

**Requirements of ISO/IEC 17043- 2010
and selected Terms and definitions**



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**ISO/IEC 17043 Requirements
4. Technical Requirements**

- 4.1 General
- 4.2 Personnel
- 4.3 Equipment, accommodation and environment
- 4.4 Design of proficiency testing schemes
- 4.5 Choice of method or procedure
- 4.6 Operation of proficiency testing schemes
- 4.7 Data analysis and evaluation of proficiency testing schemes results
- 4.8 Reports
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**ISO/IEC 17043 Requirements
5. Management Requirements**

- 5.1 Organization
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ISO/IEC 17043 Requirements

5. Management Requirements (contd.)

- 5.8 Complaints and appeals
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- 5.14 Internal Audit
- 5.15 Management review

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DEFINITIONS OF IMPORTANT TERMS

- **Inter Laboratory Comparisons** – Organization, performance and evaluation of measurements or tests on the same or similar items by two or more laboratories in accordance with predetermined conditions
- **Proficiency Testing** – Evaluation of participant performance against pre established criteria by means of inter laboratory comparisons

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Types of proficiency testing Schemes

- ❑ **Quantitative Scheme:** Quantification of one or more measurands of the Proficiency Test item
- ❑ **Qualitative Scheme :** Identification or description of one or more quality characteristics of PT item
- ❑ **Sequential Scheme :** One or more PT items are distributed sequentially for testing or measurement and returned to the provider at intervals

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Types of proficiency testing Schemes

- ❑ **Simultaneous Scheme** : Distribution of PT items for concurrent testing or measurement within a defined time period
- ❑ **Single occasion exercise**: Provision of PT items on a single occasion
- ❑ **Continuous Scheme** : Provision of PT items at regular intervals

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Types of proficiency testing Schemes

- ❑ **Sampling**: samples are taken for subsequent analysis & the purpose of PT Scheme includes evaluation of the execution of sampling
- ❑ **Data transformation and interpretation**: data or other information are furnished and the information is processed to provide an interpretation

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Typical purposes for inter-laboratory comparisons

- a) Evaluation of the performance of laboratories for specific tests or measurements and monitoring laboratories' continuing performance;
- b) identification of problems in laboratories and initiation of actions for improvement which, for example, may be related to inadequate test or measurement procedures, in-effective staff training and supervision, or deficiencies in the calibration of equipments;

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Typical purposes for inter-laboratory comparisons

- c) **establishment of the effectiveness and comparability of test or measurement methods;**
- d) **provision of additional confidence to laboratory customers;**
- e) **identification of inter-laboratory differences;**
- f) **education of participating laboratories based on the outcomes of such comparisons;**
- g) **validation of uncertainty claims;**

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Typical purposes for inter-laboratory comparisons

- h) **evaluation of the performance characteristics of a method – often described as collaborative trials;**
- i) **assignment of values to reference materials and assessment of their suitability for use in specific test or measurement procedures;**
- j) **Support for statements of the equivalence of measurements of National Metrology Institutes through "key comparisons" and supplementary comparisons conducted on behalf of the International Bureau of Weights and Measurement (BIPM) and associated regional metrology organizations**

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DEFINITIONS OF IMPORTANT TERMS

- **Assigned value – Value attributed to a particular property of a PT item.**
- **Standard Deviation for Proficiency Assessment (SDPA)- Measure of dispersion used in the evaluation of results of Proficiency Testing**

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DEFINITIONS OF IMPORTANT TERMS

- **Measurement Error** – Measured quantity value **minus** reference quantity value
- **Maximum permissible measurement error (Limit of Error) Delta E (δE)** - Extreme value of measurement error, with respect to a known reference quantity value, permitted by specifications or regulations for a given measurement, measuring instrument, or measuring system

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DEFINITIONS OF IMPORTANT TERMS

- **Z Score** – Standardised measure of performance, calculated using participant result, Assigned Value and **the SDPA**
- **Zeta (ζ) Score** – Standardised measure of performance, calculated using participant result, Assigned Value and **the combined standard uncertainties for the result and Assigned Value**

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DEFINITIONS OF IMPORTANT TERMS

- **Normalized Error Score (E_n)** – Standardised measure of performance, calculated using participant result, Assigned Value and **the combined expanded uncertainties for the result and Assigned Value**
- **Proportion of Allowed limit Score (P_A)** – Standardised measure of performance, calculated using participant result, Assigned Value and **criterion for measurement error in a Proficiency Test**

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DEFINITIONS OF IMPORTANT TERMS

- **Action Signal** – Indication of a need for action arising from a PT result
- **Consensus Value** – Value derived from a collection of results in an interlaboratory comparisons
- **Outlier** – A member of a set of values which is inconsistent with other members of that set

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DEFINITIONS OF IMPORTANT TERMS

- **Participant** – Laboratory, organization or individual, that receives proficiency test items and submits results for review by the PT Provider
- **Proficiency Test item** - Sample, product, artefact, reference material, piece of equipment, measurement standard, data set or other information used to assess participant performance in PT

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DEFINITIONS OF IMPORTANT TERMS

- **Proficiency Testing Provider** – Organization which takes responsibility for all tasks in the development and operation of a PT Scheme
- **Proficiency Testing Scheme** - Proficiency Testing designed and operated in one or more rounds for a specified area of testing, measurement, calibration or inspection

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DEFINITIONS OF IMPORTANT TERMS

- **Coordinator** – One or more individuals with responsibility for organizing and managing all of the activities involved in the operation of a PT Scheme
- **Customer** - Organization or individual for which a PT Scheme is provided through a contractual arrangement

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DEFINITIONS OF IMPORTANT TERMS

- **Subcontractor** – Organization or individual engaged by the PT Provider to perform (some of the) activities specified in the International Standard ISO/IEC 17043 and that affects the quality of a PT Scheme
- **PT round**- Single complete sequence of distribution of PT items and the evaluation and reporting of results to the participants

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DEFINITIONS OF IMPORTANT TERMS

- **Reference Material (RM)** – Material, sufficiently homogeneous & stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process
- **Certified Reference Material (CRM)** – Reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability

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DEFINITIONS OF IMPORTANT TERMS

- **Metrological Traceability** - Property of a measurement result whereby the result can be related to a reference through a documented unbroken chain of calibrations, each contributing to the measurement uncertainty
- **Measurement Uncertainty** - Non-negative parameter characterizing the dispersion of the quantity values being attributed to a measurand, based on the information used

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