Irish Standard
I.S. EN 4632-004:2012

Aerospace series - Weldability and brazeability of materials in aerospace constructions - Part 004: Welding and brazing of homogeneous assemblies of high alloyed steels

I.S. EN 4632-004:2012

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Aerospace series - Weldability and brazeability of materials in aerospace constructions - Part 004: Welding and brazing of homogeneous assemblies of high alloyed steels

Série aérospatiale - Soudabilité et brasabilité des matériaux pour constructions aérospatiales - Partie 004: Assemblages soudés et brasés homogènes d'aciers fortement alliés

Luft- und Raumfahrt - Schweißeignung und Löteignung von Werkstoffen im Luft- und Raumfahrzeugbau - Teil 004: Schweißen und Löten gleichartiger Verbingungen aus hochlegeirten Stähler

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

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Foreword

This document (EN 4632-004:2012) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

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of an identical text or by endorsement, at the latest by March 2013, and conflicting national standards shall be withdrawn at the latest by March 2013.

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.

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1 Scope

This European Standard specifies the weldability and brazeability of materials or material families used in the aerospace industry.

It comprises a series of sheets, by materials or material family, which:

— indicate the main titles, the typical chemical composition and the main characteristics,

— contain recommendations for welding and brazing,

— indicate a degree of weldability or brazeability for a given process under defined conditions,

— indicate a value for the welded joint mechanical resistance coefficient for each welding process when extracted from relevant bibliographical references. Joint coefficient is the ratio of stress resistance transversally to welded joint over tensile strength of parent alloy.

It recommends ISO/TR 17671-3 and EN 1011-3 for pre-heating conditions specially for the welding of martensitic steels. These conditions depend on the line energy of welding, thickness, arc welding process and of hydrogen rate in filler metal.

It applies unreservedly to the manufacturing of new parts or for repair.

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.

EN 1011-3, *Welding — Recommendations for welding of metallic materials — Part 3: Arc welding of stainless steels*

EN 1045, *Brazing — Fluxes for brazing — Classification and technical delivery conditions*

EN 2174, *Aerospace series — Heat resisting alloy FE-PA2602 (X4NiCrTiMoV26-15) — Solution treated and precipitation treated — Forgings — $D_e \leq 100$ mm — $R_m \geq 850$ MPa* [1)]

EN 2175, *Aerospace series — Heat resisting alloy FE-PA2602 (X4NiCrTiMoV26-15) — Solution treated and precipitation treated — Sheet strip and plate — 0,5 mm $\leq a \leq$ 10 mm — $R_m \geq 850$ MPa* [1)]

EN 2177, *Aerospace series — Heat resisting alloy FE-PA2501 (X4NiCrMoTi43-13) — Solution treated and precipitation treated — Forgings — $D_e \leq 100$ mm* [1)]

EN 2178, *Aerospace series — Heat resisting alloy FE-PA2501 (X4NiCrMoTi43-13) — Solution treated and precipitation treated — Bar and section — $D_e \leq 200$ mm* [1)]

EN 2278, *Steel FE-PM37 — 900 MPa $\leq R_m \leq$ 1 100 MPa — Bars $D_e \leq 150$ mm — Aerospace series* [2)]

EN 2279, *Steel FE-PM37 — 900 MPa $\leq R_m \leq$ 1 100 MPa — Forgings $D_e \leq 150$ mm — Aerospace series* [2)]

EN 2280, *Steel FE-PM37 — 900 MPa $\leq R_m \leq$ 1 100 MPa — Sheets $a \leq 6$ mm — Aerospace series* [2)]

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1) Published as ASD-STAN Prestandard at the date of publication of this standard (www.asd-stan.org).

2) Published as ASD-STAN Standard at the date of publication of this standard (www.asd-stan.org).