

CORTEN SPECIFICATION DOC

General Description

CORTEN weather resistant steel grades optimised through their alloying elements (copper, chromium, nickel and phosphorus) for a variety of environments and purposes.

When the total costs over the life cycle of structures are taken into account, significant economic benefits result from using these weathering steels.

Delivered as heavy plates, cut lengths, slit strips and coils, this product range are produced under licence from the United States Steel Corporation.

Max sheet width 1250mm, length 8m.

The thickness ranges for heavy plates and cut lengths manufactured from weathering steel grades as per EN 100255.

Tolerances

Strip products: EN 10051

Surface quality

Cut lengths, slit strips and coils are delivered in as rolled condition or in pickled condition.

Properties

The anticorrosive properties of weather resistant steels are better than those of other structural steels in many applications.

The enhanced weather resistance is based on the oxide layer, i.e. patina. The use of uncoated weather resistant steel in steel structures saves surface treatment costs. The elegantly brown patinated surface is architecturally distinguished.

Mechanical properties

Tensile strength

Rm N/mm² Minimum 485

The advantages of patina in different conditions

Thanks to their patina layer, weathering steels can be used in outdoor structures without any separate surface treatment. At its best, weather resistant steel can save the costs of all the surface treatment and the repairs necessary later. The cost advantage in comparison to painted structures is emphasised in environments where regular repainting is required.

Open air structures and patina

Weather resistance is based on the oxide layer, i.e. patina, which forms on the surface of the steel, and which, as a result of the alloying elements, is dense and nearly impervious to oxygen. Under normal weather conditions the patina will form in about 18-36 months, if the surface is alternately wet and dry. At first, the patina is a reddish brown colour, but with time takes on a darker hue.

Corrosion allowance:

To be added for one side of the nominal thickness for each 10 year period of working life

First 10 years: 0.2mm

Following 10 year: 0.05mm

In order to ensure the uniform colour of the patina, all impurities must be cleaned from the steel surface. Organic impurities such as oil or protective greases must be removed by washing. Surface oxidation, oxides or rust can be removed by either shotblasting or pickling. This will also accelerate the patina formation process. The surface of clean weathering steel can be prepatinated by allowing the surface to get wet and dry.

