SLOVENSKI STANDARD
oSIST prEN ISO 14920:2022

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Vroče brizganje (metalizacija) - Taljenje in brizganje - Vroče nanašanje samotaljivih zlitin (ISO/DIS 14920:2022)

Thermal spraying - Spraying and fusing of self-fluxing alloys (ISO/DIS 14920:2022)

Thermisches Spritzen - Spritzen und Einschmelzen von selbstfließenden Legierungen (ISO/DIS 14920:2022)

Projection thermique - Projection et fusion d'alliages autofondants (ISO/DIS 14920:2022)

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Thermal spraying — Spraying and fusing of self-fluxing alloys

Projection thermique — Projection et fusion d'alliages autofondants

ICS: 25.220.20

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Contents

Page

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

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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 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 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 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Influence on the substrate and design

4.1 Substrate

Due to the heat transfer into the substrate metal when fusing the coating, in order to bond the coating with the substrate 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, sulphides, P, and nitrogen can create porosity in the coating and may render the substrate metal liable to stress cracking.

When “self-fluxing alloys” are utilised with fusing, there are additional restrictions on the coatable base materials. Austenitic steels (both non-magnetic and stainless as well as chromium-nickel steel) can be fused without any structural transformation during sintering. Other metals must have melting points which should be well over 1,200°C.

Ferritic steels (magnetic) can only be utilised if they are not higher-alloyed heat-treatable steels. This means that the alloying constituents should not exceed upper limiting values. Empirical values for the upper limiting values on alloying constituents are: C = 0.5 %; Cr = 5 %; Ni = 4 %; W = 3 %; Mo = 3 %

4.2 Design

If pre-machining is carried out prior to spraying and fusing of a coating there will usually be a reduction of the design dimensions. 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.

Due to the heat input during fusing unacceptable deformation of the component may occur. Measures to prevent distortion or deformation can be used, such as, to erect or hang the parts along their centre-of-gravity axis or by using supporting jigs.

5 Spray material of the self-fluxing alloy

5.1 Selection

The properties of the coating are determined by the selection of the spray material and the spray and fuse procedure, e.g.:

a) hardness;

b) resistance to wear and/or corrosion;

c) machinability;

d) suitability for the foreseen application.

5.2 Composition

The chemical composition of the spray material and the structure of the coating determine its metallurgical and technological properties as well as its machinability.

For substrate alloys, which can create a martensitic structure, see 6.3.5.

Table A.1 contains reference values for the expected hardness of the fused coating.