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Random sampling and randomization procedures

Modes opératoires d'échantillonnage et de répartition aléatoires

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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 24153 was prepared by Technical Committee ISO/TC 69, *Applications of statistical methods*, Subcommittee SC 5, *Acceptance sampling*.

Introduction

Random sampling and randomization procedures are the cornerstone to the validity of many statistical methods used in experimentation, whether for industrial quality control and improvement purposes or for designed experiments in the medical, biological, agricultural, or other scientific fields. Many statistical standards address the conduct of such experimentation. In particular, all of the following acceptance-sampling standards have been designed on the premise that random sampling is employed to select the required sampling units for lot disposition purposes:

ISO 2859 (all parts), *Sampling procedures for inspection by attributes*

ISO 3951 (all parts), *Sampling procedures for inspection by variables*

ISO 8422, *Sequential sampling plans for inspection by attributes*

ISO 8423, *Sequential sampling plans for inspection by variables for percent nonconforming (known standard deviation)*

ISO 13448 (all parts), *Acceptance sampling procedures based on the allocation of priorities principle (APP)*

ISO 14560, *Acceptance sampling procedures by attributes — Specified quality levels in nonconforming items per million*

ISO 18414, *Acceptance sampling procedures by attributes — Accept-zero sampling system based on credit principle for controlling outgoing quality*

ISO 21247, *Combined accept-zero sampling systems and process control procedures for product acceptance*

In addition, ISO 2859-3 and ISO 21247 include provisions for random sampling to be applied to determine whether a lot should be inspected or not under skip-lot sampling procedures, and to decide which units require inspection from a production process under continuous sampling plans, respectively. Consequently, it is of great importance to the valid operation of all of the above standards that sampling be effectively random in its application.

Although the principles of this International Standard are universally applicable where random sampling is required and the sampling units can be clearly defined, preferably on the basis of discrete items, there are many situations in which the material of interest does not lend itself to being quantified on a discrete-item basis, as in the case of a bulk material. In such situations, the user is advised to consult the following ISO International Standards for appropriate guidance:

ISO 11648 (all parts), *Statistical aspects of sampling from bulk materials*