

1.0 Scope

1.1 This standard establishes a conformance test procedure for the performance of metric Nonmetallic Resistant Element Type Prevailing-Torque Screws (hereinafter called REPT screw), in nominal thread diameters M1.6 thru M36.

The prevailing-torque values given in this standard are conformance requirements of test conditions described in the performance test procedure (5.1). If the conditions of the actual service application differ from those of 5.1 (e.g., internally threaded hole in a different material, length of thread engagement, class of internal thread tolerance, speed of driving, different plating or coating on screw or mating part), the prevailing-torque values may differ. Such values can only be determined through testing the REPT screw in its specific application.

This standard is not concerned with dimensional features such as head styles, or with performance capabilities such as strength properties, corrosion resistance, sealing, suitability for use in high or low temperatures, and/or consistency of torque-to-tension relationships during assembly. Such features and properties are covered in other standards and specifications and must be referenced when specifying a REPT screw to assure that all of the service conditions of the particular engineering application are properly met.

(Note: The application of some nonmetallic elements requires heating of an isolated area in the screw thread to approximately 316°C which may have an adverse effect on the mechanical properties of some products.)

1.2 While the requirements of this standard apply to REPT screws, it is not the intent to preclude alternate types of screws which totally satisfy the requirements of this standard.

1.3 Definitions

1.3.1 A prevailing-torque REPT screw is an externally threaded fastener which is frictionally resistant to rotation due to a self-contained prevailing-torque feature, and not because of a compressive load developed against the underhead bearing surface of the screw or a tensile load developed in the shank of the screw.

1.3.2 REPT screws are metallic screws to which have been added a nonmetallic insert or fused nonmetallic substance in their threaded length. The design of the prevailing-torque feature shall be in accordance with the practice of the manufacturer. Depending upon the amount of friction present because of surface finish and lubricants, the dimensional characteristics of the nonmetallic element may vary to achieve the performance requirements stated in Table 1.

1.3.3 For purposes of this standard, "lot" means a quantity of fasteners of one part number fabricated by the same production process from the same coil or heat number of metal as provided by the fastener manufacturer and submitted for inspection and testing at one time.

2.0 Property Classes

2.1 Property Classes. This standard covers only steel REPT screws produced to meet the mechanical strength requirements of one of four basic property classes, 8.8, 9.8, 10.9 and 12.9 as specified in ASTM F568.

The standard sizes of REPT screws for each of the four property classes are given in Table 1.

3.0 Referenced Standards

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

3.1 ASME Standards

These may be obtained from ASME; Three Park Avenue; New York, NY 10016-5990.

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Table 1 Prevailing-Torques for Nonmetallic Resistant Element Screws

Nom Screw Size and Thread Pitch	Clamp Load (1) kN				Prevailing-Torque	First Removal Prevailing-Torque	Fifth Removal Prevailing-Torque
	Property Class of Screw				Max	Min	Min
	8.8	9.8	10.9	12.9	N•m	N•m	N•m
M1.6 × 0.35	—	0.6	—	0.9	0.10	0.01	0.004
M2 × 0.4	—	1.0	—	1.5	0.20	0.02	0.01
M2.5 × 0.45	—	1.6	—	2.5	0.40	0.05	0.03
M3 × 0.5	—	2.4	—	3.7	0.60	0.14	0.06
M3.5 × 0.6	—	3.3	—	4.9	0.90	0.22	0.11
M4 × 0.7	—	4.3	—	6.4	1.2	0.26	0.16
M5 × 0.8	—	6.9	8.8	10	2.3	0.36	0.23
M6 × 1	—	9.8	12	15	3.0	0.45	0.30
M8 × 1.25	—	18	23	27	10	0.90	0.58
M10 × 1.5	—	28	36	42	14	1.8	1.1
M12 × 1.75	—	41	52	61	21	2.6	1.5
M14 × 2	—	56	72	84	30	3.6	2.3
M16 × 2	—	76	98	110	40	5.0	3.4
M20 × 2.5	110	—	150	180	60	8.0	5.5
M24 × 3	160	—	220	260	90	13	8.5
M30 × 3.5	250	—	350	410	120	19	13
M36 × 4	370	—	510	590	150	28	18

(1) Clamp loads equal 75 percent of the proof loads specified for the property class in ASTM F568.

- 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

3.2 ASTM Standards

These may be obtained from ASTM; 100 Barr Harbor Drive; West Conshohocken, PA 19428-2959.

- ASTM F568M Carbon and Alloy Steel Externally Threaded Metric Fasteners

4.0 Requirements

- 4.1 Finish.** REPT screws shall be furnished plain or with a protective coating as specified by the purchaser. At the option of the manufacturer, screws may be provided with a supplementary lubricant.

4.2 Threads

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