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Fasteners — Types of inspection documents

Fixations — Types de documents de contrôle

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 7, *Reference standards*.

Introduction

This document specifies the fastener inspection documents which can be supplied when requested at the time of the order.

Before publication of this document, inspection documents according to ISO 10474 or EN 10204 were also applied for fasteners. This document was developed specifically for fasteners, as a preferred alternative to ISO 10474 or EN 10204.

Data in inspection documents may be collected from in-process control during the manufacture of the fasteners and/or from final control on the finished fasteners based on sampling. In-process control during manufacture within a certified quality assurance system operated by the manufacturer gives the most reliable information about conformance of the fasteners (for more information regarding acceptance inspection or quality assurance for fasteners, see ISO 3269 or ISO 16426).

Inspection documents for fasteners may include material, mechanical, physical, dimensional, functional and finish-coating properties, as agreed at the time of the order.

Fasteners — Types of inspection documents

1 Scope

This document specifies the different types of fastener inspection documents issued by the fastener manufacturer or distributor and/or by the external authorized representative on specific request of the purchaser at the time of the order.

— declaration of compliance (F2.1);

— test reports (F2.2, F3.1 and F3.2).

NOTE The term "certificate" is in common use, however for fastener inspection documents the terminology to be used is "test report".

This document specifies requirements for the content of each fastener inspection document, in conjunction with the order, the relevant standards and/or specified requirements.

This document is applicable to finished fasteners such as bolts, screws, studs, nuts, washers, pins, rivets, etc. made of steel, stainless steel, non-ferrous metal or non-metallic material.

This document does not apply to special-purpose or specially engineered applications requiring other types of procedures (e.g. initial samples).

Examples of inspection documents are given in Annex A. An example of a coding system identifying the sections in fastener inspection documents is given in Annex B.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread*

ISO 898-2, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 2: Nuts with specified property classes — Coarse thread and fine pitch thread*

ISO 898-3,[1)] *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 3: Flat washers with specified property classes*

ISO 898-5, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 5: Set screws and similar threaded fasteners with specified hardness classes — Coarse thread and fine pitch thread*

ISO 1891-4:2017, *Fasteners — Terminology — Part: 4: Control, inspection, delivery, acceptance and quality*

ISO 2320, *Fasteners — Prevailing torque steel nuts — Functional properties*

ISO 2702, *Heat-treated steel tapping screws — Mechanical properties*

ISO 3269, *Fasteners — Acceptance inspection*

ISO 3506-1, *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 1: Bolts, screws and studs*

1) Under preparation.

ISO 3506-2, *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 2: Nuts*

ISO 3506-3, *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 3: Set screws and similar fasteners not under tensile stress*

ISO 3506-4, *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 4: Tapping screws*

ISO 10666, *Drilling screws with tapping screw thread — Mechanical and functional properties*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1891-4 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
authorized representative
person who is authorized as a quality assurance representative to validate and sign inspection documents on behalf of the supplier or the purchaser

3.2
external authorized representative
third party agreed between the purchaser and the supplier or a purchaser's requested inspection representative, or an inspection representative designated by an official regulation

3.3
validation
confirmation by the *authorized representative* (3.1) or the *external authorized representative* (3.2) of the content of the inspection document and final approval by means of signature

3.4
pass-through distributor
fastener distributor who sells the original manufacturer's fasteners as received, without altering the fasteners or the packages

[SOURCE: ISO 1891-4:2017, 3.6.4]

3.5
alteration distributor
fastener distributor who alters fasteners prior to delivery

[SOURCE: ISO 1891-4:2017, 3.6.6]

4 Inspection

4.1 Types of inspection documents for material

For material inspection documents 2.1, 2.2, 3.1 and 3.2, see ISO 10474 or other relevant technical specifications (e.g. EN 10204).

4.2 Types of inspection for fasteners

4.2.1 Non-specific inspection for fasteners

Inspection carried out in order to verify that the fasteners comply with the order and relevant standards and/or specified requirements. The fasteners inspected and/or tested are not necessarily part of the actually delivered fasteners provided that they

— are in accordance with the same standard or technical specification,

— are manufactured from the same material designation,

— are manufactured with the same manufacturing sequences and under same conditions,

— have the same shape, and

— have similar dimensions, where the differences do not impact the test results.

4.2.2 Specific inspection for fasteners

Inspection carried out before delivery, on the fasteners from the original manufacturing lot and in accordance with the product specification, in order to verify that the fasteners comply with the order and relevant standards and/or specified requirements.

4.3 Types of inspection documents for fasteners

4.3.1 General

The types of inspection document for fasteners are summarized in Table 1.

Table 1 — Inspection documents for fasteners

Type and name of fastener inspection document		When	Content	Validation
F2.1	Fastener declaration of compliance	Requested by the purchaser at the time of the order	Declaration of conformance for the **delivered fasteners**, **without results**	The manufacturer or distributor authorized representative
F2.2	Fastener test report	Requested by the purchaser at the time of the order	Declaration of conformance for the **delivered fasteners**, with results based on **non-specific** inspection	The **manufacturer** authorized representative
F3.1	Fastener test report	Specifically requested by the purchaser and agreed at the time of the order	Declaration of conformance for the **delivered fasteners**, with results from **specific** inspection	The **manufacturer** or **distributor** authorized representative
F3.2	Fastener test report	Specifically requested by the purchaser and agreed at the time of the order	Declaration of conformance for the **delivered fasteners**, with results from **specific** inspection	The **manufacturer** or **distributor** authorized representative **and** either the **purchaser** authorized representative or the **external** authorized representative

4.3.2 Fastener declaration of compliance F2.1

Document issued by the manufacturer or distributor declaring that the delivered fasteners are in compliance with the order and relevant standards and/or specified requirements without inclusion of results.

F2.1 inspection document shall be validated by either the manufacturer's authorized representative or the distributer's authorized representative.

4.3.3 Fastener test report F2.2

Document issued by the manufacturer declaring that the delivered fasteners are in compliance with the order and relevant standards and/or specified requirements, and in which results based on non-specific inspection are supplied.

It is the responsibility of the manufacturer to determine the correlation between the results on the inspection document and the delivered fasteners in order to demonstrate conformance.

Results shall be taken from raw material certificates, fastener in-process control and/or final inspection which shall be performed by (a) suitably qualified person(s).

The resulting data shall be assessed and transferred into the inspection document by (a) suitably qualified person(s).

F2.2 inspection document shall be validated by the manufacturer's authorized representative.

4.3.4 Fastener test report F3.1

Document issued by the manufacturer or distributor declaring that the delivered fasteners are in compliance with the order and relevant standards and/or specified requirements and in which results from specific inspection are supplied.

Results shall be taken from raw material certificates (3.1 or 3.2), fastener in-process control and/or final inspection which shall be performed by (a) suitably qualified person(s).

The resulting data shall be assessed and transferred into the inspection document by (a) suitably qualified person(s).

F3.1 inspection document shall be validated by either the manufacturer's authorized representative or the distributor's authorized representative.

4.3.5 Fastener test report F3.2

Document issued by the manufacturer or distributor declaring that the delivered fasteners are in compliance with the order and relevant standards and/or specified requirements, and in which results from specific inspection are supplied.

Results shall be taken from fastener inspection which shall be performed by (a) suitably qualified person(s). Results for raw material(s) shall be taken either from the raw material certificate(s) (3.1 or 3.2) or from the fastener inspection.

F3.2 inspection document shall be validated by **both** the manufacturer's or distributor's authorized representative **and** either the purchaser's authorized representative or the external authorized representative.

5 Requirements for fastener inspection documents

5.1 General

Inspection document in accordance with this document is only supplied on request of the purchaser. The type of inspection document, F2.1, F2.2, F3.1 or F3.2 shall be agreed at the time of the order.

Fasteners produced in accordance with a product standard (and/or technical specification) shall meet all the applicable requirements, regardless of which controls are performed during manufacturing and/or final inspection. It is the responsibility of the manufacturer and distributor to apply suitable

methods of their choice, such as in-process control or final inspection, to ensure that the manufactured lot does conform to the specified requirements.

Even when receiving an inspection document, the purchaser is responsible for the approval of the delivered fasteners by acceptance inspection procedures in accordance with ISO 3269 unless otherwise agreed.

The inspection documents F2.1 and F2.2 should include the fastener manufacturing lot number of the delivered fasteners, however a trace lot number may replace or complement the manufacturing lot number. The inspection documents F3.1 and F3.2 shall include the fastener manufacturing lot number of the delivered fasteners.

Each inspection document is only valid for the as-delivered condition of the related fasteners referenced in the inspection document. Any further processing after delivery (e.g. coating) altering the fasteners may invalidate all or part of the content of the inspection document.

5.2 Maintenance of data for inspection documents

The fastener supplier issuing an inspection document shall maintain in-process control and/or final test/inspection records either in hardcopy or electronically for a minimum period of three years.

5.3 Traceability

Fasteners shall be fully traceable by the manufacturing lot number (or trace lot number), and to maintain lot integrity, manufacturing lots shall not be commingled.

NOTE For the definitions of manufacturing lot number, trace lot number and commingling, see ISO 1891-4.

The purchaser who receives the fastener inspection document is responsible for maintaining subsequent traceability when required. Upon opening the original packaging, the purchaser assumes full responsibility for all subsequent traceability.

In case of dispute, the supplier shall be able to provide all necessary documentation and test/inspection records related to the manufacturing lot number (or trace lot number).

5.4 Inspection document sources

The fastener manufacturer is allowed to

— generate F2.1, F2.2, F3.1 or F3.2 inspection documents, and

— transfer the original data from suppliers into the manufacturer inspection document, provided that full traceability is ensured; the test/inspection results of the original inspection document shall not be modified.

The pass-through distributor and repackaging distributor are allowed to

— generate F2.1 or F2.2 inspection documents only by transferring data from F2.1 or F2.2 from the manufacturer,

— generate F3.1 or F3.2 inspection documents,

— supply the incoming inspection document F2.1, F2.2, F3.1 or F.3.2 from the manufacturer, and

— transfer the original data from F3.1 of the manufacturer into the distributor F3.1 inspection document, provided that full traceability is ensured; the test/inspection results of the original inspection document shall not be modified.

The alteration distributor is allowed to

— generate F2.1 inspection documents only by transferring data from the manufacturer,

— generate F2.2 inspection documents by transferring data from F2.2 from the manufacturer provided that the reported properties have not been altered, by testing the altered properties and by adding his own test results,

— generate F2.1, F3.1 or F3.2 inspection documents, and

— transfer the original data from F3.1 of the manufacturer into the distributor F3.1 inspection document after it has been determined that the considered property has not been altered and provided that full traceability is assured; the transferred test/inspection results of the original inspection document shall not be modified.

The alteration distributor shall test and/or inspect the properties which have been altered.

Data transferred from an external source shall be validated by the supplier before inclusion into the supplier inspection document. The supplier shall be responsible for the conformity and traceability of the data from the external source.

Transferring of non-specific test/inspection results from F2.2 (or from 2.2 for material) into an F3.1 inspection document is not allowed.

5.5 Subcontracted tests and/or inspection

Suppliers may subcontract tests and/or inspection to an external source. Those results can be either included as an attached complete report or transferred into the inspection document under the responsibility of the supplier issuing the inspection document. Data transferred into the inspection document shall be identified in accordance with 5.7.

The subcontracted tests and/or inspection from external source shall be traceable. The test sample(s) shall be traceable using manufacturing lot number (or trace lot number). The subcontracted tests and/or inspection report shall reference the manufacturing lot number (or trace lot number).

5.6 Sampling

The manufacturer and the distributor shall apply suitable sampling plans to ensure that the results included in the inspection document are representative of the manufacturing lot. For test reports F2.2, F3.1 and F3.2, the quantity of tested/inspected parts shall be included in the test reports for each test, except when all test results are reported.

If a specific quantity of parts to be tested is required by the purchaser for one or more specific tests, it shall be agreed at the time of the order.

In case of test reports F3.2, sampling is under the responsibility of either the purchaser authorized representative or the external authorized representative.

5.7 Reporting of test/inspection results

The control methods are left to the choice of the supplier, unless otherwise requested in a standard or technical specification and/or agreed at the time of the order.

Table 2 specifies the minimum requirements for reporting the test/inspection results in the test reports. More information may be included at the discretion of the manufacturer, distributor and/or external authorized representative issuing the inspection document, e.g. all individual values, mean value, dispersion, etc.

Each measured value shall be given with its unit specified in the standard or technical specification.

