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Australian STANDARD®

Atmospheric corrosivity zones in Australia

STANDARDS Australia

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Australasian Corrosion Association
Australian Chamber of Commerce and Industry
Australian Paint Manufacturers Federation
Australian Pipelines and Gas Association
Australian Steel Institute
Austroads
Bureau of Steel Manufacturers of Australia
CSIRO
Energy Safe Victoria
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Materials Australia
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Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee MT-014, Corrosion of Metals, to supersede AS 4312—2008.

After consulting with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to provide guidelines for the classification of atmospheric environments in terms of their effects on corrosion to assist with the selection of metal finishes for ferrous products.

This edition includes the following major changes from the previous edition:

(a) Description of and identification of regions within the ISO CX severe corrosivity classification.

(b) More accurate definition of locations within corrosivity categories, especially in tropical regions, and redrawing the corrosivity maps.

(c) Removal of the industrial and marine sub-sections of the C5 and the Tropical category, to achieve complete correlation with the ISO categories.

(d) Additional information on identifying internal environments.

The term “informative” has been used in this Standard to define the application of the appendix to which it applies. An “informative” appendix is only for information and guidance.

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Section 1 Scope and general

1.1 Scope

This Standard provides guidelines for the classification of atmospheric corrosivity zones in Australia and their effect on the corrosion of steel and other metals.

The guidelines in this Standard use the corrosion rate classifications defined in ISO 9223 to delineate atmospheric corrosivity zones.

Environments that are not atmospheric, such as immersed, underground and splash zones, are not considered in this Standard. For these environments, refer to AS 2159 (piling) or AS/NZS 2041.1 (buried corrugated metal structures).

1.2 Application

This Standard is intended to be used by designers and specifiers of corrosion control methods to assist in determining the correct atmospheric corrosivity zone in Australia. The influence of micro climates is also addressed and should be considered when specifying the necessary corrosion protection that is required.

In general, a knowledge of atmospheric corrosivity is necessary in the following corrosion mitigation activities:

(a) Selection of protective coatings such as paint coatings according to AS 2312.1 or hot dip galvanized coatings according to AS/NZS 2312.2. A more severe environment will normally require a higher performance or thicker coating system, or both.

(b) Selection of in-line pre-coated products and suitable metals. The durability of in-line pre-coated products and metals such as copper and stainless steels depends on the corrosivity of the environment.

(c) Maintenance of protective coating systems. In severe environments, maintenance is more difficult and usually required more frequently than in less severe environments.

(d) Design of products and components such as fasteners. The importance of minimizing corrosion through careful design and fabrication procedures becomes more important as the environment becomes more corrosive.

NOTE AS 2312.1 and AS/NZS 2312.2 provide details of selection and maintenance of protective coatings, and include design features for minimizing corrosion.

1.3 Normative references

There are no normative references in this document.

NOTE The documents referenced in this Standard and additional reading matter are listed in the Bibliography.

1.4 Terms and definitions

For the purpose of this Standard, the following terms and definitions apply.

1.4.1
corrosion rate
amount (thickness or mass loss) of corrosion that occurs in a given time

Note 1 to entry: Corrosion rate is usually measured in micrometres (μm) per year.