

Domex 650 MC

Hot rolled, extra high strength, cold forming steel

PRODUCT

Domex cold forming steels are thermo-mechanically rolled in modern plants where the heating, rolling and cooling processes are carefully controlled.

The chemical analysis, consisting of low levels of carbon and manganese has precise addition of grain refiners such as niobium, titanium or vanadium. This together with a clean structure, makes Domex Steels the most competitive alternative for cold formed and welded products.

Domex 650 MC with designation D and E meet and exceed the demands for steel S650 MC in EN-10149-2.

APPLICATION

The extra high strength steel grades are used in applications such as truck chassis, cranes and earthmoving machines. In these applications, the high strength of the steels is used to save weight and/or to increase the payload.

As a result of this and the good formability of the steels, the total costs can be reduced.

DIMENSION RANGE

Domex 650 MC is available in the range of sizes tabulated below in as rolled or pickled condition with mill edge.

For material with trimmed edges, the width is reduced by 35 mm.

Some exceptions may occur.

Thickness (mm)	Width (mm)	Length (mm)
2.00 - (3.00)	1000 - 1035	1500 - 13000
3.00 - (4.00)	885 - 1300	1500 - 13000
4.00 - (5.00)	885 - 1450	1500 - 13000
5.00 - (6.00)	885 - 1600	1500 - 13000
6.00 - (7.00)	885 - 1550	1500 - 13000
7.00 - (8.00)	885 - 1500	1500 - 13000
8.00 - 10.00	885 - 1300	1500 - 13000



IMPACT STRENGTH

The Charpy V-notch test is carried out according to EN 10045-1.

Designation	Test temperature	Energy level
B	Not impact tested	
D	- 20 °C	40J
E	- 40 °C	27J

1) Other test temperatures and impact strengths are available subject to special agreement.

MECHANICAL PROPERTIES

Yield strength	Tensile strength	Elongation on failure	
		< 3 mm	≥ 3 mm
R_{eH} N/mm ² min	R_m N/mm ² min - max	A_{80} % min	A_5 % min
650	700 - 880	12	14

BENDABILITY

	Nominal sheet thickness, t		
	≤3 mm	3 mm < t ≤6 mm	>6 mm
Min. recommended bending radius (≤90°)	0.8 xt	1.2 xt	1.5 xt

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WELDING

The low contents of carbon, phosphorus and sulphur enable all conventional welding methods to be readily used for Domex 650 MC. No preheating is necessary. A narrow heat affected zone with a somewhat lower hardness is formed immediately adjacent to the weld. However, if normal welding parameters and methods are used, the heat affected zone is of no practical significance.

Tensile test pieces taken across the weld can meet the same minimum tensile strength requirements as the base metal.

If the stresses acting on the weld are low also under-matching filler metals can be used.

There are a large number of matching or over matching filler metals that can be used for welding of Domex 650 MC, which gives a weld that can meet the same minimum tensile strength requirements as the base metal. Some examples of different filler metals that can be used are tabulated below.

HEAT TREATMENT

Stress relief annealing should be carried out within the temperature range of 530 - 580 °C. Heat treatment above this range, e.g. normalizing and hot forming, reduces the strength and should be avoided.

CHEMICAL COMPOSITION

C % max	Si % max	Mn % max	P % max	S % max	Al % min	Nb % max	V % max	Ti % max
0.12	0.10 ¹⁾	2.00	0.025	0.010	0.015	0.09 ²⁾	0.20 ²⁾	0.15 ²⁾

1) If the material is to be hot-dip galvanized, this must be specified in the order.

2) Sum of Nb, V and Ti = 0,22% max.

EXAMPLES OF DIFFERENT MATCHING AND OVER MATCHING FILLER METALS

MMA	GMAW		Manufacturer
	Cored electrode	Wire electrode	
OK 75.75	OK Tubrod 14.03	OK AristoRod 13.29	ESAB
-	-	OK AristoRod 69	ESAB
Filarc 118	-	-	ESAB
Maxeta 110	Elgacore M690	-	ELGA
TENACITO 75	Fluxofil 42	Carbofil NiMoCr	Oerlikon

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 concerning this product and other products from SSAB.

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