



NSAI
Standards

Irish Standard
I.S. EN 4632-003:2010

Aerospace series - Weldability and brazeability of materials in aerospace constructions - Part 003: Welding and brazing of homogeneous assemblies of unalloyed and low alloy steels

I.S. EN 4632-003:2010

Incorporating amendments/corrigenda/National Annexes issued since publication:

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I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

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English Version

**Aerospace series - Weldability and brazeability of materials in
aerospace constructions - Part 003: Welding and brazing of
homogeneous assemblies of unalloyed and low alloy steels**

Série aérospatiale - Soudabilité et brasabilité des matériaux
pour constructions aérospatiales - Partie 003 :
Assemblages homogènes des aciers non alliés et
faiblement alliés

Luft- und Raumfahrt - Schweißbarkeit und Lötbarkeit von
Werkstoffen im Luft und Raumfahrzeugbau - Teil 003:
Schweißen und Löten gleichartiger Verbindungen aus
unlegierten und niedriglegierten Stählen

This European Standard was approved by CEN on 15 August 2009.

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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 Management Centre has the same status as the official versions.

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Foreword

This document (EN 4632-003:2010) 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of an identical text or by endorsement, at the latest by September 2010, and conflicting national standards shall be withdrawn at the latest by September 2010.

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1 Scope

This standard defines degrees of weldability and brazeability for materials or families of materials used in the aerospace industry.

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

- a) indicate the main titles, the typical chemical composition and the main characteristics;
- b) contain recommendations for welding and brazing;
- c) indicate a degree of weldability or brazeability for a given process under defined conditions;
- d) indicate a value of the mechanical strength coefficient of the welded joint for each welding process, when it could be extracted from bibliographic references referring to it. The joint coefficient is expressed as a ratio of the tensile strength of the welded joint to the tensile strength of the base alloy.

To define preheating conditions, it recommends EN 1011-2 recommendations. These conditions depend on the calculation of carbon equivalent, welding energy per unit length, thickness, arc welding process and hydrogen rate in filler metal.

It is applicable without restriction for the manufacturing of new parts or for repair.

2 Normative references

The following referenced documents are indispensable for the application 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 1011-2, *Welding — Recommendations for welding of metallic materials — Part 2: Arc welding of ferritic steels*

EN 2135, *Aerospace series — Steel FE-PL61 — Carburized, hardened and tempered — Bar $D_e \leq 40$ mm* ¹⁾

EN 2213, *Steel FE-PL52 S — $980 \text{ MPa} \leq R_m \leq 1\,180 \text{ MPa}$ — Bars $D_e \leq 16$ mm — Aerospace series* ²⁾

EN 2218, *Steel FE-PL52 S — $980 \text{ MPa} \leq R_m \leq 1\,180 \text{ MPa}$ — Tubes for structures $a \leq 4$ mm — $d \geq 5 a$ — Aerospace series* ²⁾

EN 2220, *Steel FE-PL52 S — $1\,080 \text{ MPa} \leq R_m \leq 1\,250 \text{ MPa}$ — Tubes for structures — $2 \text{ mm} \leq a \leq 20 \text{ mm}$ — $d \geq 5 a$ — Aerospace series* ²⁾

EN 2767, *Aerospace series — Steel FE-PL79 — Carburized, hardened and tempered — $1\,180 \text{ MPa} \leq R_m \leq 1\,550 \text{ MPa}$ — Bar for machining — $D_e \leq 150$ mm* ¹⁾

EN 2768, *Aerospace series — Steel FE-PL79 — Carburized, hardened and tempered — $1\,180 \text{ MPa} \leq R_m \leq 1\,550 \text{ MPa}$ — Forgings — $D_e \leq 150$ mm* ¹⁾

EN 2779, *Aerospace series — Steel FE-PL56 — Hardened and tempered — $1\,250 \text{ MPa} \leq R_m \leq 1\,400 \text{ MPa}$ — Bars — $D_e \leq 70$ mm* ¹⁾

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