Self healing

Material Properties

Steel Grades

Steel grades and their approximate correspondence for weather resistance.

COR-TEN®	EN 10025-5:2004
COR-TEN® A	S355J0WP
COR-TEN® B	S355J0W and S355J2W

Heat Treatment

	Temperature °C	Treatment Time Manner of cooling
Stress relieving	550 - 600 (target 580)	2 minutes / mm thickness, minimum 30 minutes Slow cooling in the furnace
Normalising	860 - 940 (target 910	1 minute / mm thickness, minimum 15 minutes Free cooling in air atmosphere outside the oven.

The yield strength is guaranteed as R_{eL} for COR-TEN ® steels and as R for COR-TEN® steels and as R_{eH} for weathering steel grades according to EN 10025-5:2004. A Charpy V impact test is carried out on standard steels equivalent to COR-TEN® B.

Chemical Composition

	Content % (ladle analysis)									
	C	Si	Mn	P	S	Al	V	Cu	Cr	Ni
	Maximum					Maximum				Maximum
COR-TEN® A	0.12	0.25 - 0.75	0.20 - 0.50	0.07 - 0.15	0.030	0.015 - 0.06	-	0.25 - 0.55	0.50 - 1.25	0.65
COR-TEN® B	0.19	0.30 - 0.65	0.80 - 1.25	0.035 max.	0.030	0.020 - 0.06	0.02 - 0.10	0.25 - 0.40	0.40 - 0.65	0.40

Formability values apply to all forming directions

	Thickness mm											
	(2) -3	(3) -4	(4) -5	(5) -6	(6) -7	(7) -8	(8) -10	(10) -12	(12) -14	(14) -16	(16) -18	(18) -20
	Smallest allowable internal bending radius mm											
COR-TEN® A	6	8	10	12	21	24	30	36	42	-	-	-
COR-TEN® B	-	-	-	-	21	24	30	36	42	48	54	60

Carbon Equivalent CEV

	Thickness mm	CEV typical	Product
COR-TEN® A	0.8 - 10.0	0.35	Strip products
COR-TEN® A	6.0 - 12.0	0.39	Plate products
COR-TEN® B	6.0 - 20.0	0.48	Plate products
COR-TEN® B	(20.0) - 40.0	0.50	Plate products

CEV= C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

Stock Range

	CR	HR	RMP
Thicknesses mm	0.80 - 1.60	1.50 - 10.0	10.0 - 40.0

Example of corrosion allowance for untreated COR-TEN® steel

Type of atmosphere	Corrosion allowance to be added for one side of the nominal thickness for each 10-year period of working life. First 10 year period mm	Each following 10 year period mm
Rural	0.10	0.05
Urban[1)]	0.20	0.05
Industrial[2)]	0.20	0.10

[1)] With the chief impurity in the air being sulphur dioxide, SO_2.

[2)] In addition to SO_2 the air also contains chloride. Also for locations in the immediate vicinity of salt water.

Mechanical properties and Thickness Range

COR-TEN®	Thickness mm Strip products	Plate products	Yield strength R_{eL} N/mm² Minimum	Tensile strength R_m N/mm² Minimum	Elongation A_{50} % Minimum
COR-TEN® A	0.8 - 10.0	6.0 - 12.0	345(HR/RMP) 310(CR)	485(HR/RMP) 450(CR)	20(HR/RMP) 22(CR)
COR-TEN® B	-	6.0 - 40.0	345	485	19

EN10025-5: 2004	Yield strength R_{eH} N/mm² Minimum Thickness mm		Tensile strength R_m N/mm² Minimum Thickness mm		Elongation R_{80} % Minimum Thickness mm		A_5 % Minimum Thickness mm
	2 - 16	(16) - 40	2 - (3)	3 - 40	2 (2) - 2.5	(2.5) - (3)	3 - 40
S355J0WP	355	355	510 - 680	470 - 630	14 15	16	20
S355J0W S355J2W	-	355	-	470 - 630	14 15	16	20