
Sampling procedures for inspection by attributes —

Part 2: Sampling plans indexed by limiting quality (LQ) for isolated lot inspection

Règles d'échantillonnage pour les contrôles par attributs —

*Partie 2: Plans d'échantillonnage pour les contrôles de lots isolés,
indexés d'après la qualité limite (QL)*



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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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 69, *Application of statistical methods*, Subcommittee SC 5, *Acceptance sampling*.

This second edition cancels and replaces the first edition (ISO 2859-2:1985), which has been technically revised.

The main changes compared to the previous edition are as follows:

- inclusion of a sampling plan for the number of nonconformities per item in the lot;
- extension of the range of preferred LQ values from the original range "0,5 0,8 1,25 2 3,15 5 8 12,5 20 31,5" to the new one "0,05 0,008 0,125 0,2 0,315 0,5 0,8 1,25 2 3,15 5 8 12,5 20 31,5 50 80 125 200 315 500 800 1 250 2 000 3 150";
- tables of shortest length confidence intervals for lot proportion nonconforming under confidence levels 0,95 and 0,99;
- new technical annexes: Annex A on "Statistical properties of single sampling plans", Annex B on "Calculation of the statistical indices" and Annex C on "Information on technical background of confidence intervals".

A list of all parts in the ISO 2859 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Sampling procedures for inspection by attributes —

Part 2:

Sampling plans indexed by limiting quality (LQ) for isolated lot inspection

1 Scope

This document specifies an acceptance sampling system for inspection by attributes indexed by limiting quality (LQ). The sampling system is used for lots in isolation (isolated sequences of lots, an isolated lot, a unique lot or a short series of lots), where switching rules, such as those of ISO 2859-1, are not applicable. Inspection levels, as provided by ISO 2859-1 to control the relative amount of inspection, are not provided in this document. In many industrial situations, in which switching rules might be used, they are not applied for a number of reasons, not all of which might be valid:

- a) production is intermittent (not continuous);
- b) production is from several different sources in varying quantities, i.e. “job lots”;
- c) lots are isolated;
- d) lots are resubmitted after inspection.

The sampling plans in this document are indexed by a series of specified values of limiting quality (LQ), where the consumer’s risk (the probability of acceptance at the LQ) is usually below 0,10 (10 %), except in some instances.

This document is intended both for inspection for nonconforming items and for inspection for nonconformities per 100 items.

It is intended to be used when the supplier and the consumer both regard the lot to be in isolation. That is, the lot is unique in that it is the only one of its type produced. It can also be used when there is a series of lots too short for switching rules to be applied.

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 2859-1, *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: General statistical terms and terms used in probability*

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

3 Terms and definitions, and symbols and abbreviated terms

3.1 Terms and definitions

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

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1.1

consumer's risk

CR

probability of acceptance when the quality level has a value stated by the acceptance sampling plan as unsatisfactory

Note 1 to entry: For the purposes of this document, the consumer's risk is approximately 0,10 or 10 % in percent scale.

[SOURCE: ISO 3534-2:2006, 4.6.2, modified — The symbol has been deleted; the original Note has been deleted; and the new Note 1 to entry has been added.]

3.1.2

consumer's risk quality

CRQ

quality of a lot or process which, in the acceptance sampling plan, corresponds to a specified *consumer's risk* ([3.1.1](#))

Note 1 to entry: For the purposes of this document, the consumer's risk quality is mostly equated to the *limiting quality (LQ)* ([3.1.3](#)).

[SOURCE: ISO 3534-2:2006, 4.6.9, modified — The symbol has been deleted; in the definition, “quality level of a lot or process” has been replaced with “quality of a lot or process”; the original Note has been deleted; and the new Note 1 to entry has been added.]

3.1.3

limiting quality

LQ

quality level, when a lot is considered in isolation, which, for the purposes of acceptance sampling inspection, is limited to a low probability of acceptance

[SOURCE: ISO 3534-2:2006, 4.6.13]

3.1.4

producer's risk

PR

probability of non-acceptance when the quality level has a value stated by the plan as acceptable

Note 1 to entry: For the purposes of this document, the producer's risk is approximately 0,05 (5 %), and never exceeds 0,05 (5 %).

[SOURCE: ISO 3534-2:2006, 4.6.4, modified — The symbol has been deleted; the original Note 1 and Note 2 have been deleted; and the new Note 1 to entry has been added.]

3.1.5**producer's risk quality****PRQ**

quality level of a lot or process which, in the acceptance sampling plan, corresponds to a specified *producer's risk* ([3.1.4](#))

[SOURCE: ISO 3534-2:2006, 4.6.10, modified — The symbol has been deleted; the original Note 1 and Note 2 have been deleted; and the new Note 1 to entry has been added.]

3.2 Symbols and abbreviated terms

Ac	acceptance number
CR (β)	consumer's risk
CRQ	consumer's risk quality
D	number of nonconforming items (or nonconformities) in the population or lot
d	number of nonconforming items (or nonconformities) found in a sample from a lot
LQ	limiting quality
N	lot size
n	sample size
OC	operating characteristic
p	lot proportion nonconforming or average number of nonconformities per item in the lot
P	probability
P_a	probability of acceptance
PR (α)	producer's risk
PRQ	producer's risk quality
σ^2	variance of a statistical distribution
μ	mean of a statistical distribution

4 Choice of sampling plan**4.1 General**

The following procedures shall be followed in advance of acceptance sampling.

- a) The value of the limiting quality (LQ) shall be specified in accordance with [4.2](#).
- b) The lot size shall be determined.

The sampling plan to be used shall be found in accordance with [4.3](#).

By reference to [Tables 1](#) to [4](#), an applicable sampling plan is identified from the lot size (N) and the limiting quality (LQ).

With the specified lot size and the limiting quality as indexing values, the sample size n and the acceptance number Ac are given in [Tables 1](#) to [4](#).