

Domex Hardenable Steel - Case Hardening Steel

Hot rolled sheet for case hardening

PRODUCT

Domex case hardening steels have a relatively low carbon content, and are intended for carburising or carbonitriding and subsequent hardening. The steels are produced in accordance with the standard EN 10084.

APPLICATION

The steels are used in applications where a high hardness surface layer and a tough core is required. Examples are wear parts, gear wheels etc.

DIMENSION RANGE

Domex case hardening steels are delivered in the following dimensions in the as rolled, pickled or annealed condition with mill edge.

Thickness (mm)	Domex C10, C15 Width (mm)	Domex 16MnCr5, 20MnCr5 Width (mm)
1.80 - 1.99	800 - 1050	
2.00 - 2.24	800 - 1100	
2.25 - 2.49	800 - 1150	
2.50 - 2.74	800 - 1300	
2.75 - 2.99	800 - 1400	900 - 1050
3.00 - 3.24	800 - 1540	900 - 1050
3.25 - 3.99	800 - 1600	900 - 1300
4.00 - 4.99	800 - 1600	900 - 1300
5.00 - 10.00	800 - 1600	900 - 1500
10.01 - 11.00	800 - 1600	900 - 1600
11.01 - 12.00	800 - 1600	900 - 1300
		900 - 1200

The sheet can not be supplied in lengths of 1500 - 13000 mm.

CHEMICAL COMPOSITION

Steel grade	C (%) min-max	Si (%) min-max	Mn (%) min-max	P (%) max	S (%) max	Cr (%) min-max
Domex C10	0.07 - 0.13	0.15 - 0.35	0.30 - 0.60	0.025	0.025	max 0.10
Domex C15	0.12 - 0.18	0.15 - 0.35	0.30 - 0.60	0.025	0.025	max 0.10
Domex 17Cr3	0.14 - 0.20	0.15 - 0.35	0.60 - 0.90	0.025	0.025	0.70 - 1.00
Domex 16MnCr5	0.14 - 0.19	0.15 - 0.35	1.00 - 1.30	0.025	0.025	0.80 - 1.10
Domex 20MnCr5	0.17 - 0.22	0.15 - 0.35	1.10 - 1.40	0.025	0.025	1.00 - 1.30

MECHANICAL PROPERTIES (Approximative values)

Steel grade	Condition	Yield strength R_e (Mpa)	Tensile strength R_m (Mpa)	Elongation A_5 (%)	Hardness HRC	Quenching Temperature (°C)
Domex C10	Rolled	320	440	35		
	Annealed	280	380	40		
	Water quenched		-		-	
	Oil quenched		-		-	
Domex C15	Rolled	330	460	33		
	Annealed	290	400	37		
	Water quenched		-		-	
	Oil quenched		-		-	
Domex 17Cr3	Rolled	370	520	28		
	Annealed	330	450	32		
	Water quenched		1360		43	900
	Oil quenched		1260		40	860
Domex 16MnCr5	Rolled	420	600	23		
	Annealed	370	520	27		
	Water quenched		1360		43	900
	Oil quenched		1260		40	860
Domex 20MnCr5	Rolled	490	700	16		
	Annealed	420	610	20		
	Water quenched		1470		45	900
	Oil quenched		1315		42	860

BENDABILITY

	Nominal thickness, t 1.8 mm ≤ t ≤ 12.0 mm	
	Rolled	Annealed
Min. recommended bending radius (≤90°)	2.0 x t	1.0 x t

WELDING

Recommended fusion welding methods for Domex case hardening steels include manual metal arc welding (MMA), gas metal arc welding (GMAW) and flux cored arc welding (FCAW). To avoid problems with hydrogen cracking preheating should be used according to the recommendations in the table below.

Recommended preheating temperature according to EN 1011-2

Combined thickness (mm) $t_1 + t_2 + t_3$	5	10	15	20	25	30	35	40
Domex C10	A	A	A	A	A	A	A	A
Domex C15	A	A	A	A	A	A	A	A
Domex 17Cr3	A	A	A	A	A	A	50°C	
Domex 16MnCr5	A	A	A	50°C	75°C	100°C	125°C	
Domex 20MnCr5	A	50°C	125°C	150°C	175°C			200°C

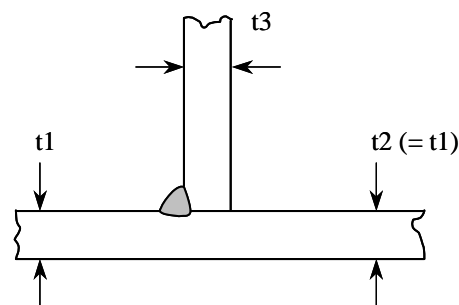
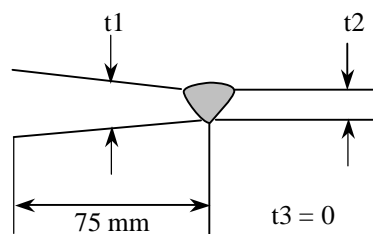
A = Ambient temperature

The recommended preheating temperature is valid when:

- the hydrogen content of deposited metal is max. 5 ml/100g.
- the heat input is not below 0.5 kJ/mm.

Combined thickness = $t_1 + t_2 + t_3$ according to EN 1011-2

t_1 = average thickness over a length of 75 mm



It is recommended that welding is carried out before case hardening. If the welding has to be carried out after case hardening please contact the customer service department at SSAB Tunnpått.

RECOMMENDED FILLER METALS

Manual metal arc welding (MMA)	Gas metal arc welding (GMAW)	Flux cored arc welding (FCAW)
AWS: A5.1 E7018	AWS: A5.18 ER 70S-X	AWS: A5.20 E71T-X

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.



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