

Hot rolled, extra high strength, cold forming steel Domex 460 MC

PRODUCT

All Domex cold forming steels are produced in modern plants under carefully controlled, computerized conditions. Low carbon and manganese contents, together with small additives of grain refiners, such as niobium (and/or titanium) and an otherwise very pure steel provide the good metallurgical conditions for the ultimate properties of the steels. Compared to the high strength cold forming steels, these steels have somewhat higher contents of niobium, titanium and/or vanadium micro-alloying elements. A further contributory factor to the good properties of the steels is the thermo-mechanical rolling, with its very carefully controlled heating, rolling and cooling sequences.

These conditions give the Domex cold forming steels their characteristic combination of high strength and good formability, weldability and impact strength.

APPLICATIONS

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 production costs can be reduced.

DIMENSION RANGE

Domex 460 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 - (2.50)	1000 - 1035	1500 - 13000
2.50 - (2.75)	800 - 1100	1500 - 13000
2.75 - (3.00)	800 - 1200	1500 - 13000
3.00 - (3.50)	800 - 1350	1500 - 13000
3.50 - (4.00)	800 - 1400	1500 - 13000
4.00 - (4.50)	800 - 1500	1500 - 13000
4.50 - (5.00)	800 - 1550	1500 - 13000
5.00 - (11.00)	800 - 1600	1500 - 13000
11.00 - 12.00	800 - 1400	1500 - 13000

CHEMICAL COMPOSITION

C % max	Si % max	Mn % max	P % max	S % max	Al % min	Nb % max	V % max	Ti % max
0.10	0.10 ¹⁾	1.50	0.025	0.010	0.015	0.09	0.20	0.15

Sum of Nb, V and Ti = 0.22% max.

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

MECHANICAL PROPERTIES

Yield strength R _{eH} N/mm ² min	Tensile strength R _m N/mm ² min - max	Elongation on failure	
		<3mm A ₈₀ % min	≥3 mm A ₅ % min
460	520 - 670	15	19

BENDABILITY

	Nominal sheet thickness, t		
	≤3 mm	3 mm <t≤6 mm	>6 mm
Min. recommended bending radius (≤90°)	0.5xt	0.7xt	0.9xt

IMPACT STRENGTH

The Charpy V-notch test is carried out on a test piece taken in the direction of the rolling according to EN 10045-1. Test temperature and energy levels are tabulated below.

Designation	Test temperature	Energy level
B	Not impact tested	
C	±0°C	40J
D	-20°C	40J
E	-40°C	27J

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

WELDING

The low contents of carbon, phosphorus and sulphur enable all conventional welding methods to be readily used for Domex 460 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 have the same yield strength and tensile strength as the parent metal.

Practical tests have shown that mild filler metals can be used in most cases.

The manufacturers of filler materials recommend the filler metals tabulated below for producing a weld that has the same strength as the parent metal.

RECOMMENDED FILLER METALS

Manual metal arc welding coated electrode	Gas shielded metal arc welding		Submerged arc welding Wire / powder	Manufacturer
	Cored electrode	Wire electrode		
OK 74.78	OK Tubrod 15.17	OK Autrod 12.51	OK 12.24/OK Flux 10.62	ESAB
Filarc 88 S	Filarc PZ 6145	Filarc PZ6041; PZ6047	-	Filarc
P 48 S; Maxeta 21	DWA 50, DWA 55E	Elgamatic 130	-	ELGA
Tenacito 70	Fluxofil 41	Carbofil CrMo-1	Fluxocord 41/Powder OP 121TT	Oerlikon

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.

TECHNICAL SERVICE AND INFORMATION

Customer Service Department will be pleased to assist with additional information concerning this product and other hot rolled products from SSAB Tunnlåt.

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.



SSAB Tunnlåt AB
781 84 Borlänge
Telephone +46 243 700 00
Telefax +46 243 720 00
www.ssabtunnplat.com
E-mail: office@ssabtunnplat.com

China
SSAB Swedish Steel
Beijing
Telephone +86 10 6466 3441
Telefax +86 10 6466 3442

France
SSAB Swedish Steel SA
Neuilly Sur Seine Cedex
Telephone +33 1 55 61 91 00
Telefax +33 1 55 61 91 09

Great Britain
SSAB Swedish Steel Ltd.
Droitwich
Telephone +44 1905 79 57 94
Telefax +44 1905 79 47 36

Italy
SSAB Swedish Steel S.p.A.
Ghedi
Telephone +39 030 905 88 11
Telefax +39 030 905 89 30

Japan
SSAB Swedish Steel Ltd
Shiba
Telephone +81 33 456 3447
Telefax +81 33 456 3449

Korea
SSAB Swedish Steel Ltd
Seoul
Telephone +82 27 61 61 72
Telefax +82 27 61 61 73

Netherlands
SSAB Swedish Steel BV
Beuningen
Telephone +31 24 679 05 50
Telefax +31 24 679 05 55

Poland
SSAB Swedish Steel Sp z.o.o
Warszawa
Telephone +48 602725985
Telefax +48 22 8253636

Portugal
SSAB Swedish Steel
Santa Maria da Feira
Telephone +351 256 371 610
Telefax +351 256 371 619

SSAB Swedish Steel, S.L.
Madrid
Telephone +34 91 300 54 22
Telefax +34 91 388 96 97

South Africa
SSAB Swedish Steel (Pty) Ltd
Germiston
Telephone +27 11 824 3917 / 8 / 9
Telefax +27 11 824 2169