

Bolts, MJ threads, in heat resisting nickel base alloy NI-PH2601 (Inconel 718) — Classification: 1 275 MPa (at ambient temperature)/650 °C — Technical specification

The European Standard EN 2583:1997 has the status of a
British Standard

ICS 49.040.20

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Committees responsible for this British Standard

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- British Industrial Fasteners Federation
- Ministry of Defence
- Society of British Aerospace Companies

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National foreword

This British Standard has been prepared by Technical Committee ACE/12 and is the English language version of EN 2583:1997 *Aerospace series — Bolts, MJ thread, in heat resisting nickel base alloy NI-PH2601 (Inconel 718) — Classification: 1 275 MPa (at ambient temperature)/650 °C — Technical specification*, published by the European Committee for Standardization (CEN). EN 2583:1997 was produced as a result of international discussions in which the United Kingdom took an active part.

Cross-references

Publication referred to	Corresponding British Standard
EN 3042:1991	BS EN 3042:1992 <i>Quality assurance. EN aerospace products. Qualification procedure</i>
ISO 2859-1:1989	BS 6001 <i>Sampling procedures for inspection by attributes</i> Part 1:1991 <i>Specification for sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection</i>
ISO 5585-2:1988	BS 6293 <i>Aerospace. MJ threads</i> Part 2:1994 <i>Limit dimensions for bolts and nuts</i>
ISO 7961:1994	BS A 305:1994 <i>Bolts, test methods</i>
ISO 9227:1990	BS 7479:1991 <i>Method for salt spray corrosion tests in artificial atmospheres</i>

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 20, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

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English version

**Aerospace series — Bolts, MJ threads, in heat
resisting nickel base alloy NI-PH2601
(Inconel 718) — Classification: 1 275 MPa
(at ambient temperature)/650 °C — Technical specification**

Série aéronautique — Vis à filetage MJ, en
alliage résistant à chaud à base de nickel
NI-PH2601 (Inconel 718) —
Classification: 1 275 MPa (à température
ambiante)/650 °C — Spécification technique

Luft — und Raumfahrt — Schrauben,
MJ-Gewinde, aus hochwarmfester
Nickelbasislegierung NI-PH2601
(Inconel 718) — Klasse: 1 275 MPa
(bei Raumtemperatur)/650 °C — Technische
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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

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Foreword

This European Standard has been prepared by the European Association of Aerospace Manufacturers (AECMA).

After inquiries 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 AECMA, 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 July 1997, and conflicting national standards shall be withdrawn at the latest by July 1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard specifies the characteristics, qualification and acceptance requirements for bolts with MJ threads in NI-PH2601.

Classification: 1 275 MPa¹⁾/650 °C²⁾

It is applicable whenever referenced.

2 Normative references

This European Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection*.

ISO 3452, *Non-destructive testing — Penetrant inspection — General principles*.

ISO 3534:1977, *Statistics — Vocabulary and symbols*.

ISO 4288, *Rules and procedures for the measurement of surface roughness using stylus instruments*.

ISO 5855-2, *Aerospace — MJ threads — Part 2: Limit dimensions for bolts and nuts*.

ISO 6508, *Metallic materials — Hardness test — Rockwell test (scales A – B – C – D – E – F – G – H – K)*.

ISO 6892, *Metallic materials — Tensile testing*.

ISO 7961, *Aerospace — Bolts — Test methods*.

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*.

EN 3042, *Aerospace series — Quality assurance — EN aerospace products — Qualification procedure*.

ASTM E 112-88, *Standard Test Methods for Determining Average Grain Size*³⁾.

3 Definitions

For the purposes of this standard, the following definitions apply:

3.1

batch

quantity of finished bolts, of the same type and same diameter, produced from a material obtained from the same melt, manufactured in the course of the same production cycle, following the same manufacturing route and having undergone all the relevant heat treatments and surface treatments

3.2 Surface discontinuities

3.2.1

crack

rupture in the material which may extend in any direction and which may be intercrystalline or transcrystalline in character

3.2.2

seam

open surface defect

3.2.3

lap

surface defect caused by folding over metal fins or sharp corners and then compressing them into the surface

3.2.4

inclusions

non-metallic particles originating from the material manufacturing process. These particles may be isolated or arranged in strings

3.3

test temperature

ambient temperature, unless otherwise specified

3.4

simple random sampling

the taking of n items from a population of N items in such a way that all possible combinations of n items have the same probability of being chosen⁴⁾

3.5

critical defect

a defect that, according to judgement and experience, is likely to result in hazardous or unsafe conditions for individuals using, maintaining, or depending upon the considered product, or that is likely to prevent performance of the function of a major end item⁴⁾

¹⁾ Minimum tensile strength of the material at ambient temperature

²⁾ Maximum test temperature of the parts

³⁾ Published by: American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103-1187, USA

⁴⁾ Definition taken from ISO 3534

3.6**major defect**

a defect, other than critical, that is likely to result in a failure or to reduce materially the usability of the considered product for its intended purpose⁵⁾

3.7**minor defect**

a defect that is not likely to reduce materially the usability of the considered product for its intended purpose, or that is a departure from established specification having little bearing on the effective use or operation of this product⁵⁾

3.8**sampling plan**

a plan according to which one or more samples are taken in order to obtain information and possibly to reach a decision⁵⁾

3.9**limiting quality**

in a sampling plan, the quality level which corresponds to the specified 10 % probability of acceptance

3.10**acceptable quality level (AQL)**

a quality level which in a sampling plan corresponds to a specified but relatively high probability of acceptance

it is the maximum per cent defective (or the maximum number of defects per hundred units) that, for purposes of sampling inspection can be considered satisfactory as a process average⁵⁾

3.11**finished bolt**

a bolt ready for use, inclusive of any possible treatments and/or surface coatings, as specified in the product standard or definition document

3.12**definition document**

document specifying all the requirements for finished bolts

4 Quality assurance**4.1 Qualification**

EN 3042

Qualification inspections and tests (requirements, methods, numbers of bolts) are specified in Table 1. They shall be carried out on:

- each type and diameter of bolt;
- 25 bolts selected from a single batch by simple random sampling.

The test programme may possibly be reduced, or the qualification be granted without inspection or testing: any such decision shall be based on the results obtained on similar types and diameters of bolts provided that the design and manufacturing conditions are identical.

Table 2 indicates the allocation of bolt samples for the inspections and tests.

4.2 Acceptance**4.2.1 Purpose**

The purpose of acceptance inspections and tests is to check, as simply as possible, by a method representative of actual use conditions, with the uncertainty inherent to statistical sampling, that the bolts constituting the batch satisfy the requirements of this standard.

4.2.2 Conditions

Acceptance inspections and tests (requirements, methods, numbers of bolts) are specified in Table 1. They shall be carried out on each batch. Bolts from the batch to be tested shall be selected by simple random sampling.

Each bolt may be submitted to several inspections or tests.

If a more stringent inspection is deemed necessary, all or part of the qualification inspections and tests may be performed during the acceptance inspection and testing. In this case, the number of bolts submitted to these inspections and tests is the same as that submitted for qualification inspection and tests.

4.2.3 Responsibility

Acceptance inspections and tests shall be carried out by the manufacturer, or under his responsibility.

4.2.4 Inspection and test report

A test report showing actual numerical values shall be provided if specified in the purchase order.

5 Requirements

See Table 1.

⁵⁾ Definition taken from ISO 3534