
**Paints and varnishes — Corrosion
protection of steel structures by protective
paint systems**

Part 6:
Laboratory performance test methods

*Peintures et vernis — Anticorrosion des structures en acier par systèmes
de peinture —*

Partie 6: Essais de performance en laboratoire



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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.

International Standard ISO 12944-6 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 14, *Protective paint systems for steel structures*.

ISO 12944 consists of the following parts, under the general title *Paints and varnishes — Protective paint systems for steel structures*:

- *Part 1: General introduction*
- *Part 2: Classification of environments*
- *Part 3: Design considerations*
- *Part 4: Types of surface and surface preparation*
- *Part 5: Protective paint systems*
- *Part 6: Laboratory performance test methods*
- *Part 7: Execution and supervision of paint work*
- *Part 8: Development of specifications for new work and maintenance*

Annex A of this part of ISO 12944 forms an integral part of this part of ISO 12944. Annex B is for information only.

Introduction

Unprotected steel in the atmosphere, in water and in soil is subject to corrosion that may lead to damage. Therefore, to avoid corrosion damage, steel structures are normally protected to withstand the corrosion stresses during the service life required of the structure.

There are different ways of protecting steel structures from corrosion. ISO 12944 deals with protection by paint systems and covers, in the various parts, all features that are important in achieving adequate corrosion protection. Additional or other measures are possible but require particular agreement between the interested parties.

In order to ensure effective corrosion protection of steel structures, it is necessary for owners of such structures, planners, consultants, companies carrying out corrosion protection work, inspectors of protective coatings and manufacturers of coating materials to have at their disposal state-of-the-art information in concise form on corrosion protection by paint systems. Such information has to be as complete as possible, unambiguous and easily understandable to avoid difficulties and misunderstandings between the parties concerned with the practical implementation of protection work.

This International Standard — ISO 12944 — is intended to give this information in the form of a series of instructions. It is written for those who have some technical knowledge. It is also assumed that the user of ISO 12944 is familiar with other relevant International Standards, in particular those dealing with surface preparation, as well as relevant national regulations.

Although ISO 12944 does not deal with financial and contractual questions, attention is drawn to the fact that, because of the considerable implications of inadequate corrosion protection, non-compliance with requirements and recommendations given in this standard may result in serious financial consequences.

ISO 12944-1 defines the overall scope of all parts of ISO 12944. It gives some basic terms and definitions and a general introduction to the other parts of ISO 12944. Furthermore, it includes a general statement on health, safety and environmental protection, and guidelines for using ISO 12944 for a given project.

ISO 12944-6 provides a way of assessing paint systems by means of laboratory tests in order to be able to select the most suitable.

Paints and varnishes — Corrosion protection of steel structures by protective paint systems

Part 6: Laboratory performance test methods

1 Scope

This part of ISO 12944 specifies laboratory test methods and test conditions for the assessment of paint systems for the corrosion protection of steel structures. The test results are to be considered as an aid in the selection of suitable paint systems and not as exact information for determining durability.

This part of ISO 12944 covers protective paint systems designed for application to uncoated steel, hot-dip-galvanized steel and steel surfaces with thermally sprayed zinc coatings.

This part of ISO 12944 does not apply to protective paint systems for electroplated or painted steel.

Certain tests in this part of ISO 12944 are not applicable to many water-borne paint systems (see 4.2). Nevertheless, some water-borne paint systems are amenable to testing and evaluation using the procedures described herein, and their results could be taken into account.

The environments defined in ISO 12944-2 are considered.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 12944. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 12944 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 554:1976, *Standard atmospheres for conditioning and/or testing — Specifications.*

ISO 1512:1991, *Paints and varnishes — Sampling of products in liquid or paste form.*

ISO 1513:1992, *Paints and varnishes — Examination and preparation of samples for testing.*

ISO 2409:1992, *Paints and varnishes — Cross-cut test.*

ISO 2808:1997, *Paints and varnishes — Determination of film thickness.*

ISO 2812-1:1993, *Paints and varnishes — Determination of resistance to liquids — Part 1: General methods.*

ISO 2812-2:1993, *Paints and varnishes — Determination of resistance to liquids — Part 2: Water immersion method.*

ISO 3231:1993, *Paints and varnishes — Determination of resistance to humid atmospheres containing sulfur dioxide.*

ISO 4624:1978, *Paints and varnishes — Pull-off test for adhesion.*

ISO 4628-1:1982, *Paints and varnishes — Evaluation of degradation of paint coatings — Designation of intensity, quantity and size of common types of defect — Part 1: General principles and rating schemes.*

ISO 4628-2:1982, *Paints and varnishes — Evaluation of degradation of paint coatings — Designation of intensity, quantity and size of common types of defect — Part 2: Designation of degree of blistering.*

ISO 4628-3:1982, *Paints and varnishes — Evaluation of degradation of paint coatings — Designation of intensity, quantity and size of common types of defect — Part 3: Designation of degree of rusting.*

ISO 4628-4:1982, *Paints and varnishes — Evaluation of degradation of paint coatings — Designation of intensity, quantity and size of common types of defect — Part 4: Designation of degree of cracking.*

ISO 4628-5:1982, *Paints and varnishes — Evaluation of degradation of paint coatings — Designation of intensity, quantity and size of common types of defect — Part 5: Designation of degree of flaking.*

ISO 6270:1980, *Paints and varnishes — Determination of resistance to humidity (continuous condensation).*

ISO 7253:1996, *Paints and varnishes — Determination of resistance to neutral salt spray (fog).*

ISO 7384:1986, *Corrosion tests in artificial atmospheres — General requirements.*

ISO 8501-1:1988, *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.*

ISO 8503-1:1988, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 1: Specifications and definitions for ISO surface profile comparators for the assessment of abrasive blast-cleaned surfaces.*

ISO 8503-2:1988, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 2: Method for the grading of surface profile of abrasive blast-cleaned steel — Comparator procedure.*

ISO 12944-1:1998, *Paints and varnishes — Corrosion protection of steel structures by protective paint systems — Part 1: General introduction.*

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

ISO 12944-4:1998, *Paints and varnishes — Corrosion protection of steel structures by protective paint systems — Part 4: Types of surface and surface preparation.*

ISO 12944-5:1998, *Paints and varnishes — Corrosion protection of steel structures by protective paint systems — Part 5: Protective paint systems.*