

**Nuts, self-locking,
MJ threads, in heat
resisting nickel base
alloy NI-PH2601
(Inconel 718), MoS2
coated —
Classification:
1 550 MPa (at ambient
temperature) / 425 °C —
Technical specification**

The European Standard EN 4048:2003 has the status of a
British Standard

ICS 49.030.30

National foreword

This British Standard is the official English language version of EN 4048:2003.

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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**Aerospace series - Nuts, self-locking, MJ threads, in heat
resisting nickel base alloy NI-PH2601 (Inconel 718), MoS2
coated - Classification: 1 550 MPa (at ambient temperature) /
425 °C - Technical specification**

This European Standard was approved by CEN on 2 June 2002.

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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 Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (EN 4048:2003) has been prepared by the European Association of Aerospace Manufacturers – Standardization (AECMA-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 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of an identical text or by endorsement, at the latest by July 2003, and conflicting national standards shall be withdrawn at the latest by July 2003.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 the United Kingdom.

1 Scope

This standard specifies the characteristics, qualification and acceptance requirements for self-locking nuts with MJ threads in NI-PH2601, MoS₂ coated.

Classification: 1 550 MPa ¹⁾ / 425 °C ²⁾

It is applicable whenever referenced.

2 Normative references

ISO 1463	Metallic and oxide coatings – Measurement of coating thickness – Microscopical method
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
ISO 8642	Aerospace – Self-locking nuts with maximum operating temperature greater than 425 °C – Test methods
EN 2491	Aerospace series – Molybdenum disulphide dry lubricants – Coating methods
EN 3042	Aerospace Series – Quality assurance – EN aerospace products – Qualification procedure

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

3 Definitions

For the purposes of this standard, the following 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

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 chosen ⁵⁾

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 item ⁵⁾

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 purpose ⁵⁾

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 product ⁵⁾

³⁾ Published by American Society for Testing and Materials (ASTM), 100 Barr Harbor Dr, West Conshohocken, PA 19428-2959 - USA

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 average⁴⁾.

3.11 Finished nut

A 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

The 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

The 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

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

3.16 Breakaway torque

The torque required to start unscrewing the nut or bolt with respect to the associated part, with the nut locking zone still fully engaged on the bolt, but after the axial load in the assembly has been removed by unscrewing half a turn followed by a halt in rotational movement

3.17 Torque for testing the wrench feature

The torque to be applied to the wrenching feature of the nut

⁴⁾ Definition taken from ISO 3534