Corrosion resistant steels

COR-TEN A
COR-TEN B
S355J0WP*
S355J0W+AR*
S355J2W+N*

(*) EN-10025-5

Steel with alloy content formulated to give a protective oxide layer which enhances the resistance to atmosferic corrosion.

Applications

- Bridges, viaducts, gangways
- Guardrails
- Civil buildings
- Industrial filters
- Industrial ventilators
- Chimneys
- Heat exchangers
- Boilers
- Railway and underground trains
- Fencing
- Lighting poles
- Containers

COR-TEN can be used in unpainted conditions and gives superior performance when painted (3 - 4 times than normal structural steel).

Mechanical properties

STEEL GRADE	Thickness *mm*	Tensile strength *N/mm² min.*	Yield point *N/mm² min.*	Elongation *A% min*
COR-TEN A *cold rolled*	1-1.5	450	310	22
COR-TEN A *hot rolled*	2-12	485	345	20
COR-TEN B	15-60	485	345	19

Indicated thicknesses are usually available

Chemical composition - %

STEEL GRADE	C	Mn	Si	P	S	Al	V	Ni	Cr	Cu
COR-TEN A S355J0WP	0.12 *max*	0.20 – 0.50	0.25 – 0.75	0.07 – 0.15	0.03 *max*	0.015 – 0.06	-	0.65 *max*	0.50 – 1.25	0.25 – 0.55
COR-TEN B S355J0W+AR S355J2W+N	0.19 *max*	0.80 – 1.25	0.30 – 0.65	0.035 *max*	0.03 *max*	0.02 – 0.06	0.02 – 0.10	0.40 *max*	0.40 – 0.65	0.25 – 0.40

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Comparative standards

U.S.S.	ASTM	EN 10025-5
COR-TEN A COR-TEN B	A 242 A 588 GR A	S355J0WP S355J0W / S355J2W+N

Cold forming

It is better to avoid using internal bending radius lower than the one indicated in the following (mandril's axis to be perpendicular to rolling direction).

	THK = a (mm)				
STEEL GRADE	1-1.5	2-6	6-12	15-20	21-60
COR-TEN A	1a	2a	3a		
COR-TEN B				4a	6a

In case of forming particularly difficult (double-bending, bending with mandril's axis parallel to rolling directions, etc.) it is better to use normalized material. For all other forming please refer to carbon steel with equivalent resistance.

Hot forming

Temperature for hot forming should not exceed 1100°C while forming operations should be finished at a temperature not lower than 815°C. If cooling is carried out in a proper way, and consequently hardness values are maintained, additional technical treatments are not required.

Welding

All thicknesses can be welded by usual methods as:

- arc with coated electrode;
- submerged arc;
- gas metal arc.

Particular remarks

COR-TEN A: basic electrodes are recommended for arc welding coated electrodes when high thicknesses are involved and when a particular mechanical resistance to welding is needed

CORE-TEN B: basic electrodes are recommended for arc welding in case of arc welding with coated electrodes.

In case of welding with submerged arc or with atmosphere of inert gas, the same flux-wire combination can be used as well as same protected gas used for high strength carbon steel of similar strength.

For electrodes and flux it is always required a good drying-process.