

Introduction to corrosion protection and corrosivity categories

Depending on the material, this resistance can be further enhanced through protective treatments – such as painting, hot-dip galvanising or advanced surface coatings – ensuring long-term durability and reliable performance.

Factors influencing the risk of atmospheric corrosion

The risk of atmospheric corrosion, and the rate at which it develops, depend primarily on the following parameters:

- ➞ The relative humidity of the surrounding air, both indoor and outdoor.
- ➞ The risk of condensation, influenced by relative humidity, steel surface temperature and air velocity.
- ➞ The concentration of corrosive pollutants – gases, solids or liquids – such as sulphur dioxide, acids, alkalis or salts.

Classification of corrosive environments

A general classification of atmospheric corrosivity is defined in ISO 9223 and referenced in ISO 12944. These standards define typical environments for each corrosivity category, helping you select the right materials and protection systems.

| Category (ISO 9223) | Corrosion level | Typical environments – Indoor | Typical environments – Outdoor |
|---------------------|-----------------|--|--|
| C1 | Very low | Heated spaces with low relative humidity and very low pollution, e.g. offices, schools, museums. | Dry or cold zones with very low pollution and minimal time of wetness, e.g. certain deserts, Central Arctic / Antarctica. |
| C2 | Low | Unheated spaces with varying temperature and humidity levels, with low frequency of condensation and low pollution, e.g. storage, sports halls. | Temperate zones with low pollution ($SO_2 < 5 \mu g/m^3$), e.g. rural areas, small towns. Dry or cold zones with short time of wetness, e.g. deserts, subarctic areas. |
| C3 ⁽¹⁾ | Medium | Spaces with moderate frequency of condensation and moderate pollution from production processes, e.g. food processing plants, laundries, breweries, dairies. | Temperate zones with medium pollution (SO_2 : 5 to 30 $\mu g/m^3$) or some effect of chlorides, e.g. urban areas, coastal areas with low chloride deposition. Subtropical and tropical zones with low pollution. |
| C4 | High | Spaces with high frequency of condensation and high pollution from production processes, e.g. industrial processing plants, swimming pools. | Temperate zones with high pollution (SO_2 : 30 to 90 $\mu g/m^3$) or substantial effect of chlorides, e.g. polluted urban areas, industrial areas, coastal areas without salt water spray or exposure to de-icing salts. Subtropical and tropical zones with medium pollution. |
| C5 ⁽²⁾ | Very high | Spaces with very high frequency of condensation and/or high pollution from production processes, e.g. mines, caverns for industrial purposes, unventilated sheds in subtropical and tropical zones. | Temperate and subtropical zones with very high pollution (SO_2: 90 to 250 $\mu g/m^3$) and/or significant effect of chlorides, e.g. industrial areas, coastal areas, sheltered positions along the coastline. |
| CX | Extreme | Spaces with almost permanent condensation or prolonged exposure to extreme humidity and/or high pollution from production processes, e.g. unventilated sheds in humid tropical zones. | Subtropical and tropical zones with very high time of wetness and very high SO_2 pollution (higher than 250 $\mu g/m^3$), including additional industrial factors and/or strong chloride effects, e.g. extreme industrial areas, coastal and offshore areas. |

1) Minimum recommended: C3
 2) MUB level: C5

Understanding ZM310

ZM310 is a metal coating with outstanding corrosion resistance. Although the manufacturing process involves immersing the steel in a galvanising bath, it differs significantly from standard galvanised coatings. The enhanced performance is achieved by using a specially formulated alloy of zinc, aluminium and magnesium.

Key benefits

High corrosion resistance (C5)

Up to three times higher resistance compared to standard galvanised steel.

Self-healing effect

ZM310 maintains protection even when scratched, reducing maintenance and ensuring long service life.

For severe conditions

Engineered to withstand harsh environments and ensure reliable long-term operation.

Corrosion rarely starts on flat surfaces

Corrosion typically starts at the most vulnerable points of a unit – cut edges, screws, joints and surface scratches. These areas are often exposed to mechanical stress, impacts or handling during installation and operation. When damaged, the protective layer on powder-coated or galvanised surfaces can be compromised, as its effectiveness relies on the integrity of the coating.

As a result, these exposed areas become highly susceptible to corrosion, particularly in humid or saline environments. With ZM310, an additional level of protection is ensured. Thanks to its self-healing properties, the coating actively protects exposed surfaces in the event of scratches or minor damage – securing extended durability and reliable long-term performance.

Corrosion fears our MUB fans

x3 higher corrosion protection (C5)

- ✓ ZM310 removable panels
- ✓ Certified C5 corrosion resistance
- ✓ Long service life
- ✓ Silent operation
- ✓ Any-position installation



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