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Thermal spraying — Spraying and fusing of self-fluxing alloys

Projection thermique — Projection et fusion d'alliages autofondants

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Foreword

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This third edition cancels and replaces the second edition (ISO 14920:2015), which has been technically revised.

The main changes are as follows:

— materials which can and can’t be used for fusing have been clarified;

— grit blasting material has been defined;

— spray methods and their influence coating quality have been specified.

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Thermal spraying — Spraying and fusing of self-fluxing alloys

1 Scope

This document specifies 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.

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 following 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 can render the substrate metal liable to stress cracking.

When “self-fluxing alloys” are utilized 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 utilized 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 %.

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