



SLOVENSKI STANDARD

SIST ISO 2859-3:2006

01-april-2006

Določila o j ncf YbUnU_cblfc`c`dc`cd]gb]`gdfYa Yb`lj _U`E`" r"XY. Določila o j ncf YbUn]ndi ý UbYa`dUfh^

Sampling procedures for inspection by attributes -- Part 3: Skip-lot sampling procedures

Règles d'échantillonnage pour les contrôles par attributs -- Partie 3: Procédures d'échantillonnage successif partiel

Ta slovenski standard je istoveten z: **ISO 2859-3:2005**

ICS:

03.120.30 Vj [!æÁæãã } ãQ^q å Application of statistical methods

SIST ISO 2859-3:2006

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Full standard:
<https://standards.iteh.ai/catalog/standards/sist/723d7f77-bc85-44ac-a0a1-76449ef00bd/sist-iso-2859-3-2006>

INTERNATIONAL STANDARD

ISO 2859-3

Second edition
2005-05-01

Sampling procedures for inspection by attributes —

Part 3: Skip-lot sampling procedures

Règles d'échantillonnage pour les contrôles par attributs —

Partie 3: Procédures d'échantillonnage successif partiel

*Teh STANDARD PREVIEW
(standards.tch.ua)
Full standard:
https://standards.tch.ua/catalog/standard/standards/12077-0-5-
44ac-a0a1-76449ef00bd/sist-iso-2859-3-2005*



Reference number
ISO 2859-3:2005(E)

© ISO 2005

ISO 2859-3:2005(E)**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

TECH STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/723d7f77-b885-44ac-a0a1-76449ef00bd/sist-iso-2859-3-2006>

© ISO 2005

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	iv
1 Scope.....	1
2 Normative references	1
3 Terms, definitions and symbols	1
3.1 Terms and definitions.....	1
3.2 Symbols and abbreviated terms.....	3
4 General requirements	3
5 Supplier and product qualification.....	4
5.1 Supplier qualification.....	4
5.2 Product qualification	5
5.3 Qualification score	6
5.4 Example for product qualification.....	8
6 Skip-lot sampling procedures	9
6.1 General	9
6.2 Initial inspection frequency and its determination	11
6.3 Inspection frequency and shifting	11
6.4 Sampling plans, lot selection and inspection procedures (States 2 and 3)	14
6.5 Skip-lot interruption.....	15
6.6 Requalification	16
6.7 Product disqualification	16
6.8 Supplier disqualification and suspension	17
7 Supplier responsibilities	17
8 Inspection agency and responsible authority responsibilities	18
8.1 General	18
8.2 Responsibilities on supplier qualification.....	19
8.3 Other responsibilities	19
9 Compatibility with ISO 2859-1.....	20
9.1 Limitations	20
9.2 Relation to reduced inspection	20
10 Additional information.....	21
10.1 Design basis	21
10.2 Statistical characteristics of the skip-lot procedures	21
Annex A (normative) Optional requirements to be agreed prior to product qualification.....	23
Annex B (normative) Procedures for random selection at specified inspection frequency	25
Annex C (informative) Factors used in deciding between skip-lot inspection and reduced inspection	27
Bibliography	29

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 2859-3 was prepared by Technical Committee ISO/TC 69, *Applications of statistical methods*, Subcommittee SC 5, *Acceptance sampling*.

This second edition cancels and replaces the first edition (ISO 2859-3:1991), which has been technically revised.

ISO 2859 consists of the following parts, under the general title *Sampling procedures for inspection by attributes*:

- *Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*
- *Part 2: Sampling plans indexed by limiting quality (LQ) for isolated lot inspection*
- *Part 3: Skip-lot sampling procedures*
- *Part 4: Procedures for assessment of declared quality levels*
- *Part 5: System of sequential sampling plans indexed by acceptance quality limit (AQL) for lot-by-lot inspection.*
- *Part 10: Overview of the ISO 2859 attribute sampling systems*

Sampling procedures for inspection by attributes —

Part 3: Skip-lot sampling procedures

1 Scope

This part of ISO 2859 specifies generic skip-lot sampling procedures for acceptance inspection by attributes. The purpose of these procedures is to provide a way of reducing the inspection effort on products of high quality submitted by a supplier who has a satisfactory quality assurance system and effective quality controls. The reduction in inspection effort is achieved by determining at random, with a specified probability, whether a lot presented for inspection will be accepted without inspection. This procedure extends the principle of the random selection of sample items already applied in ISO 2859-1 to the random selection of lots.

The skip-lot sampling procedures specified in this part of ISO 2859 are applicable to, but not limited to, inspection of

- a) end items, such as complete products or sub-assemblies,
- b) components and raw materials, and
- c) materials in process.

2 Normative references

The following referenced documents are indispensable for the application 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 2859-1:1999, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 3534-1, *Statistics — Vocabulary and symbols — Part 1: Probability and general statistical terms*

ISO 3534-2, *Statistics — Vocabulary and symbols — Part 2: Applied statistics*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2859-1, ISO 3534-1, ISO 3534-2 and the following apply. For ease of reference, some terms are quoted from these standards.

3.1.1

continuous production

production that is at a steady rate

NOTE Production is considered continuous if the production has been continued for a specified production period at a specified production frequency (see 5.2.1). Continuous production is considered a stabilizing factor of the manufacturing or assembly processes.

ISO 2859-3:2005(E)**3.1.2****disqualification**

failure to qualify for skip-lot sampling inspection (3.1.11)

3.1.3**inspection agency**

independent third party with the responsibility for lot inspection and qualification assessment

3.1.4**inspection frequency**

probability that a lot is inspected

NOTE Inspection frequencies specified in this part of ISO 2859 are 1/2, 1/3, 1/4 and 1/5.

3.1.5**interruption**

cessation of skip-lot sampling inspection (3.1.11), ending with a return either to skip-lot sampling inspection or to lot-by-lot inspection

3.1.6**lot-by-lot inspection**

inspection of products submitted in a series of lots

NOTE 1 In this part of ISO 2859, a sample (or samples) is (are) drawn from each lot and inspected using acceptance sampling procedures by attributes given in ISO 2859-1.

NOTE 2 In this part of ISO 2859, lot-by-lot inspection is used both in State 1 (qualification period) and State 3 (skip-lot interruption state) (see 5.1).

3.1.7**product qualification**

assessment of the product to determine its suitability for skip-lot sampling inspection (3.1.11)

3.1.8**qualification score**

running total derived according to given rules from the immediately preceding quality history, and used in making decisions regarding qualification, changes in inspection frequency (3.1.4), interruption (3.1.5), disqualification (3.1.2) and requalification (3.1.9)

3.1.9**requalification**

qualification for a resumption of skip-lot sampling inspection (3.1.11)

3.1.10**responsible authority**

person or group of people who has responsibility and authority to manage inspection systems appropriately

NOTE In this part of ISO 2859, the responsible authority has responsibility and authority to assess and verify supplier qualification, decide various criteria and judge switch inspection stages.

3.1.11**skip-lot sampling inspection**

sampling inspection procedure in which some lots in a series are accepted without inspection when the sampling results for a stated number of immediately preceding lots meet stated criteria

NOTE The lots to be inspected are chosen randomly in accordance with a stated (skip-lot) inspection frequency. An inspection frequency of 1 in 2, for example, means that the long run average proportion of lots inspected is 1/2.

3.1.12**supplier qualification**

assessment of the supplier's competence to implement skip-lot sampling inspection (3.1.11)

3.2 Symbols and abbreviated terms

The symbols and abbreviated terms used in this document are as follows:

- Ac acceptance number;
- Ac_0 acceptance number for the corresponding single sampling plan;
- Ac_1 first acceptance number (for the double or multiple sampling plan);
- Ac_2 second acceptance number (for the double or multiple sampling plan);
- d number of nonconforming items or nonconformities in the sample;
- k number of lots used for inspection frequency (the inspection frequency is 1 in k ; i.e. $1/k$);
- n sample size.

4 General requirements

4.1 Skip-lot inspection may only be used when both the supplier and the product are qualified. The requirements for qualification are specified in Clause 5.

NOTE The skip-lot sampling procedures specified in this part of ISO 2859 should be distinguished from Dodge's skip-lot sampling plans. See [1], [2] and [3] in the Bibliography.

4.2 This part of ISO 2859 is intended to supplement the ISO 2859-1 sampling system, and may be used together with ISO 2859-1. Unless otherwise specified in this part of ISO 2859, the provisions of ISO 2859-1 shall apply. ISO 2859-10 provides useful information concerning the use of the standards in the ISO 2859 series.

4.3 The skip-lot sampling procedures specified in this part of ISO 2859 are intended only for a continuing series of lots and shall not be used for isolated lots. All lots in the series are expected to be of a similar quality and there should be reason to believe that lots not inspected are of the same quality as the ones inspected.

4.4 Skip-lot sampling may be used instead of reduced inspection if it is more cost effective to do so (see 9.2 and Annex C), but its application and switching rules are different from those of reduced inspection in ISO 2859-1.

4.5 There are some limitations to the use of skip-lot sampling procedures (see 9.1).

4.6 When different acceptance quality limit (AQL) values are specified for two or more classes of nonconforming items or nonconformities, special care should be taken to ensure correct application of the standard (see 5.2.2 to 6.6 and 10.2).

4.7 Inspection may take place at the supplier's or purchaser's locations, or at an interface between operations of a production process.

4.8 As every product has its own environment and characteristics, options are provided so that the supplier and the responsible authority may select the appropriate options to meet the specifics of the product and its environment. All choices as a result of this tailoring should be specified in a written document.

4.9 When specified by the purchaser, this part of ISO 2859 may be referenced in a purchasing or specification contract, inspection instruction, or other contractual documents.

ISO 2859-3:2005(E)

4.10 The responsible authority and the inspection agency are to be designated in one of the above documents. This part of ISO 2859 assumes that both lot inspection and qualification assessment are conducted by an inspection agency, being an independent third party. However, the purchaser may conduct both. It is necessary to replace the term "inspection agency" by "purchaser's inspector" or "assessing team" as occasion demands (see 5.1.2, 5.2.3 and Clauses 7 and 8).

5 Supplier and product qualification**5.1 Supplier qualification****5.1.1 Requirements for supplier qualification**

The requirements for supplier qualification are as follows.

- a) The supplier shall have implemented and maintained a documented system for controlling product quality and design changes. It is assumed that the system includes inspection by the supplier of each lot produced and the recording of inspection results.
- b) The supplier shall have instituted a system that is capable of detecting and correcting shifts in quality levels and monitoring process changes that may adversely affect quality. The supplier's personnel responsible for the application of the system shall demonstrate a clear understanding of the applicable standards, systems and procedures to be followed.
- c) The supplier shall not have experienced any change that might adversely affect quality.

5.1.2 Assessment for supplier qualification

An assessment team may be dispatched for the assessment for supplier qualification. When the assessment is conducted by the inspection agency, a typical example of what is to be examined and how functions and responsibilities are shared is shown in Clause 8.

When the purchaser conducts the assessment for supplier qualification, the functions and responsibilities of the assessment team are similar to those of the inspection agency.

If the supplier has been qualified for another similar product, the responsible authority may consider this fact in determining the degree of additional assessment for supplier qualification.

The responsible authority shall determine whether the supplier is eligible for skip-lot inspection after reviewing the assessment results (see 8.2).

Assessment and registration of the supplier in accordance with the third-party assessment standards given in ISO 9001 for the group of products containing the product concerned should be considered in determining eligibility for skip-lot inspection.

5.1.3 Verification of supplier qualification

Supplier qualification shall be verified at a frequency agreed to by both the supplier and the responsible authority. The purpose of this verification is to determine whether or not the supplier is still able to understand and follow the quality control procedures.

The method of verification is similar to the method of assessment, but it may be simplified so that the review may be conducted by an inspector in place of an assessment team (see 8.2).

5.2 Product qualification

5.2.1 Generic requirements for product qualification

Generic requirements for the product qualification are as follows.

- a) The product shall be of stable design.
- b) The product shall not have any critical classes of nonconforming items or nonconformities.
- c) The specified AQL(s) shall be at least 0,025 %. The specified inspection level(s) shall be general inspection levels I, II or III (see ISO 2859-1).
- d) The product shall have been on normal or reduced inspection or a combination of normal and reduced inspection (see ISO 2859-1) during the qualification period. A product that has been on tightened inspection at any time during the qualification period is ineligible for skip-lot inspection.
- e) The product shall have been produced on an essentially continuous basis for a specified production period at a specified production frequency.

Both the minimum production period and the minimum production frequency should be specified, based on the agreement between the supplier and the responsible authority (see Annex A).

If no minimum production period is specified, the period shall be 6 months. Whenever production is held pending sample approval, only the time period after approval and resumption of production shall be included.

If no minimum production frequency is specified, the minimum production frequency shall be once per month, or at least one lot shall be submitted each month.

Products of a similar nature shipped to other parties may be considered in the determination of "essentially continuous", if agreed to by both the supplier and the responsible authority.

- f) The product quality shall have been maintained at the AQL or better (see ISO 2859-1) for a period of stability mutually agreed to by both the supplier and the responsible authority. If no period is specified, the period shall be 6 months.

5.2.2 Specific requirements for product qualification

5.2.2.1 The specific requirements for the product qualification are that the following criteria shall be met:

- a) the preceding 10 or more consecutive lots have been accepted on original inspection; the term "on original inspection" means that the results of resubmitted lots shall not be included;
- b) the qualification score (see 5.3) reaches or exceeds 50 within 20 consecutive lots; if the qualification period exceeds 20 lots, use the qualification score recalculated for the last 20 lots.

5.2.2.2 There are the following limitations on applicable sampling plans:

- a) fractional acceptance number sampling plans (see ISO 2859-1:1999, Clause 13) shall not be used;
- b) multiple sampling plans are permitted only when the first acceptance number is a numerical value.

5.2.3 Assessment for product qualification

An assessment for product qualification shall not be made prior to the assessment for supplier qualification, although both assessments may be made at the same time.

The product qualification assessment shall be conducted by an assessment team, an inspector or an inspection agency. When the assessment is conducted by an inspection agency, a typical example of what is to be examined and how functions and responsibilities may be shared is shown in Clause 8 and Annex A.