

Inspections, acceptance testings and certificates



Table 3: Overview of the usual inspection documents for screws, bolts, studs, nuts and accessory parts
 Extract from EN 10204 – Jan 2005 (previously DIN 50049)

Standard marking	2.1 ^①	2.2 ^①	3.1	3.2
Certification	Declaration of compliance with the order		Test report	Inspection certificate
Type of inspection	Not specific no testing/evaluation of testing results of the delivery batch/ parts of the delivery itself		Specific ^② = Testing is done on the delivery batch/parts of the delivery itself	
Content of the certification	No test results (= informal manufacturer confirmation, that the delivered products correspond to the agreements made on ordering)	Test result on the basis of non-specific tests (= from current series manufacturing records and not from tests on parts of the delivery batch	Test results on the basis of specific tests ^② = Evaluation and documentation of actual values from testing of parts of the delivery batch itself ^②	
Terms of delivery	According to the terms of the order		According to the delivery terms of the order ^③ = specified testing requirements of the orderer (also according to the technical regulations AD/TRD)	
Confirmation Certification by	The manufacturer		The acceptance-testing officer independent of the processing department of the manufacturer	As 3.1 + the technical expert commissioned (prescribed) by the orderer ^④
Order example: Addendum to article text: "... with test certification according to EN 10204-3.1"				

- ① not recommended since there is no specific statement on the delivered product
- ② the sample quantities required for destructive inspections are to be taken into account when deciding the order quantity
- ③ e.g. specification of the yield strength/impact testing with specified high and low temperatures, particular crack testing procedures, etc.
- ④ according to the specifications of the orderer, e.g. TÜV, GL, DB...

3. Acceptance testing for "Mechanical fasteners"

Extract from ISO 3269 (previously DIN 267-5)

This standard is always included as applicable when "Mechanical fasteners" are ordered according to standard or similar form parts, if not expressly agreed otherwise beforehand.

It does not apply to fasteners which

- are intended for automatic screw-in,
- are supposed to fulfil particularly high requirements,
- require particular processing procedures/testing measures
- require specific traceability.

Here, special corresponding arrangements always need to be made on request, on ordering at the latest (e.g. according to ISO 16426). In general, standard commercial stock is not suitable for these specific requirements.

Since the mass production of standard parts for general use cannot be assumed to be free of individual errors or defective parts for economic reasons, the expectation of zero-error deliveries is fundamentally not standard-compliant (→ ISO 3269, "Introduction").

For sample test instructions during incoming goods inspections, ISO 3269 prescribes values for an "Acceptable Quality Level (AQL)" to which an acceptance number (Ac) is assigned. Ac is the highest count of defective parts in a sample test for which the test batch can still be accepted.

The assignment of AQL values is determined according to the following:

- Product type, e.g. screws, nuts, washers, bolts, pins, rivets
- Product (tolerance) classes: A, B or C
- Function-relevant characteristics = AQL value 1.5-1.0
- Other characteristics = AQL value 4.0-2.5
- Mechanical properties = AQL value 1.5-0.65

Details important for the functional compliance of the parts include, for example drive, thread. Other characteristics include, for example, minor measurement/type deviations which do not negatively affect the usability.

Table 4 shows the ratio of AQL value to the acceptance number for the same sample test extent as an example as well as the mathematical limit value (%) for the number of defective parts in the delivery batch (deliverer's risk max. 5%).

Table 4: Ratio AQL values : Acceptance numbers

Sample test scope Item	AQL value	= Acceptance number Ac Item	Limit value nonconforming fasteners %
125	0.65	2	1.6
125	1.0	3	2.4
125	1.5	4	3.2
125	2.5	6	4.8
125	4.0	8	6.4