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Combined accept-zero sampling systems and process control procedures for product acceptance

*Systèmes d'échantillonnage de tolérance zéro-défaut et procédures de
maîtrise des processus combinés pour l'acceptation de produits*



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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.

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 21247 was prepared by Technical Committee ISO/TC 69, *Applications of statistical methods*, Subcommittee SC 5, *Acceptance sampling*.

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Introduction

Enlightened quality-based management practices encourage industry innovation and provide flexibility to achieve the benefits of continuous improvement. There is an evolving industrial product quality philosophy that recognizes the need for quality policy changes that will provide suppliers with opportunities and incentives toward improvement of product quality and cooperative relationships between the supplier and the customer.

Properly employed, process controls and statistical control methods are effective means of preventing nonconformities, controlling quality, and generating information for systematic improvement. An effective process control system may also be used to provide information to assess the quality of deliverables submitted for acceptance. This International Standard encourages suppliers to use process control and statistical control procedures for their internal control and to submit effective process control procedures to the customer for approval, so that the need for acceptance sampling procedures can be reduced or even eliminated.

Sampling inspection by itself can be an inefficient industrial practice for demonstrating conformance. The application of sampling plans for acceptance involves both consumer and producer risks; increased sampling is one way of reducing these risks, but it also increases costs. Suppliers can reduce risks by employing efficient processes with appropriate process controls. To the extent that such practices are properly employed and are effective, risk is controlled and, consequently, inspection and testing can be reduced.

This International Standard supports those whose preference is to move away from an acceptance quality limit (AQL)-based inspection (detection) strategy to implementation of an effective prevention-based strategy including a comprehensive quality management system, continuous improvement and partnering. The underlying theme is cooperation between customer and supplier, with the requisite competence of both parties, and a clear mutual benefit from processes capable of consistently high quality products and services. The objective is to create an atmosphere where every non-compliance is an opportunity for corrective action and improvement, rather than one where AQLs are the contractually sufficient goals.

The following points provide the basis for this International Standard:

- a) suppliers are required to submit deliverables that conform to requirements and to generate and maintain sufficient evidence of conformance;
- b) suppliers are responsible for establishing their own manufacturing and process controls to produce results in accordance with requirements;
- c) suppliers are expected to use recognized prevention practices such as statistical process control.

This International Standard's goal, ideally, is to have product accepted as a result of control procedures. It also, however, provides a set of accept-zero sampling systems (see Annex A) and procedures for planning and conducting inspections to assess quality and conformance to specified requirements. The intent of including provisions for acceptance sampling is as a verification of the efficacy of process controls, or as an interim measure while such controls are being developed and implemented.

When acceptance sampling is conducted using the tables of this International Standard, the supplier has the option to inspect using any one of three types of sampling: single sampling by attributes; single sampling by variables; continuous sampling by attributes. Switching procedures are also provided to allow movement among normal, tightened and reduced inspection severities.

Some organizations have a policy of not using sampling plans indexed by AQLs. This International Standard complies with that policy.