

BS EN ISO 14920:2015



BSI Standards Publication

Thermal spraying — Spraying and fusing of self-fluxing alloys

bsi.

...making excellence a habit.™

National foreword

This British Standard is the UK implementation of EN ISO 14920:2015. It supersedes BS EN ISO 14920:1999 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee STI/40, Thermal spraying and thermally sprayed coatings.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2015. Published by BSI Standards Limited 2015

ISBN 978 0 580 79715 6

ICS 25.220.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 January 2015.

Amendments issued since publication

Date	Text affected
------	---------------

EUROPEAN STANDARD

EN ISO 14920

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2015

ICS 25.220.20

Supersedes EN ISO 14920:1999

English Version

Thermal spraying - Spraying and fusing of self-fluxing alloys (ISO 14920:2015)

Projection thermique - Projection et fusion d'alliages
autofondants (ISO 14920:2015)

Thermisches Spritzen - Spritzen und Einschmelzen von
selbstfließenden Legierungen (ISO 14920:2015)

This European Standard was approved by CEN on 18 October 2014.

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, 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

Foreword

This document (EN ISO 14920:2015) has been prepared by Technical Committee CEN/TC 240 "Thermal spraying and thermally sprayed coatings" the secretariat of which is held by DIN, in collaboration with Technical Committee ISO/TC 107 "Metallic and other inorganic coatings".

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 July 2015, and conflicting national standards shall be withdrawn at the latest by July 2015.

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

This document supersedes EN ISO 14920:1999.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 14920:2015 has been approved by CEN as EN ISO 14920:2015 without any modification.

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Influence on the substrate and design	1
3.1 Substrate metal.....	1
3.2 Design.....	1
4 Spray material of the self-fluxing alloy	2
4.1 Selection.....	2
4.2 Composition.....	2
5 Preparation of the component	2
5.1 General.....	2
5.2 Methods of surface preparation.....	3
5.3 Cleanliness.....	3
6 Spray and fusion process	3
6.1 Spraying with simultaneous fusion.....	3
6.1.1 Procedure.....	3
6.1.2 Particle size and particle size range of the powder particles.....	3
6.1.3 Coating thickness.....	3
6.2 Spraying with subsequent fusion.....	4
6.2.1 Procedure.....	4
6.2.2 Particle size and particle size range of the powder particles.....	4
6.2.3 Coating thickness.....	4
6.3 Spraying technique — Procedure.....	4
6.3.1 General.....	4
6.3.2 Preheating.....	4
6.3.3 Spraying.....	4
6.3.4 Fusing the deposit.....	5
6.3.5 Cooling.....	5
7 Final machining	5
8 Hardness testing	5
8.1 General.....	5
8.2 Standard hardness test.....	6
Annex A (informative) Reference values for the expected hardness of the fused coating	7
Bibliography	8

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. 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. 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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword - Supplementary information](#)

ISO 14920 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 240, *Thermal spraying and thermally sprayed coatings*, in collaboration with Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 14920:1999), which has been technically revised.

Introduction

Requests for official interpretations of any aspect of this standard should be directed to the secretariat of ISO/TC 107/WG 1 via your national standards body, a complete listing which can be found at www.iso.org.

Thermal spraying — Spraying and fusing of self-fluxing alloys

1 Scope

This International standard defines the procedure for thermal spraying of self-fluxing alloys that are simultaneously or subsequently fused to create a homogeneous, diffusion bonded coating.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11124-1, *Preparation of steel substrates before application of paints and related products — Specifications for metallic blast-cleaning abrasives — Part 1: General introduction and classification*

ISO 11126-1, *Preparation of steel substrates before application of paints and related products — Specifications for non-metallic blast-cleaning abrasives — Part 1: General introduction and classification*

ISO 12679, *Thermal spraying — Recommendations for thermal spraying*

ISO 14924, *Thermal spraying — Post-treatment and finishing of thermally sprayed coatings*

EN 1274, *Thermal spraying — Powders — Composition, technical supply conditions*

EN 13507, *Thermal spraying — Pre-treatment of surfaces of metallic parts and components for thermal spraying*

3 Influence on the substrate and design

3.1 Substrate metal

Due to the heat transfer into the substrate metal when fusing the coating, in order to bond the coating with the substrate metal by diffusion, the possible effects of such heating on the substrate metal shall be considered:

- a) scaling;
- b) the need to stress relieve;
- c) an irreversible transformation of the mechanical and/or metallurgical properties.

Martensitic steels are susceptible to stress cracking and alloys containing significant amounts of C, Al, Ti, Mg, S, sulfides, P, and nitrogen can create porosity in the coating and may render the substrate metal liable to stress cracking.

3.2 Design

The preparation of the component for spraying and fusing of a coating usually includes a reduction of the design dimensions, if pre-machining is applied. Consideration shall be given to the effect of such a reduction on the loading of the component, as the coating does not contribute to the strength of the component. Consideration shall be given, to the fact that the sprayed and fused coating will have differing physical properties to the substrate material.

The fatigue strength, the deformation resistance, and other properties of the component can be affected by the application of the coating.