
**Corrosion of metals and alloys —
Guidelines for selection of protection
methods against atmospheric corrosion**

*Corrosion des métaux et alliages — Lignes directrices pour le choix des
méthodes de protection contre la corrosion atmosphérique*

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 11303 was prepared by Technical Committee ISO/TC 156, *Corrosion of metals and alloys*.

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Corrosion of metals and alloys — Guidelines for selection of protection methods against atmospheric corrosion

1 Scope

This International Standard gives guidance on the selection of methods of protection against atmospheric corrosion of metals and alloys. It is applicable for technical equipment and products made of structural metals and used under atmospheric conditions. In a rational selection of protection methods, the corrosivity of the atmospheric environments is one of the important factors. These guidelines use the atmospheric corrosivity classification defined in ISO 9223.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 8044:1999, *Corrosion of metals and alloys — Basic terms and definitions*

ISO 9223:1992, *Corrosion of metals and alloys — Corrosivity of atmospheres — Classification*

ISO 9224:1992, *Corrosion of metals and alloys — Corrosivity of atmospheres — Guiding values for the corrosivity categories*

ISO 12944-2:1998, *Paints and varnishes — Corrosion protection of steel structures by protective paint systems — Part 2: Classification of environments*

3 Terms and definitions

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

3.1

corrosion system

system consisting of one or more metals and those parts of environment that influence corrosion

[ISO 8044]

3.2

corrosion damage

corrosion effect that causes impairment of the function of the metal, the environment or the technical system of which these form a part

[ISO 8044]

3.3

corrosivity

ability of an environment to cause corrosion of a metal in a given corrosion system

[ISO 8044]

3.4

corrosion protection

modification of a corrosion system so that corrosion damage is reduced

[ISO 8044]

3.5

serviceability (with respect to corrosion)

ability of a system to perform its specified function(s) without impairment due to corrosion

[ISO 8044]

3.6

service life (with respect to corrosion)

time during which a corrosion system meets the requirements for serviceability

[ISO 8044]

3.7

durability (with respect to corrosion)

ability of a corrosion system to maintain serviceability over a specified time when the specified requirements for use and maintenance have been fulfilled

[ISO 8044]

3.8

maintenance

complex of activities, securing functions of a protection system during a planned service life

3.9

atmosphere

mixture of gases, and normally also aerosols and particles, that surrounds a given object

[ISO 12944-2]

4 Procedure for selection of a corrosion protection method

4.1 General

In general, protection against atmospheric corrosion can be achieved by the selection of suitable material, the design of the product with respect to protection against corrosion, by reducing the corrosivity of the environment and by covering the product with appropriate protective coatings.

The selection of the appropriate corrosion protection method comprises several steps respecting characteristics of the product, its designed service life and other demands connected with its use, the corrosive environment and other factors outside the corrosion system e.g. cost. The relations are shown in Figure 1. The steps of the corrosion protection selection defined in 4.2 to 4.6 are marked on this schematic diagram.

4.2 Corrosion system

In the sense of this International Standard, the corrosion system encompasses both the structural metallic element and its environment, i.e., the atmosphere in contact with it. The term atmosphere includes corrosive atmospheric components (gases, aerosols, particles).