Second edition
2018-01

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

Reference number
ISO 12944-6:2018(E)

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Published in Switzerland

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 14, *Protective paint systems for steel structures*.

This second edition cancels and replaces the first edition (ISO 12944-6:1998), which has been technically revised.

The main changes compared to the previous edition are as follows:

— the normative references have been updated;

— the terms and definitions have been revised;

— 4.2 “Additional performance tests” has been revised and the Note deleted;

— 5.1 “Test panels” has been revised;

— 5.4 “Paint systems” has been revised and requirements for maximum film thickness added;

— 5.6 “Test procedures and duration” has been revised and includes a revised Table 1;

— Table 1 “Test procedures for paint systems applied to carbon steel, hot dip galvanized steel or steel with thermal-sprayed metallic coating” has been divided into two separate tables, one containing categories C1 to C5 and one containing categories Im1 to Im3;

— the former Table 2 has been deleted;

— Clause 6 “Paint system assessment” has been revised;

— in 6.2 a new Table 3 “Assessment before artificial ageing” has been included;

— in 6.3 a new Table 4 “Assessment after artificial ageing for the specified time” has been included;

— in Clause 7 “Test report” the following items were added: “photographic documents [...]”, “thickness of zinc layer [...]”, and “thickness of the thermal-sprayed metallic coating [...]”;

— Annex A has been revised and Figures A.1 and A.2 have been added;

— a new normative Annex B “Cyclic ageing test” has been added;

— the former Annex B has been deleted;

— a Bibliography has been added;

— the text has been editorially revised.

A list of all parts in the ISO 12944 series can be found on the ISO website.

Introduction

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

There are different ways of protecting steel structures from corrosion. ISO 12944 (all parts) 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, owners of such structures, planners, consultants, companies carrying out corrosion protection work, inspectors of protective coatings and manufacturers of coating materials need to have at their disposal state-of-the-art information in concise form on corrosion protection by paint systems. It is vital that such information is as complete as possible, unambiguous and easily understandable to avoid difficulties and misunderstandings between the parties concerned with the practical implementation of protection work.

ISO 12944 (all parts) 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 (all parts) is familiar with other relevant International Standards, in particular those dealing with surface preparation.

Although ISO 12944 (all parts) 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 document can result in serious financial consequences.

ISO 12944-1 defines the overall scope 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 (all parts) for a given project.

This document provides a way of assessing paint systems by means of laboratory tests in order to be able to select the most suitable.

Cyclic ageing testing according to Annex B is introduced within this document. It is currently used in C5 VH/ H and C4 VH. In case of C5 H and C4 VH the test regime including salt spray and condensation test can still be used as alternative to cyclic ageing test. For the future, it is intended to remove salt spray and condensation tests as alternative tests for C5 H and C4 VH.