



WE 955

2016 09 09

MECHANICAL AND PERFORMANCE PROPERTIES OF NUTS WITH SPECIFIED PROOF LOAD VALUES FOR HEXAGON FLANGED NUT AND HEXAGON FLANGED NUT & CONICAL WASHER ASSEMBLIES**1. SCOPE**

This standard specifies the mechanical and performance requirements for free running and prevailing torque-type steel hexagon flanged nut and hexagon flanged nut & washer assemblies, tested at room temperature as specified in ISO 1.

- a) with nominal diameters M4 to M24 inclusive.
- b) with strength requirements of property classes 8 and 10, according to ISO 898-2.
- c) with dimensions as specified in the Worldwide Product Standards or on Worldwide Utility Part drawings.
- d) within the following temperature ranges:
 - 1) -50 to +300 °C for all-metal nuts.
 - 2) -50 to 120 +120 °C for non-metallic insert nuts.

NOTE: This specification is not applicable to parts which do not have a coating incorporating a self-lubrication constituent or which are not lubricated to meet the requirements of WZ 100, unless otherwise specified.

Unless stated otherwise, all reference to nuts in this standard are to free running, all metal and non-metallic insert prevailing torque hexagon flanged nuts, hexagon flanged nut & washer.

NOTE: These products shall be capable of being assembled on bolts with pilot points in accordance with WA 900.

2. REFERENCES

ISO 1	-	Standard reference temperature for industrial length measurement.
ISO 1302	-	Technical drawing - Method of indicating surface texture on drawings.
ISO 965/1	-	ISO general purpose metric screw threads - Tolerances - Part 1: Principles and basic data.
ISO 898-1	-	Mechanical properties of fasteners - Part 1: Bolts, screws and studs.
ISO 898-2	-	Mechanical properties of fasteners - Part 2: Nuts with specified proof load values.
ISO 2320	-	Prevailing torque type steel hexagon nuts - Mechanical and performance properties.
WSK-M4D671-A/A2	-	Polyamide (PA) 4.6, Heat Stabilized Molding Compound
WX 100	-	Finish specification.
WZ 100	-	Steel hexagon ISO metric threaded fasteners torque/clamping force performance.
WE 990	-	Surface discontinuities of nuts



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A nut which is frictionally resistant to rotation due to a self-contained prevailing torque feature, and not because of a compressive load developed against the bearing surface of the nut.

3.2 PREVAILING TORQUE DEVELOPED BY A NUT

The torque necessary to rotate the nut on its mating externally-threaded component, with the torque being measured while the nut is in motion, and with no axial load in the mating component.

4. FINISH

Prevailing torque nuts for prevailing torque and torque/clamping force testing must satisfy the requirements of the specified protective coating (if any) including lubrication requirements.

NOTE: Prevailing torque nuts which are specified without supplementary lubrication may not satisfy the requirements of this specification unless the lubrication is an integral property of the specified coating.

5. MECHANICAL PROPERTIES AND PERFORMANCE REQUIREMENTS**5.1 MATERIALS AND PROCESSES****5.1.1 MATERIALS**

The material used to produce all metal prevailing torque nuts must be steel.

The choice of steel shall be at the discretion of the manufacturer provided that finished parts meet the mechanical properties and performance requirements specified in Clauses 5.2 and 5.3.

The body of prevailing torque nuts with non-metallic inserts must be made from steel as above.

The insert material must be heat stabilized Polyamide 4.6, 6, or 6.6 with a minimum moisture content of 1.5%. If the nylon is inserted prior to coating and the cure temperature of the coating is in excess of 180 °C but not exceeding 250 °C, heat stabilized Polyamide 4.6 with a minimum moisture content of 3% in accordance with WSK-M4D671-A/A2 must be used.

Table 2. Nut/bolt assemblies

Property class of the nut ¹⁾	8	10
Property class of the mating bolt or screw. - - all metal	8.8	10.9
Property class of the mating bolt or screw. - - non-metallic insert	8.8 and lower	10.9

1) If an all metal nut is combined with a bolt of a lower property class, the prevailing torque characteristics may be significantly altered and thread damage may occur.



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5.1.2 HEAT TREATMENT

Class 8 nuts may be hardened and tempered at the option of the manufacturer. Class 10 nuts must be hardened and tempered.

5.2 MECHANICAL PROPERTIES

Mechanical properties as specified per ISO 898-2.

5.3 PERFORMANCE REQUIREMENTS

5.3.1 PREVAILING TORQUE

The prevailing torque developed by nuts (See Clause 3.2) during their first fixing, or any subsequent fixing or removal, shall not exceed the maximum prevailing torque specified for the applicable class in Table 1 when tested as specified in Clause 6.2. In addition, the prevailing torques developed by nuts during their first and last removals shall be not less than the minimum prevailing torques specified in Table 1 when tested as specified in Clause 6.2.

5.4 SURFACE DISCONTINUITIES

5.4.1 SURFACE DISCONTINUITIES

Shall be evaluated in accordance with WE 990.

6. TEST METHODS

Prevailing torque nuts shall meet the requirements for proof load testing and prevailing torque and torque/clamping force specified in Clauses 6.1 and 6.2.