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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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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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Foreword

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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 on 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 the following URL: www.iso.org/iso/foreword.html.

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

This first edition of ISO 28594 cancels and replaces ISO 21247:2005, of which it constitutes a minor revision to change the reference number from 21247 to 28594.

With the view to achieve a more consistent portfolio, TC 69/SC 5 has simultaneously renumbered the following standards, by means of minor revisions:

Old reference	New reference	Title
ISO 2859-10:2006	ISO 28590:2017	Sampling procedures for inspection by attributes — Introduction to the ISO 2859 series of standards for sampling for inspection by attributes
ISO 8422:2006	ISO 28591:2017	Sequential sampling plans for inspection by attributes
ISO 28801:2011	ISO 28592:2017	Double sampling plans by attributes with minimal sample sizes, indexed by producer's risk quality (PRQ) and consumer's risk quality (CRQ)
ISO 18414:2006	ISO 28593:2017	Acceptance sampling procedures by attributes — Accept-zero sampling system based on credit principle for controlling outgoing quality
ISO 21247:2005	ISO 28594:2017	Combined accept-zero sampling systems and process control procedures for product acceptance

ISO 14560:2004	ISO 28597:2017	Acceptance sampling procedures by attributes — Specified quality levels in nonconforming items per million
ISO 13448-1:2005	ISO 28598-1:2017	Acceptance sampling procedures based on the allocation of priorities principle (APP) — Part 1: Guidelines for the APP approach
ISO 13448-2:2004	ISO 28598-2:2017	Acceptance sampling procedures based on the allocation of priorities principle (APP) — Part 2: Coordinated single sampling plans for acceptance sampling by attributes

Cross references between the above listed documents have been corrected in the minor revisions.

A list of all documents in the new ISO 28590 - ISO 28599 series of International Standards can be found on the ISO website.

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.

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

1 Scope

This International Standard provides a set of accept-zero sampling systems and procedures for planning and conducting inspections to assess quality and conformance to specified requirements.

In addition, this International Standard provides requirements for alternative acceptance methods proposed by the supplier. Such alternative methods would be based upon establishing and implementing an internal prevention-based quality management system as a means of ensuring that all products conform to requirements specified by the contract and associated specifications and standards.

This International Standard, when cited in contract, is applicable to the supplier and extends to subcontractors or vendors. The quality plans are to be applied as specified in the contract documents, and deliverables may be submitted for acceptance if the requirements of this International Standard have been met.

Sampling systems and procedures in this International Standard are applicable, when appropriate, to assess conformance to requirements of the following:

a) end items;

b) components or basic materials;

c) operations or services;

d) materials in process;

e) supplies in storage;

f) maintenance operations;

g) data or records;

h) administrative procedures.

NOTE Use of the word "product" throughout this International Standard also refers to services and other deliverables.

The sampling systems and procedures of this International Standard are not intended for use with destructive tests or where product screening is not feasible or desirable. In such cases, the sampling systems to be used will be specified in the contract or product specifications.

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 3534-1:2006, *Statistics — Vocabulary and symbols — Part 1: General statistical terms and terms used in probability*

ISO 3534-2:2006, *Statistics — Vocabulary and symbols — Part 2: Applied statistics*

ISO 9000:2015, *Quality management systems — Fundamentals and vocabulary*