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GUIDE 31

Reference materials — Contents of certificates and labels

Second edition 2000

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Contents

Page

Foreword.....iv

Introductionv

1 Scope 1

2 Normative reference 1

3 Terms and definitions 1

4 General.....1

5 Certificate headings2

6 Summary of the essential contents of a certificate.....6

Bibliography 7

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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.

Guides are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft Guides adopted by the responsible Committee or Group are circulated to national bodies for voting. Publication as a Guide requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this Guide may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO Guide 31 was drawn up by the ISO Committee on reference materials (REMCO) and was approved by ISO member bodies.

This second edition cancels and replaces the first edition (ISO Guide 31:1981), which has been technically revised.

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Introduction

The certificate which accompanies a certified reference material (CRM) should contain all the information which is essential to its use. Without the certificate, the material, however costly its production, is valueless. It follows, therefore, that producers of CRMs should pay very careful attention to the preparation of certificates. The ISO Committee on Reference Materials (ISO/REMCO) published the first edition of this Guide in 1981. During the past sixteen years there has been considerable growth in the number and variety of reference materials produced, and in their use. The increasing demand for reliability in the results obtained by analytical and metrological techniques, which has arisen especially from growing concern about pollution of the environment, has led to the demand for a widening range of CRMs of increasingly high quality for use in validation of measurement methods and as calibrants.

The definition of a CRM in ISO Guide 30 (see clause 2) requires all certified property values to be accompanied by an uncertainty at a stated level of confidence and for traceability to "an accurate realization of the unit in which the property value is expressed" to be demonstrated. These additional requirements must therefore be met in the certificate.

The *Guide to the expression of uncertainty in measurement*, published by ISO (see Bibliography), summarizes more recent international consideration of the subject of uncertainty in measurement and will require some modification of the definition of a CRM quoted above. Uncertainty should now be expressed as combined (type A + type B) standard uncertainty or as expanded uncertainty (with a coverage factor to be applied to the combined standard uncertainty). The concept of probability or level of confidence is now no longer central.

The first edition of this Guide discussed the difference between the information provided on the label, the certificate, and the certification report, and stressed the brief synoptic nature of the certificate. The past sixteen years, however, have seen a general decline in the issuing of certification reports and an increase in the information provided in certificates. This decline in the publication of certification reports is not necessarily to be condemned, provided all the information appropriate to a full certification report can always be obtained on application to the producers of the CRM. Production of certification reports is expensive and it is clearly unnecessary for one to be supplied to the same user every time a fresh sample from the same batch of material is purchased. At the same time, the information required from a certificate is usually more than the certified property value. Details concerning the way in which the container should be opened, the minimum sample size that should be taken for a measurement, the stability of the material, the way in which it should be stored, and, in the case of CRMs where the certified value is method-dependent, the method used to determine the certified value are all essential information for the user.