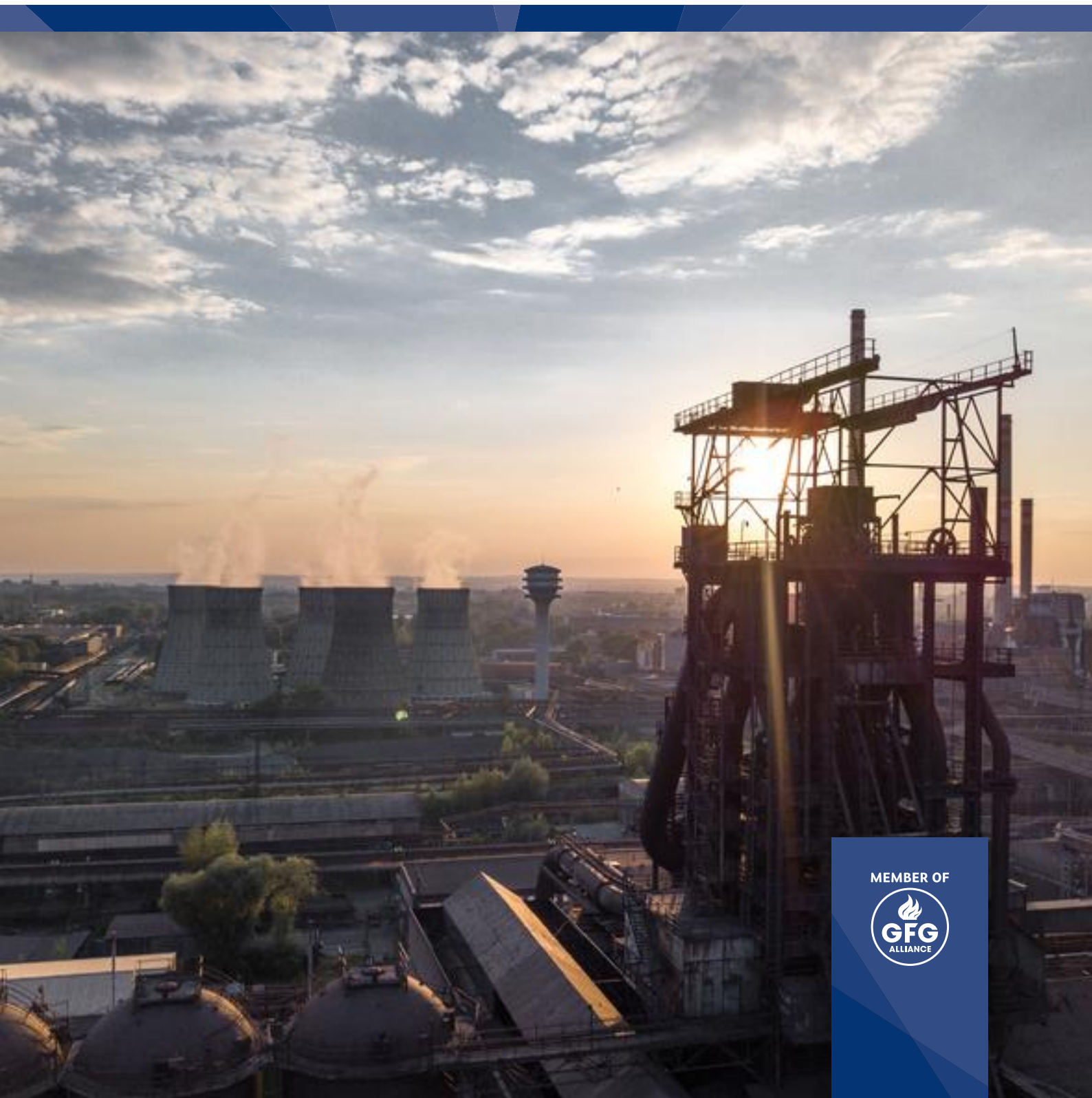


# Weathering Steels according to EN 10025-5



LIBERTY Ostrava  
[www.libertysteelgroup.com](http://www.libertysteelgroup.com)



MEMBER OF



**LIBERTY Ostrava is an integrated steel business with an annual production capacity of approximately 3.6 million tonnes serving construction, machinery and oil & gas**

industries. The company is a domestic leader in the manufacture of road barriers and tubes. In addition to the Czech market, it supplies its products to more than 40 countries around the world.

Together with its subsidiaries in Ostrava, the company has 6,000 employees. The company manufactures its products with a minimum possible environmental footprint.

It is part of LIBERTY Steel Group, which is part of GFG Alliance, a collection of global businesses and investments owned by Sanjeev Gupta and his family. The Alliance is structured into three core industrial pillars: LIBERTY Steel Group, ALVANCE Aluminium Group and SIMEC Energy Group. Headquartered in London, GFG Alliance employs 35,000 people, across 10 countries and has revenues of USD \$20bn.

## Available steel grades acc. to EN 10025-5:2019 for Sections and Merchant Bars S355J0W, S355J2W, S355K2W

### Available Sections and Merchant Bars Ranges

Product Classification	Dimension Ranges
Parallel Flange I Sections	IPE 100 – 220
Taper Flange I Sections	IPN 100 – 220
Taper Flange Channels	UPN 50 – UPN 220
Flat Bars	width 30 – 170 thickness 10 – 60 mm
Equal and Unequal Leg Angles	L40x40 – L150x150 section thickness 4 – 18 mm L100x65 – 140x90 section thickness 7 – 14 mm

Minimum order quantity per size upon agreement.

### Surface Conditioning

Material is delivered in standard ex-mill condition with surface condition according to EN10163-3:2004, class C, subclass 1 for hot rolled flat bars, equal and unequal leg angles and sections.

## Available steel grades acc. to EN 10025-5:2019 for Hot Rolled Coils and Sheets

S235J0W, S235J2W, S355J0W, S355J2W, S355J0WP, S355J2WP (all grades only in +AR)

### Available HRC, Sheets and Strips Ranges

Strip	Thickness	Width
Hot-rolled wide strip	4-12mm	740-1,300mm
	5-12mm	740-1,535mm

Supplies of these sheets and strips must be consulted with the manufacturer. HRCs are manufactured only in condition without any special rolling and/or heat treatment condition.

Minimum order quantity per size upon agreement.

### Certification

The type of certification shall be specified at the time of order or enquiry. Inspection documents according to EN 10204:2004.

**Atmospheric corrosion resistant, low alloyed steels for sustainable, decorative and cost-efficient structures with focus on long service life with low maintenance cost.**

## Advantages of Weathering Steels

Structural shapes produced from weathering steels do not need corrosion protection. Therefore, along with aesthetic possibilities, weathering steels provide durable construction even in the absence of initial painting, which enables in this case savings thanks to:

- Reduced construction cost along with construction time;
- Reduced cost of maintenance as well as time of maintenance operation;
- No environmental impact due to absence of maintenance operations and residue.



Atmospheric corrosion resistance testing polygon.

## Application Examples of Weathering Steels

The use of weathering steels may be inspiring for architectural, decorative and environmental incentives and/or for robust industrial applications in particular with the aim to minimize maintenance for e.g. halls, bridges and towers.

## Functionality

Weathering steel initially forms a natural, tightly adherent, protective oxide layer (patina), strongly reducing further oxidation and thus superseding the application of any corrosion protection system. The formation of the patina depends on the adequate environment the surface is exposed. For instance, the steel surface must be alternatively dry and wet, in order to build-up the protective layer.

## Aesthetic Aspects

Appearance, texture and maturity of the patina depend on time, degree of exposure and atmospheric environment. With time, the oxide coating changes from a rusty red-orange to a dark brown (in some cases slightly purple) patina. In industrial environments weathering steel usually achieves the darkest tone whereas in rural locations, the oxide coating develops more slowly, and generally has a lighter tone. It is advisable to carry out sand blasting on surfaces exposed to atmospheric corrosion in order to obtain a regular patina and a uniform coloring, in particular if a uniform weathered appearance is desired as early as possible. With accumulation of contaminants or in case of physical damage it is recommended, that cleaning should be done after completion of constructional work.



Example of patina colours, after approx. 25 years of exposure.

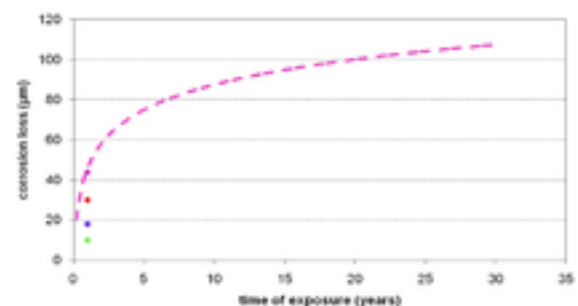
## Design Considerations

The design of weathering steel members is covered by Eurocode 3:

Design of steel structures. In addition it is recommended that suitable construction detailing is foreseen, such as to:

- Avoid rust staining of other materials;
- Avoid details that would promote retention of moisture.

Such constructive details are available in literature and on request.



Long term corrosion loss of weathering steels

## Joining and Welding

Connection elements like bolts, screws, nuts, washers, should have an atmospheric resistance equal to or higher than the weathering steel.

The formation of a local electrochemical element (contact corrosion) must be avoided in any case.

In the case of bolted joints an anti-corrosive painting of the contact surface is recommended. In addition a sealing of the joint might be necessary in order to prevent water infiltration.

Structural shapes from weathering steel can be welded with all manual and automatic welding processes according to the general rules for welding.

The weld metal should be adapted to the mechanical properties of the base metal. The atmospheric corrosion resistance of the weld metal should be equal or better than that of the steel (in case of multiple passes there is no need for the submerged runs to have such a resistance).

## Limitations

Despite, that most sites are suitable for the use of weathering steels, in some cases the self protecting patina may be ineffective:

- In atmospheres containing concentrated, corrosive industrial or chemical fumes (at an extreme level, which is rarely encountered);
- In locations subjected to salt-water spray or salt-laden fog (including marine environment);
- When deicing salt leads to substantial deposits of chloride on the steel;
- In applications where the steel is continuously submerged in water, buried in soil, or more generally, warm and damp sites (because of absence of wet / dry cycles);
- In places where the protective layer is repeatedly removed by physical contact.

## Certificates



# Contact with the mill:

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