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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*



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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.

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.

International Standard ISO 2859-3 was prepared by Technical Committee ISO/TC 69, *Applications of statistical methods*.

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

- *Part 0: Introduction to the ISO 2859 attribute sampling system*
- *Part 1: Sampling plans indexed by acceptable quality level (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 0 will be a revision of ISO 2859:1974 and Addendum 1:1977.

Annex A contains options to be agreed prior to qualification.

Annex B contains procedures for random selection at specified inspection frequencies.

Annexes A and B form an integral part of this part of ISO 2859. Annexes C and D are for information only.

Sampling procedures for inspection by attributes —

Part 3: Skip-lot sampling procedures

1 Scope

1.1 This part of ISO 2859 specifies generic attribute skip-lot sampling procedures for reducing the inspection effort on products submitted by those suppliers who have demonstrated their ability to control, in an effective manner, all facets of quality and who consistently produce lots which meet requirements. The reduction in inspection effort is achieved by selecting at random, with a specified probability, whether a lot presented for inspection will be passed without inspection. This procedure extends to the inspection of lots the principle of random selection already applied within ISO 2859-1 to the individuals comprising a lot.

Inspection may take place at the supplier's or purchaser's locations or at an interface between operations of a production process. The skip-lot procedures are designed to be used with the attribute lot-by-lot plans described in ISO 2859-1.

NOTE 1 The skip-lot procedures specified in this part of ISO 2859 should be distinguished from Dodge's skip-lot plans. See [4], [5] and [6] in annex D.

1.2 Since every product has its own environment and characteristics, options are provided in recognition of the fact that the supplier and responsible authority select the appropriate options to meet the specific needs of the product and its environment. All choices as a result of this tailoring should be specified in a written document (see annex A).

The procedures specified are applicable to, but not limited to, the inspection of

- a) end items, such as complete units or sub-assemblies;
- b) components and raw materials;

- c) services;
- d) materials in process;
- e) supplies in storage;
- f) data or records;
- g) administrative procedures.

These procedures are intended only for a continuing series of lots or batches and are not to 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 the lots not inspected are of the same quality as the ones inspected.

This part of ISO 2859 is to be used only for characteristics inspected by attributes as designated in ISO 2859-1. Its application differs from that of reduced inspection in ISO 2859-1. With respect to the inspection of multiple characteristics, the skip-lot procedures will follow the same principles used in the associated ISO 2859-1 procedures.

The skip-lot procedures in this part of ISO 2859 can only be implemented if the ISO 2859-1 procedures are in use, on normal or reduced inspection, or a combination of normal and reduced inspection, at general inspection levels I, II or III.

Multiple sampling plans may only be used during the qualification phase associated with normal inspection. It is strongly recommended that single sampling plans with an acceptance number of zero are not used in this part of ISO 2859 (see 8.1 and clause C.4).

NOTES

2 Reduced inspection is a feature of ISO 2859-1 permitting smaller sample sizes than used in normal inspection.

3 Reduced inspection may be used while the product is in the lot-by-lot inspection state, but may not be used during the skip-lot inspection or skip-lot interrupt states.

4 Skip-lot sampling may be used instead of reduced inspection if it is more cost effective to do so (see annex C).

1.3 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. The responsible authority and the inspection agency are to be designated in one of the above documents. The inspection agency may be the responsible authority or an organization delegated to conduct the inspection procedures.

1.4 It is essential that the skip-lot procedures are not applied to the inspection of product characteristics that bear upon the safety of personnel.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 2859. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 2859 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2859-1:1989, *Sampling procedures for inspection by attributes — Part 1: Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection*.

ISO 3534:1977, *Statistics — Vocabulary and symbols*.

3 Definitions

For the purposes of this part of ISO 2859, the definitions given in ISO 2859-1 and ISO 3534, together with the following definitions, apply.

3.1 skip-lot inspection: An acceptance sampling 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 5 The lots to be inspected are chosen randomly in accordance with a stated frequency called the "skip-lot frequency". A skip-lot frequency of 1 lot in 2, for example, means that the long-run average fraction of lots inspected is 50 %.

3.2 lot-by-lot inspection: Inspection of product submitted in a series of lots.

NOTE 6 A sample is selected from each lot and inspected using attribute AQL sampling procedures described in ISO 2859-1.

3.3 essentially continuous production: Production that is at a steady rate.

NOTE 7 Production is considered essentially continuous if at least 1 lot of products is submitted for inspection at a production frequency agreed to by both the supplier and the responsible authority. If no production frequency is specified, at least 1 lot shall be submitted, for example, each month. The production frequency shall be agreed between the supplier and the responsible authority. Product shipped to other parties or products of a similar nature shall or shall not be considered in the determination of "essentially continuous", as agreed by both the supplier and the responsible authority.

4 Supplier and product qualification

4.1 Supplier qualification

The supplier shall

- a) have implemented and maintained a documented system for controlling product quality and design changes (for example, see ISO 9001 or ISO 9002 or ISO 9003, cited in annex D). It is assumed that this system includes inspection by the supplier of every lot produced and recording of the inspection results;
- b) have instituted a system which is capable of detecting and correcting shifts in quality levels and monitoring process changes which may adversely affect quality. The supplier's personnel responsible for the application of the system shall show a clear understanding of the applicable standards, systems and procedures to be followed;
- c) not have experienced an organizational change that might adversely affect quality.

4.2 Product qualification

The product shall

- a) be of stable design;
- b) have been manufactured on an essentially continuous basis for a period mutually agreed to by both the supplier and the responsible authority. If no period is specified, the period shall be 6 months. Whenever production is held up pending sample approval, only the time period after approval and resumption of production shall be included;