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ISO 3951-5:2006 Sampling procedures for inspection by variables Part 5: Sequential sampling plans indexed by acceptance quality limit (AQL) for inspection by variables (known standard deviation)

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Abbreviation

ISO 3951-5:2006

Valid from

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Information provider

Standards New Zealand

Author

International Organization for Standardization

Information type

ISO Standard

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Description

ISO 3951-5:2006 specifies a system of sequential sampling plans (schemes) for lot-by-lot inspection by variables. The schemes are indexed in terms of a preferred series of acceptance quality limit (AQL) values, ranging from 0,01 to 10, which are defined in terms of percent nonconforming items. The schemes are designed to be applied to a continuing series of lots.

ISO 3951-5:2006 is designed for use under the following conditions:

- where the inspection procedure is to be applied to a continuing series of lots of discrete products all supplied by one producer using one production process;
- where only a single quality characteristic of these products is taken into consideration, which must be measurable on a continuous scale;
- where the uncertainty of the measurement system is negligible with respect to the production process standard deviation;
- where production is stable (under statistical control) and the quality characteristic is distributed according to a normal distribution (or a close approximation to the normal distribution) or a distribution which may be mathematically transformed to a normal distribution;
- where the standard deviation of the quality characteristic is known; and
- where a contract or standard defines an upper specification limit, a lower specification limit or both.

Scope

This part of ISO 3951 specifies a system of sequential sampling plans (schemes) for lot-by-lot inspection by variables. The schemes are indexed in terms of a preferred series of acceptance quality limit (AQL) values, ranging from 0,01 to 10, which are defined in terms of percent nonconforming items. The schemes of ISO 3951 are intended to induce a supplier through the economic and psychological pressure of lot non-acceptance to maintain a process average at least as good as the specified AQL value, while at the same time providing an upper limit for the risk to the consumer of accepting the occasional poor lot. The schemes are designed to be applied to a continuing series of lots, that is, a series long enough to allow the switching rules (Clause 6) to be applied.

These switching rules provide:

- automatic protection to the consumer (by means of a switch to tightened inspection or discontinuation of sampling inspection) should a deterioration in quality be detected;
- an incentive (at the discretion of the responsible authority) to reduce inspection costs (by means of a switch to reduced inspection) should consistently good quality be achieved.

This part of ISO 3951 is designed for use under the following conditions:

- a) where the inspection procedure is to be applied to a continuing series of lots of discrete products all supplied by one producer using one production process. If there are different producers or production processes, apply this part of ISO 3951 to each one separately;
- b) where only a single quality characteristic, x , of these products is taken into consideration, which must be measurable on a continuous scale;
- c) where the uncertainty of the measurement system is negligible with respect to the production process standard deviation;
- d) where production is stable (under statistical control) and the quality characteristic, x , is distributed according to a normal distribution (or a close approximation to the normal distribution) or a distribution which may be mathematically transformed to a normal distribution;
- e) where the standard deviation of the quality characteristic, x , is known;

CAUTION The procedures in this part of ISO 3951 are not suitable for application to lots that have been screened previously for nonconforming items.

- f) where a contract or standard defines an upper specification limit, U , a lower specification limit, L , or both; an item is qualified as conforming if and only if its measured quality characteristic, x , satisfies the appropriate one of the following inequalities:
 1. $x \geq U$ (i.e. the single upper specification limit is not violated);
 2. $x \geq L$ (i.e. the single lower specification limit is not violated);
 3. $L \geq x \leq U$ (i.e. the upper and lower double specification limits are not violated).

In this part of ISO 3951, it is assumed that, where double specification limits apply, conformance to both specification limits is either equally important to the integrity of the product or is considered separately for both specification limits. In the first case, it is appropriate to apply a single AQL to the combined percentage of product outside the two specification limits. This is referred to as a combined AQL requirement. In the second case, separate AQLs apply to nonconformity beyond each of the limits, and this is referred to as a separate AQL requirement.

In this part of ISO 3951, the acceptability of a lot is implicitly determined from an estimate of the percentage of nonconforming items in the process, based on a random sample of items from the lot. As such, it is not applicable for judging the acceptability of isolated lots or short series of lots. Refer to ISO 2859-2 for applicable sampling plans in this case.

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