

This is a preview of "DS/EN ISO 12944-5:20...". Click here to purchase the full version from the ANSI store.

Malinger og lakker – Korrosionsbeskyttelse af stålkonstruktioner med beskyttende malingsystemer – Del 5: Beskyttende malingsystemer

Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Part 5: Protective paint systems (ISO 12944-5:2018)

DANSK STANDARD
Danish Standards Association

Göteborg Plads 1
DK-2150 Nordhavn

Tel: +45 39 96 61 01

Tel: +45 39 96 61 01

dansk.standard@ds.dk

www.ds.dk

This is a preview of "DS/EN ISO 12944-5:20...". Click here to purchase the full version from the ANSI store.

DS projekt: M308048

ICS: 87.020

Første del af denne publikations betegnelse er:

DS/EN ISO, hvilket betyder, at det er en international standard, der har status både som europæisk og dansk standard.

Denne publikations overensstemmelse er:

IDT med: ISO 12944-5:2018

IDT med: EN ISO 12944-5:2018

DS-publikationen er på engelsk.

Denne publikation erstatter: [DS/EN ISO 12944-5:2007](#)

DS-publikationstyper

Dansk Standard udgiver forskellige publikationstyper.

Typen på denne publikation fremgår af forsiden.

Der kan være tale om:

Dansk standard

- standard, der er udarbejdet på nationalt niveau, eller som er baseret på et andet lands nationale standard, eller
- standard, der er udarbejdet på internationalt og/eller europæisk niveau, og som har fået status som dansk standard

DS-information

- publikation, der er udarbejdet på nationalt niveau, og som ikke har opnået status som standard, eller
- publikation, der er udarbejdet på internationalt og/eller europæisk niveau, og som ikke har fået status som standard, fx en teknisk rapport, eller
- europæisk præstandard

DS-håndbog

- samling af standarder, eventuelt suppleret med informativt materiale

DS-hæfte

- publikation med informativt materiale

Til disse publikationstyper kan endvidere udgives

- tillæg og rettelsesblade

DS-publikationsform

Publikationstyperne udgives i forskellig form som henholdsvis

- fuldttekstpublikation (publikationen er trykt i sin helhed)
- godkendelsesblad (publikationen leveres i kopi med et trykt DS-omslag)
- elektronisk (publikationen leveres på et elektronisk medie)

DS-betegnelse

Alle DS-publikationers betegnelse begynder med DS efterfulgt af et eller flere præfikser og et nr., fx **DS 383**, **DS/EN 5414** osv. Hvis der efter nr. er angivet et **A** eller **Cor**, betyder det, enten at det er et **tillæg** eller et **rettelsesblad** til hovedstandard, eller at det er indført i hovedstandard.

DS-betegnelse angives på forsiden.

Overensstemmelse med anden publikation:

Overensstemmelse kan enten være IDT, EQV, NEQ eller MOD

- **IDT:** Når publikationen er identisk med en given publikation.
- **EQV:** Når publikationen teknisk er i overensstemmelse med en given publikation, men præsentationen er ændret.
- **NEQ:** Når publikationen teknisk eller præsentationsmæssigt ikke er i overensstemmelse med en given standard, men udarbejdet på baggrund af denne.
- **MOD:** Når publikationen er modificeret i forhold til en given publikation.

This is a preview of "DS/EN ISO 12944-5:20...". Click here to purchase the full version from the ANSI store.

EUROPÄISCHE NORM

March 2018

ICS 87.020

Supersedes EN ISO 12944-5:2007

English Version

Paints and varnishes - Corrosion protection of steel structures by protective paint systems - Part 5: Protective paint systems (ISO 12944-5:2018)

Peintures et vernis - Anticorrosion des structures en acier par systèmes de peinture - Partie 5: Systèmes de peinture (ISO 12944-5:2018)

Beschichtungsstoffe - Korrosionsschutz von Stahlbauten durch Beschichtungssysteme - Teil 5: Beschichtungssysteme (ISO 12944-5:2018)

This European Standard was approved by CEN on 15 February 2018.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

This is a preview of "DS/EN ISO 12944-5:20...". [Click here to purchase the full version from the ANSI store.](#)

Contents

Page

European foreword	3
--------------------------------	----------

This is a preview of "DS/EN ISO 12944-5:20...". Click here to purchase the full version from the ANSI store.

European foreword

This document ([EN ISO 12944-5:2018](#)) has been prepared by Technical Committee ISO/TC 35 "Paints and varnishes" in collaboration with Technical Committee CEN/TC 139 "Paints and varnishes" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2018, and conflicting national standards shall be withdrawn at the latest by September 2018.

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

This document supersedes [EN ISO 12944-5:2007](#).

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of [ISO 12944-5:2018](#) has been approved by CEN as [EN ISO 12944-5:2018](#) without any modification.

This is a preview of "DS/EN ISO 12944-5:20...". [Click here to purchase the full version from the ANSI store.](#)

This is a preview of "DS/EN ISO 12944-5:20...". [Click here to purchase the full version from the ANSI store.](#)

Third edition
2018-02-12

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

Part 5: Protective paint systems

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

Partie : Systèmes de peinture



Reference number
ISO 12944-5:2018(E)

© ISO 2018

This is a preview of "DS/EN ISO 12944-5:20...". Click here to purchase the full version from the ANSI store.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2018, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

This is a preview of "DS/EN ISO 12944-5:20...". Click here to purchase the full version from the ANSI store.

Contents

	Page
Foreword	iv
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Classification of environments	3
5 New work and refurbishment	3
5.1 New work and total refurbishment.....	3
5.2 Partial refurbishment.....	4
6 Types of paint	4
6.1 General.....	4
6.2 Examples of generic type of paints.....	4
6.2.1 Alkyd paints (AK).....	4
6.2.2 Acrylic paints (AY).....	4
6.2.3 Ethyl silicate paints (ESI).....	5
6.2.4 Paints for epoxy coatings (EP).....	5
6.2.5 Paints for polyurethane coatings (PUR).....	5
6.2.6 Paints for polyaspartic coatings (PAS).....	6
6.2.7 Paints for polysiloxane coatings (PS).....	6
7 Paint systems	6
7.1 Priming coats and type of primers.....	6
7.1.1 General.....	6
7.1.2 Types of primer.....	6
7.2 Subsequent coats.....	7
7.2.1 General.....	7
7.2.2 Intermediate coats.....	7
7.2.3 Topcoats.....	7
7.3 Dry film thickness.....	7
7.4 Durability.....	8
7.5 Shop and site application.....	8
8 Tables for protective paint systems for C2 to C5, Im1, Im2 and Im3	9
8.1 Reading the tables.....	9
8.2 Parameters influencing durability.....	9
8.3 Designation of the paint systems listed.....	9
8.4 Guidelines for selecting the appropriate paint system.....	9
Annex A (normative) Abbreviated terms and descriptions	11
Annex B (normative) Minimum requirements for corrosion protection systems	12
Annex C (informative) Paint systems for carbon steel	15
Annex D (informative) Paint systems on hot dip galvanized steel	18
Annex E (informative) Paint systems on thermal-sprayed metallic coatings	20
Annex F (informative) Pre-fabrication primers	21
Bibliography	23

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.

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 third edition cancels and replaces the second edition ([ISO 12944-5:2007](http://www.iso.org/iso/12944-5:2007)) which has been technically revised.

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

- a) the normative references in [Clause 2](#) have been updated;
- b) the terms and definitions in [Clause 3](#) have been revised;
- c) the document has been restructured and editorially revised;
- d) new types of coatings (polyaspartic, fluoropolymer, fluoroethylene/vinyl ether co-polymer and polysiloxanes coatings) have been added;
- e) descriptions for intermediate coats and topcoats have been added;
- f) the former [Annex A](#) has been divided into the new Annexes C, D and E;
- g) the former [Annex B](#) has been renumbered to become [Annex F](#);
- h) a new normative [Annex A](#) containing abbreviated terms and descriptions has been added;
- i) a new normative [Annex B](#), "Minimum requirements for corrosion protection systems", has been added;
- j) the former [Annex C](#) has been deleted;
- k) the former [Annex D](#) has been deleted;
- l) a Bibliography has been added;

This is a preview of "DS/EN ISO 12944-5:20...". [Click here to purchase the full version from the ANSI store.](#)

A list of all parts in the [ISO 12944 series](#) can be found on the ISO website.

This is a preview of "DS/EN ISO 12944-5:20...". Click here to purchase the full version from the ANSI store.

Introduction

Unprotected steel in the atmosphere, in water and in soil is subjected to corrosion that may lead to damage. Therefore, to avoid corrosion damage, steel structures are normally protected to withstand the corrosion stresses during the required 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 [ISO 12944 \(all parts\)](#) 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 gives some terms and definitions related to paint systems in combination with guidance for the selection of different types of protective paint system.

This is a preview of "DS/EN ISO 12944-5:20...". Click here to purchase the full version from the ANSI store.

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

Part 5: Protective paint systems

1 Scope

This document describes the types of paint and paint system commonly used for corrosion protection of steel structures.

It also gives guidelines for the selection of paint systems available for different environments (see [ISO 12944-2](#)) except for corrosivity category CX and category Im4 as defined in [ISO 12944-2](#) and different surface preparation grades (see [ISO 12944-4](#)), and the durability grade to be expected (see [ISO 12944-1](#)).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[ISO 1461](#), *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods*

[ISO 2063](#) (all parts), *Thermal spraying — Zinc, aluminium and their alloys*

[ISO 2808](#), *Paints and varnishes — Determination of film thickness*

[ISO 3549](#), *Zinc dust pigments for paints — Specifications and test methods*

[ISO 8501-1](#), *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](#), *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 12944-1](#), *Paints and varnishes — Corrosion protection of steel structures by protective paint systems — Part 1: General introduction*

[ISO 12944-2](#), *Paints and varnishes — Corrosion protection of steel structures by protective paint systems — Part 2: Classification of environments*

[ISO 19840](#), *Paints and varnishes — Corrosion protection of steel structures by protective paint systems — Measurement of, and acceptance criteria for, the thickness of dry films on rough surfaces*