

1.0 Scope

1.1 Scope. This standard establishes a conformance test procedure for metric nonmetallic resistant element prevailing-torque nuts with specified prevailing-torque requirements, in nominal sizes M4 thru M20 intended for application temperatures of – 45°C to 120°C. Both partial (less than 360°) and full circumference (360°) element designs are included. It does not include nuts with adhesive coated threads which are included in IFI-560 or top insert two piece construction nuts which are included in ASME B18.16.1M, B18.16.2M and B18.16.3M.

The prevailing-torque values given apply only to the combination of test conditions established in this standard. If conditions of any actual service/application differ from those included in this standard, the prevailing-torques may differ. Variables which may cause variation in prevailing-torque values include such conditions as length of thread engagement, thread tolerance class and fit, speed of installation, materials, platings or coatings, and environment. Such values may only be determined by tests in actual application.

This standard is not concerned with dimensional features such as nut thickness or flanges; refer to ASME B18.16.3M. Other mechanical or performance properties such as strength properties, corrosion resistance, sealing, and/or consistency of torque-to-tension relationships during assembly are not included in this specification. Such features and properties are covered in other standards and specifications and must be referenced when specifying a nut to ensure that all service conditions of the particular engineering application are properly met. For editorial convenience, the words, "Resistant Element Prevailing-Torque," shall henceforth be referred to as "REPT".

2.0 General

2.1 Definition

A REPT nut is an internally threaded fastener which derives its resistance to loosening from the frictional interaction with the threads of the mating part. All circumference element designs are considered in this standard.

Partial elements function through the offside loading of the REPT nut when threaded onto a mating fastener, causing an eccentric action which jams the REPT nut member threads against the threads of the externally threaded part at the side opposite of the element. The full circumference element design functions to provide uniformly distributed prevailing-torque resistance against the threads of the externally threaded mating part.

2.2 Application. Nonmetallic elements which consist of inserts, pellets, patches, or other shapes that are installed in the REPT nut thread area shall be in accordance with the practice of the manufacturer. The nonmetallic element shall be affixed to the internal threads of the REPT nut. The element material may be of any polymeric substance which meets the requirements of this standard and is not otherwise restricted because of chemicals or reportable substances.

3.0 Referenced Documents

All standards are latest issue unless otherwise agreed between manufacturer and purchaser.

3.1 ASME Standards

- B1.3M *Screw Thread Gaging Systems for Dimensional Acceptability – Inch and Metric Screw Threads, (UN, UNR, UNJ, M and MJ)*
- B1.13M *Metric Screw Threads – M Profile*
- B18.12 *Glossary of Terms for Mechanical Fasteners*
- B18.16.1M *Mechanical and Performance Requirements for Prevailing-Torque Type Steel Metric Hex Nuts and Hex Flange Nuts*
- B18.16.2M *Torque-Tension Test Requirements for Prevailing-Torque Type Steel Metric Hex Nuts and Hex Flange Nuts*

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- B18.16.3M *Dimensional Requirements for Prevailing-Torque Type Steel Metric Hex Nuts and Hex Flange Nuts*
- B18.18.2 *Inspection and Quality Assurance for High-Volume Machine Assembly Fasteners*

ASME standards may be obtained from the American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990.

3.2 ASTM Specifications

- F1137 *Standard Specification for Phosphate and Oil and Phosphate Organic Corrosion Protective Coatings for Fasteners*
- F1789 *Terminology for F-16 Mechanical Fasteners*
- F1941M *Electrodeposited Coatings on Threaded Fasteners*

ASTM standards may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

3.3 IFI Standards

- IFI-560 *Test Procedure for the Performance of Nuts With Adhesive Coated Threads — Metric Series*

IFI standards may be obtained from the Industrial Fasteners Institute, 6363 Oak Tree Blvd., Independence, OH 44131-2500.

4.0 Requirements

4.1 Nut Finish

Nuts shall be electrodeposited zinc finished in accordance with ASTM F1941M, unless otherwise specified. The finish shall not interact with or prevent adherence of the nonmetallic element material. At the option of the manufacturer, nuts may be provided with a supplementary lubricant.

4.2 Threads

4.2.1 Thread Tolerances. Prior to plating or coating, threads of REPT nuts shall be M profile, Class 6H tolerance, as specified in ASME B1.13M for metric series product, except that the portion of the threaded length containing the nonmetallic element need not conform. Other tolerances can be provided upon agreement between purchaser and manufacturer.

4.2.2 REPT nuts shall assemble a minimum of one full turn by the fingers onto the mating test bolt before encountering the nonmetallic element.

4.2.3 Thread Acceptance. Nut thread acceptance shall be in accordance with ASME B1.3M System 21, unless otherwise specified.

4.3 Performance Ability

4.3.1 REPT nuts which have reduced thickness or which have thread lengths too short to permit testing in accordance with Section 6.0, shall have their prevailing-torque requirements and test procedures established by agreement between purchaser and manufacturer.

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