

This is a preview of "DS/EN ISO 2063-1:201...". Click here to purchase the full version from the ANSI store.

Termisk sprøjtning – Zink, aluminium og deres legeringer – Del 1: Projektering af og kvalitetskrav til korrosionsbeskyttelsessystemer

Thermal spraying – Zinc, aluminium and their alloys – Part 1: Design considerations and quality requirements for corrosion protection systems (ISO 2063-1:2017)

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 2063-1:201...". Click here to purchase the full version from the ANSI store.

DS projekt: M284695
ICS: 25.220.20; 25.220.40

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 2063-1:2017

IDT med: EN ISO 2063-1:2017

DS-publikationen er på engelsk.

Denne publikation erstatter: [EN ISO 2063:2005](#)

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

- fuldtekstpublikation (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.

EUROPÄISCHE NORM

October 2017

ICS 25.220.20; 25.220.40

Supersedes EN ISO 2063:2005

English Version

Thermal spraying - Zinc, aluminium and their alloys - Part 1: Design considerations and quality requirements for corrosion protection systems (ISO 2063-1:2017)

Projection thermique - Zinc, aluminium et alliages de
ces métaux - Partie 1: Considérations de conception
et exigences de qualité pour les systèmes de
protection contre la corrosion (ISO 2063-1:2017)

Thermisches Spritzen - Zink, Aluminium und
ihre Legierungen - Teil 1: Bauteilgestaltung
und Qualitätsanforderungen für
Korrosionsschutzsysteme (ISO 2063-1:2017)

This European Standard was approved by CEN on 31 August 2017.

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 2063-1:201...". [Click here to purchase the full version from the ANSI store.](#)

Contents

Page

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

This is a preview of "DS/EN ISO 2063-1:201...". Click here to purchase the full version from the ANSI store.

European foreword

This document ([EN ISO 2063-1:2017](#)) has been prepared by Technical Committee ISO/TC 107 “Metallic and other inorganic coatings” in collaboration with Technical Committee CEN/TC 240 “Thermal spraying and thermally sprayed coatings” 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 April 2018, and conflicting national standards shall be withdrawn at the latest by April 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 2063:2005](#).

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 2063-1:2017](#) has been approved by CEN as [EN ISO 2063-1:2017](#) without any modification.

This is a preview of "DS/EN ISO 2063-1:201...". [Click here to purchase the full version from the ANSI store.](#)

First edition
2017-09-15

Thermal spraying — Zinc, aluminium and their alloys —

Part 1: Design considerations and quality requirements for corrosion protection systems

*Projection thermique — Zinc, aluminium et alliages de ces métaux —
Partie : Considérations de conception et exigences de qualité pour les
systèmes de protection contre la corrosion*



Reference number
ISO 2063-1:2017(E)

© ISO 2017

This is a preview of "DS/EN ISO 2063-1:201...". Click here to purchase the full version from the ANSI store.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, 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 2063-1:201...". Click here to purchase the full version from the ANSI store.

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Criteria for corrosion and corrosion protection by thermal-sprayed coatings	3
4.1 General.....	3
4.2 Corrosivity categories and environment conditions.....	3
4.3 Corrosion rate.....	3
4.4 Coating materials and corrosion behaviour.....	3
4.4.1 General.....	3
4.4.2 Zinc and zinc alloys.....	4
4.4.3 Aluminium and aluminium alloys.....	4
5 Requirements for the corrosion protection systems and their planning	4
5.1 General rules — Technical requirements.....	4
5.2 Used spray materials and coating thickness.....	5
5.2.1 Spray materials.....	5
5.2.2 Coating thickness.....	5
5.3 Construction design requirements for iron and steel components for thermal spraying.....	6
5.3.1 General.....	6
5.3.2 Recommendations for the design of the part — Avoidance of corrosion creating areas.....	6
5.3.3 Requirements for welding in combination with thermal-sprayed protective coatings.....	6
5.3.4 Thermal spraying of corrosion protected fastenings.....	6
6 Pre-conditions and requirements for the manufacturing process	6
6.1 General — Requirements.....	6
6.2 Reference areas.....	6
6.3 Preparation of the surface to be coated.....	7
6.4 Thermal spraying.....	7
6.5 Sealing of thermal-sprayed coatings.....	7
6.6 Metallic coatings and additional organic top coatings.....	8
6.7 Requirements for the tests — Test procedures.....	8
6.7.1 General.....	8
6.7.2 Visual inspection — Appearance.....	8
6.7.3 Coating thickness.....	8
6.7.4 Adhesion strength.....	9
6.7.5 Metallographic investigation.....	9
7 Requirements for the manufacturer	9
7.1 General.....	9
7.2 Coating specification — Requirements for the spray coating.....	9
8 Documentation	10
Annex A (informative) Corrosivity categories — Environment conditions — Exposure	11
Annex B (informative) Summary of the corrosion behaviour of thermal-sprayed coatings of zinc, aluminium and their alloys	13
Annex C (informative) Recommended values for the thickness of the metallic coating	15
Annex D (informative) Examples of design and explanations	17

This is a preview of "DS/EN ISO 2063-1:201...". [Click here to purchase the full version from the ANSI store.](#)

Annex E (informative) Example test certificate for work specimen for thermal sprayer used on-site in accordance with ISO 2063-2	23
Annex F (informative) Appearance of surfaces in different treated conditions	25
Annex G (informative) Checklist for this document — Work and test steps and connection to relevant standards or recommendations	26
Bibliography	28

This is a preview of "DS/EN ISO 2063-1:201...". Click here to purchase the full version from the ANSI store.

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 107, *Metallic and other inorganic coatings*.

This document, together with [ISO 2063-2:2017](http://www.iso.org/iso/2063-2:2017), cancels and replaces [ISO 2063:2005](http://www.iso.org/iso/2063:2005), which has been technically revised.

A list of all the parts in the ISO 2063 series can be found on the ISO website.

This is a preview of "DS/EN ISO 2063-1:201...". [Click here to purchase the full version from the ANSI store.](#)

Introduction

In order to protect iron- and steel-based structures (e.g. for steel construction, bridge construction, steel structures for water construction, onshore and offshore wind energy constructions, petrol and natural gas industry) against corrosion, protective coatings are usually deposited. Corresponding to type, shape and required functionality of the part, numerous procedures are available. The deposition of corrosion protection coatings or coating systems can be done by applying hot-dip galvanizing, organic coatings or thermal spraying of zinc, aluminium and their alloys. Using combinations of metallic and organic coatings, duplex corrosion protection coating systems can be produced.

Thermal-sprayed corrosion protection coatings made of zinc, aluminium and their alloys can be sprayed onto all steels which make up the components used in the relevant industrial application. This may be carried out on-site, as well as in the workshop, regardless of the article's size. Due to the usually low heat input into the surface of the part, only a slight thermal loading of the substrate occurs, so that changes in steel properties and deformation of the part do not occur.

Corrosion protection coatings can be used as repairs or rework of defects of other coatings (e.g. uncoated hot-dip zinc galvanized areas) or worn coatings where thermal spraying can be applied on the spot. Due to relative low investment costs, thermal spraying can also be economically applied for single parts.

The [ISO 2063 series](#) applies to thermal-sprayed metallic coatings to protect iron and steel against corrosion by deposition of zinc, aluminium or their alloys onto the uncoated surface to be protected.

This document targets designers of components. It covers the planning engineering of the corrosion protection system and deals with the basic rules for planning of corrosion protection systems and for the constructive design of the components to be protected, if the protection system is based upon a thermal-sprayed metallic coating.

[ISO 2063-2](#) targets manufacturers of corrosion protection systems. It deals with the requirements for the execution of the corrosion protection works by thermal spraying in the workshop and on-site.

This is a preview of "DS/EN ISO 2063-1:201...". Click here to purchase the full version from the ANSI store.

Thermal spraying — Zinc, aluminium and their alloys —

Part 1:

Design considerations and quality requirements for corrosion protection systems

1 Scope

This document specifies requirements for the protection of iron and steel surfaces against corrosion by applying thermal-sprayed metallic coatings of zinc, aluminium or their alloys.

In this document, requirements for the planning of the corrosion protection system and for the constructive design of the component to be protected are specified, where thermal spraying is intended to be the process for the deposition of the metallic corrosion protection.

Some field-related basic terms are defined and instructions for corrosion behaviour of the zinc and aluminium materials under different environment conditions are provided.

Characteristic properties of the coating, e.g. coating thickness, minimum adhesive strength and surface appearance, are specified and test procedures for thermal-sprayed corrosion protection coatings of zinc, aluminium or their alloys are determined.

This document is valid for applying thermal-sprayed zinc and aluminium protection coatings against corrosion in the temperature range between -50 °C to $+200\text{ °C}$, taking into consideration the service conditions of any sealants used. Heat-resistant protective coatings of aluminium are covered by [ISO 17834](#) and are not in the scope of this document.

Other corrosion protection processes, e.g. hot-dip galvanizing (galvanic coating), sherardizing, electroplating or selection and deposition of organic coatings/paints are not in the scope of this document.

Requirements for the manufacturing of thermal-sprayed coatings are specified in [ISO 2063-2](#).

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 1463](#), *Metallic and oxide coatings — Measurement of coating thickness — Microscopical method*

[ISO 2063-2:2017](#), *Thermal spraying — Zinc, aluminium and their alloys — Part 2: Execution of corrosion protection systems*

[ISO 2178](#), *Non-magnetic coatings on magnetic substrates — Measurement of coating thickness — Magnetic method*

[ISO 4624](#), *Paints and varnishes — Pull-off test for adhesion*

[ISO 8044](#), *Corrosion of metals and alloys — Basic terms and definitions*

[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*

This is a preview of "DS/EN ISO 2063-1:201...". [Click here to purchase the full version from the ANSI store.](#)

[ISO 8501-3](#), *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Part 3: Preparation grades of welds, edges and other areas with surface imperfections*

[ISO 12671](#), *Thermal spraying - Thermally sprayed coatings - Symbolic representation on drawings*

[ISO 14232-1](#), *Thermal spraying — Powders — Part 1: Characterization and technical supply conditions*

[ISO 14916](#), *Thermal spraying — Determination of tensile adhesive strength*

[ISO 14917](#), *Thermal spraying — Terminology, classification*

[ISO 14919](#), *Thermal spraying — Wires, rods and cords for flame and arc spraying — Classification — Technical supply conditions*

[ISO 14923](#), *Thermal spraying — Characterization and testing of thermally sprayed coatings*

[EN 10163-2](#), *Delivery requirements for surface conditions of hot-rolled steel plates, wide flats and sections — Part 2: Plate and wide flats*

EN 10163-3, *Delivery requirements for surface condition of hot-rolled steel plates, wide flats and sections — Part 3: Sections*