



Inspections, acceptance testings and certificates

For "Mechanical fasteners" (screws, nuts and accessory parts), all function-relevant external and internal characteristics are regulated in detail in DIN, ISO or EN standards, these include:

- **Product standards** (e.g. DIN 931/ISO 4014)
 Specifications on the figure of the product, assigned version and product class (tolerance group), usual strength classes and/or materials and nominal sizes. Furthermore, each product standard contains "normative references" to relevantly applicable basic function standards.
- **Basic/Function standards** (e.g. DIN 13, 267/ISO 898, 4759, 3269...)
 Regulations for joint characteristics of the various products like, for example, thread, tolerances, surface versions, corrosion protection, mechanical properties and corresponding factory test programme as well as acceptance testing conditions.

By naming an article with a product standard number, all referred basic standards are automatically included and applicable as "Technical Delivery Conditions". This also applies for non-standardised thread and form parts when no particular arrangements have been made between the orderer and the supplier.

Standards always can only regulate just one general standard for products "for general use", this also applies for "Mechanical fasteners" (→ ISO 3269/8992). For higher requirements for specific cases exceeding these normative regulations, it is the job of the user to define these requirements and specify necessary additional inspection requirements.

1. Quality checks during manufacture:

For basic/functional standards, testing programmes and procedures are given within which the manufacturer has to ensure the compliance with the proper standards quality of its products by carrying out constant sample checks. Alongside the obligatory checks for dimensional accuracy and surface condition, the following checks are also listed, among others:

- for screws and similar thread parts (→ ISO 898-1)
 - hardness testing, proof load testing
 - bolt head impact/diagonal pull testing
 - surface decarburisation testing
- for nuts (→ ISO 898-2)
 - hardness test, proof load test
 - expansion test

The procedure to be used in arbitration is specified in the standards. All standardised mechanical properties are generally valid at room temperature (approx. +20 °C).

2. Additional tests – Certificates according to EN 10204

For particular requirements and/or safety-related use-cases, additional articles or use-specific tests can be carried out either in the factory or by a commissioned factory independent technical expert or testing institute. The results of these extra tests shall be documented in a Certificate (inspection document), which the orderer shall receive as either an original or an unmodified copy.

The type and scope of these additional tests and who is to carry out and document them is to be determined by the user due to his knowledge on the use and particular requirements, and specified accordingly on ordering.

Inspection contents - according to DIN 11204

If there are no specifications on the scope of the test contents agreed in the order, DIN 11204 shall apply. This standard regulates the test contents of certificates according to EN 10204 for fasteners.

Table 1:
Test contents for screws according to DIN 11204

Section designation	Details
Tensile test: shape of test pieces	Tensile test of the entire screw: For the screws M6 to M39 according to ISO 898-1, ISO 3506-1, ISO 8839 or DIN 267-13, as long as the geometry of the screws is suited for the tensile test on the entire screw. In case a tensile test should be carried out on the cylindrical sample, this needs to be arranged at the time of ordering.
Tensile test: tensile strength	–
Hardness testing: test method	Symbol denoting test method
Hardness testing: individual values	Does not apply for ISO 8839 and austenitic steels of the types A1 to A5 according to ISO 3506-1 or ISO 3506-2
Torsion test: breaking torque	For screws ≤ M5. For all property classes according to ISO 898-1, for austenitic steels of the types A1 to A5 according to ISO 3506-1 and for non-ferrous metals according to ISO 8839 as long as the geometry of the screw is suited to the torsion test according to ISO 898-7
Chemical composition	Cast analysis/product analysis according to the product specifications

Table 2:
Test contents for nuts according to DIN 11204

Section designation	Details
Proof load test	For nuts M6 to M39 according to ISO 898-2, ISO 898-6, ISO 3506-2, ISO 8839 and DIN 267-13, if specified.
Hardness test: test method	Code of the hardness testing procedure
Hardness testing: individual values	Does not apply for ISO 8839 and austenitic steels of the types A1 to A5 according to ISO 3506-1 or ISO 3506-2.
Chemical composition	Cast analysis/product analysis according to the product specifications

Costs for additional testing are not contained in the product price.

Table 3 provides information on types of test certificates which have proven themselves as requirements for screws, nuts and other form and accessory parts.

General information:

- The values determined by additional testing and documented in certificates are not "committed properties" or "guarantees of quality" according to Section 267 of the German Civil Code (BGB) and do not mean that the user does not have to perform the proper inspection of incoming goods (Section 377 of the German Commercial Code (HGB)).
- All tests named in 1 and 2 are carried out in general on samples. While their results are representative for the most part of the delivery batch of a load, a 100% guarantee for each part of the batch can be derived from this just as little as its suitability for a specific purpose can be.