Technical

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Good practice in reference material preparation

Bonne pratique pour la préparation des matériaux de référence

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This document was prepared by Technical Committee ISO/TC 334, *Reference materials*.

This first edition of ISO/TR 33402 cancels and replaces ISO Guide 80:2014, which has been technically revised.

The main changes are as follows:

— this document provides guidance for the preparation of reference materials and does not include information about characterization or the assessment of homogeneity and stability;

— the scope of this document has been broadened to include all types of matrix reference materials and not only reference materials used for statistical quality control.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Reference materials (RMs) are widely used in measurement laboratories for a variety of purposes, and it is important to ensure that the material most appropriate for a particular application is used. Certified reference materials (CRMs), i.e. those which have at least one certified value with associated uncertainty assigned by a metrologically valid procedure, are primarily used for method validation and calibrations providing metrological traceability.

While many RMs do not require characterization by metrologically valid procedures, they can be prepared to meet specific measurement requirements, including quality control. The key requirements for these RMs are sufficient homogeneity and stability, with respect to specific properties, for the intended use. Proper preparation processes can ensure the material's homogeneity and stability.

This document provides general information on key steps in material preparation of candidate matrix RMs. It is intended for laboratory staff involved in preparing and using matrix materials for specific applications. Reference material producers (RMPs) can also use it as an information source for the preparation steps of RM production.

The document includes case studies highlighting key considerations in RM preparation. Most of the case studies describe the production of matrix RMs used for statistical quality control and include information about the preparation of the materials as well as additional information about the characterization of the property values and the assessment of homogeneity and stability, as applicable.

The general requirements for the competence of reference material producers (RMPs) are outlined in ISO 17034, specifying necessary sample preparation steps. ISO 33405 covers guidance for assessing homogeneity and stability, characterization, and value assignment of property values. ISO 33403 provides guidance for the correct use of RMs. The requirements and guidance in these documents rely on the competent preparation of the candidate RM. However, preparation steps, especially for candidate matrix RMs, are intricate, and there is a lack of guidance focusing on these steps.