0,005	0,04	0,80	0,08	0,10	0,02	0,020	0,70	2,0	0,010

The steel is grain refined.

CEV typical value 0,59 $CEV = C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$

CET typical value 0,35 $CET = C + \frac{Mn+Mo}{10} + \frac{Cr+Cu}{20} + \frac{Ni}{40}$

Welding

The low content of carbon, phosphorus and sulphur enable all conventional welding methods to be readily used for Domex 1200.

Domex 1200 has low carbon equivalent relative its strength that makes it possible to MAG-weld the steel at ambient temperature if certain criteria are met. MAG-welding with solid wire makes it possible to weld the steel at ambient temperature (20° C) up to a combined thickness of 12 mm.

Welding with Flux cored wires requires an elevated temperature of 150° C in combined thicknesses from 10 mm and above.

The maximum interpass temperature should be restricted to 175° C. Post weld treatment are not recommended.

To reduce the risk of hydrogen embrittlement, filler metals, which give maximum hydrogen content of 5 ml/100 gram in the weld metal, are recommended.

Examples of recommended filler materials are

MMA Manual metal arc	SAW Submerged arc welding	MIG/MAG Gas metal arc welding	FCAW Flux cored arc welding
AWS: A5.5 E12018	AWS: A5.23 F 12AX-EX	AWS: A5.28 ER 120S-X	AWS: A5.29 E12XT-X

Note: X stands for one or more characters.

For more detailed information regarding welding please contact our Knowledge Service Centre.

The particulars in this data sheet are correct at the time of going to print and are intended to give general guidance for the use of the product. Subject to changes arising from continual product development. The information and data must not be regarded as guaranteed values, unless specially confirmed in writing.

Technical service and information

Knowledge Service Center will be pleased to assist with additional information regarding Domex 1200 and other products from SSAB Swedish Steel.



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