WEATHER-PROOF STEEL

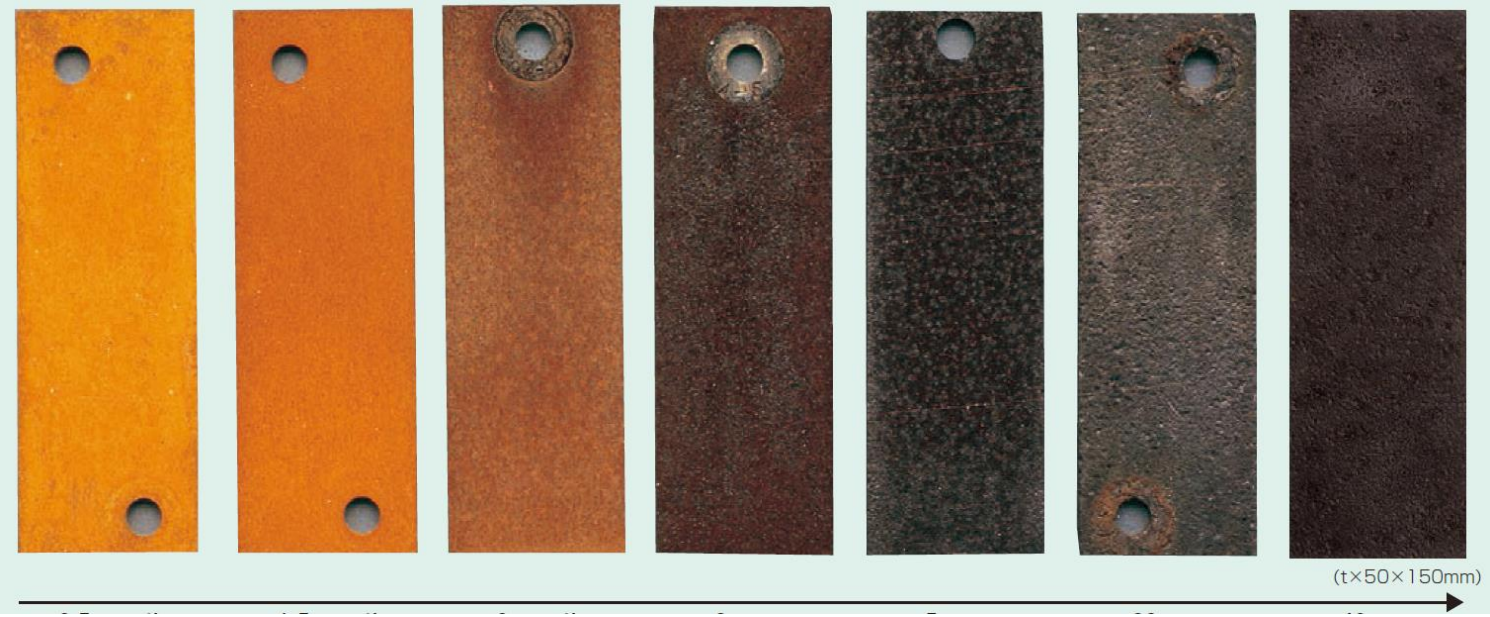
Breaf

COR-TEN is the most common brand of weather-proof steel.
COR-TEN is registered trademark United States Steel Corporation (USS). Sometimes it called «Corten steel».
The first developed Corten steel was given the name A 242 («COR-TEN A») from ASTM International.
Korten steel appeared in construction practice not long ago - the registration of the American brand COR-TEN dates back to 2003.
Corten steel sheets seem to be bronze, although in reality they are simply rusty - this is the secret of “eternal” steel with a velvety texture: its oxide film is not eroded by water, therefore steel, once rusted, retains its noble brownish color forever.

The mechanical properties of this steel are in correspondance to conventional structural steels.
These steels can be used uncoated under normal outdoor air conditions, in which the steel surface is exposed to weathering fluctuations, i.e. it is constantly wetted and dries. In this case, a protective patina layer is formed on the metal surface.
Steel can also be used in painted metal structures. Weather resistance improves the durability of the paintwork and, thus, reduces the need for repainting. Weather-resistant steels withstand corrosion caused by flue gases better than conventional structural steels; besides, their scaling resistance is better at high temperatures.
Weather-resistant steel has found wide application in bridge building.
Recently, steel has been used for the manufacture of decorative signs and in design.

PROTECTION COAT

An oxide layer or patina is formed on the surfaceof sheets, which, due to doping additives, is dense or poorly permeable for additional oxygen.
After the formation of a protective patina, the corrosion rate is minimal.
Due to the fact that steel protects itself, you can save on costs associated with surface treatment and subsequent repair.
For a uniform coating of metal with patina, it is necessary to rid the surface of the metal from contamination in the form of oils, scale, rust, etc..



CONSTRUCTION INDUSTRY ARCHITECTURE AND DESIGN

European Solidarity Center, Gdansk, Poland. Steel grade S355K2W + N

ALLOYED STRUCTURAL STEEL GRADES. THE SECRET OF "ETERNITY" IS AN OUTER OXIDE LAYER THAT BLOCKS INTERNAL CORROSION

Project Cleveland Bridge, UK, capacity 3700 tons, steel grade S355J2W + N

ANY MORE CONSTRUCTIONS

NLMK office Moscow

The fence around the hospital in Harrogate, North Yorkshire, England. Brand S355K2W + N

THE PROJECT OF RECONSTRUCTION USING THE WEATHER-RESISTANT STEEL

THE PROJECT OF RECONSTRUCTION THE OLD BUILDING, MOSCOW, RUSSIA.

ANY MORE?..

Characteristics of rolled products

Grade, standard	Chemical elements content, %													
	C	Mn	Si	S	P	**Cr**	Ni	**Cu**	Al	Ti	**V**	Nb	Mo	N
S235J0W (DIN EN 10025-5)	≤0,13	0,20-0,60	≤0,40	≤0,035	≤0,035	0,40-0,80	≤ 0,65	0,25-0,55	≥ 0,02	0,02-0,1	0,02-0,12	0,015-0,06	≤ 0,30	≤ 0,009
S355J0W (DIN EN 10025-5)	≤ 0,16	0,50-1,50	≤ 0,50	≤ 0,035	≤ 0,035	0,40-0,80	≤ 0,65	0,25-0,55	≥ 0,02	0,02-0,1	0,02-0,12	0,015-0,06	≤ 0,30	≤ 0,009

Grade, standard	thikness, мм	$\sigma_т$, N/мм^2	$\sigma_в$, N/мм^2	δ_4, %
S235J0W (DIN EN 10025-5:2005-02)	2-14	≥235	360-510	≥24
S355J0W (DIN EN 10025-5:2005-02)	2-14	≥355	470-630	≥20

Sheet dimensions:
width - 1000-1800 mm
Length - 2000-8000 mm

Chrome forms a protective film on the surface.

Copper poorly soluble in iron, segregated around non-metallic inclusions. Increases corrosion resistance by 3-4 times. Increases resistance to hydrochloric and sulfuric acids.

Nickel affects the inhibition of diffusion processes, reduces the corrosion rate by 1.5-2 times.

Molybdenum increases the weather resistance of steel by 20-30%. The effect of molybdenum in the presence of copper and chromium is more effective.

Silicon has a positive effect on corrosion resistance.

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