INTERNATIONAL STANDARD

ISO 14595

First edition
2003-06-01

Microbeam analysis — Electron probe microanalysis — Guidelines for the specification of certified reference materials (CRMs)

Analyse par microfaisceaux — Microanalyse par sonde à électrons — Lignes directrices pour les spécifications des matériaux de référence certifiés (CRM)

Reference number
ISO 14595:2003(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

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 14595 was prepared by Technical Committee ISO/TC 202, *Microbeam analysis*, Subcommittee SC 2, *Electron probe microanalysis*.

Introduction

For electron probe microanalysis (EPMA), a comparative quantitative analytical method used throughout the world, certified reference materials (CRMs) play a crucial role in the analytical accuracy.

This International Standard has been developed to facilitate international exchange and compatibility of analysis data in electron probe microanalysis (EPMA).

It gives guidance on evaluating and selecting reference materials (RMs), on evaluating the extent of heterogeneity and stability of RMs and it gives recommendations for the determination of the chemical composition of RMs for production as EPMA certified reference materials.

Microbeam analysis — Electron probe microanalysis — Guidelines for the specification of certified reference materials (CRMs)

1 Scope

This International Standard gives recommendations for single-phase certified reference materials (CRMs) used in electron probe microanalysis (EPMA). It also provides guidance on the use of CRMs for the microanalysis of flat, polished specimens. It does not cover organic or biological materials.

2 Normative references

The following referenced documents are indispensable for the application 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 Guide 31:2000, *Reference materials — Contents of certificates and labels*

3 Terms and definitions

For the purposes of this International Standard the following terms and definitions apply.

3.1
heterogeneity
measured variation in compositions of elements measured from a group of specimens

NOTE The contributions to heterogeneity include the uncertainties in the measurements from specimen to specimen, from micrometre to micrometre within each specimen, and from the test procedure itself.

3.2
research material
material that appears to have the physical and chemical characteristics required of a CRM, but which is to be examined in detail, including the determination of chemical composition, stability, and micro- and macro-heterogeneity, before certification as a CRM

3.3
stability
⟨general⟩ resistance of a specimen to chemical and physical change during long-term storage at normal temperature and pressure

3.4
stability
⟨EPMA⟩ resistance of the material to changes in chemical composition during electron bombardment, i.e. the resistance to change of the intensity of the relevant characteristic X-rays observed during the time the specimen is exposed to the electron beam