

**Nuts, self-locking,
MJ threads, in heat
resisting nickel base
alloy NI-PH2601
(Inconel 718) silver
plated —
Classification:
1 550 MPa (at ambient
temperature)/600 °C —
Technical specification**

The European Standard EN 4047:2003 has the status of a
British Standard

ICS 49.030.30

National foreword

This British Standard is the official English language version of EN 4047:2003. The UK participation in its preparation was entrusted by Technical Committee ACE/12, Aerospace fasteners and fastening systems, to Subcommittee ACE/12/1, Aerospace fasteners and fastening systems (international), which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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English version

**Aerospace series - Nuts, self-locking, MJ threads, in heat
resisting nickel base alloy NI-PH2601 (Inconel 718), silver plated
- Classification: 1 550 MPa (at ambient temperature)/600 °C -
Technical specification**

This European Standard was approved by CEN on 1 November 2002.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

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 Management Centre has the same status as the official versions.

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Foreword

This document EN 4047:2003 has been prepared by the European Association of Aerospace Manufacturers (AECMA).

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 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 August 2003, and conflicting national standards shall be withdrawn at the latest by August 2003.

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

1 Scope

This standard specifies the characteristics, qualification and acceptance requirements for self-locking nuts with MJ threads in NI-PH2601, silver plated.

Classification: 1 550 MPa ¹⁾ / 600 °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 (including amendments).

- ISO 2859-1 *Sampling procedures for inspection by attributes - Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection.*
- ISO 3452 *Non-destructive testing - Penetrant inspection - General principles.*
- ISO 3534 *Statistics - Vocabulary and symbols.*
- ISO 4288 *Geometrical product specifications (GPS) - Surface texture: Profile method - Rules and procedures for the assessment of surface texture.*

1) Corresponds to the minimum tensile stress which the nut is able to withstand at ambient temperature without breaking or cracking when tested with a bolt of a higher strength class.

2) Maximum test temperature of the parts

ISO 8642:1986 *Aerospace - Self-locking nuts with maximum operating temperature greater than 425 °C - Test methods.*

EN 2786 *Aerospace series - Electrolytic silver plating of fasteners* ³⁾.

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

ASTM E112-96 *Standard Test Methods for Determining Average Grain Size* ⁴⁾.

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1

batch

quantity of finished nuts, 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

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 chosen ⁵⁾

3) Published as AECMA Prestandard at the date of publication of this standard

4) Published by: American Society for Testing and Materials (ASTM), 100 Barr Harbor Dr, West Conshohocken, PA 19428-2959- USA

5) Definition taken from ISO 3534

3.5**critical defect**

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 item ⁵⁾

3.6**major defect**

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 purpose ⁵⁾

3.7**minor defect**

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 product ⁵⁾

3.8**sampling plan**

plan according to which one or more samples are taken in order to obtain information and possibly to reach a decision ⁵⁾

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)**

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 average ⁵⁾

3.11**finished nut**

nut 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 nuts

3.13**self-locking torque**

torque to be applied to the nut or bolt to maintain its movement of rotation in relation to the associated part, the assembly being under no axial load and the nut locking zone being completely engaged with the bolt (minimum protrusion of two pitches, including the end chamfer)

3.14**seating torque**

tightening torque to be applied to the nut or bolt to introduce or to increase the axial load in the assembly

3.15**unseating torque**

untightening torque to be applied to the nut or bolt to reduce or remove the axial load in the assembly