

ICS 71.040.99

CCS N53



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 15616-2008

Replacing GB/T 15616-1995

**Quantitative method for electron probe microanalysis of metals
and alloys**

金属及合金的电子探针定量分析方法

Issued on: August 20, 2008

Implemented on: April 1, 2009

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of China**

Table of Contents

- 1 Scope
- 2 Normative references
- 6 Sample

Foreword

This standard replaces GB/T 15616-1995 "method of quantitative electron probe microanalysis of metals and alloys." This standard and GB/T 15616-1995 compared to the main changes are as follows:

--- In the "program" to remove the original "concentration of 1% or more" requirement, increase "is also applicable to a configuration with a scanning electron spectrometer Micromirrors for quantitative analysis of metals and alloys "requirement;

--- Increasing the reference standard;

--- Some of the terms according to ISO 23833.2006 has been modified;

--- Increase in Chapter 11, "Results Report";

--- Remove the original standard in Appendix A. This standard by the National Standardization Technical Committee microbeam analysis made. This standard by the National Standardization Technical Committee microbeam analysis. This standard was drafted. Iron and Steel Research Institute, Beijing Institute of Aeronautical Materials. Drafters of this standard. Zhuyan Yong, Zhong before Maoyun Jing, Dong Yuzhuo. This standard replaces the standards previously issued as follows:

--- GB/T 15616-1995. The method of quantitative electron probe microanalysis of metals and alloys

1 Scope

GB/T 15616-2008 is the Chinese national standard on quantitative method for electron probe microanalysis of metals and alloys, in the field of chemical technology. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 20 August 2008 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 April 2009. Classification: ICS 71.040.99, CCS N53. This page is published from the official record of

the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the chemical composition by electron probe metals and alloys quantitative analysis. This standard applies to metal and alloy samples cubic micron-sized micro-composition analysis, elemental analysis range is 11Na ~ 92U. This standard also applies to the configuration of the spectrometer using a scanning electron microscope for quantitative analysis of metals and alloys.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 4930 electron probe microanalysis standard specimen General technical requirements

GB/T 13298 metal microstructure inspection method

GB/T 15074 method of quantitative electron probe microanalysis General

GB/T 20725-point analysis of the legal spectrum electron probe microanalysis Guide

ISO 22309.2006 microbeam analysis EDS quantitative analysis

ISO 22489 micro beam analysis - electron probe microanalysis (EPMA) - spectrometer bulk sample point quantitative analysis method General requirements ISO /

IEC 17025 testing and calibration laboratories Analysis Principle

3 Quantitative electron probe microanalysis of metals and alloys is focused electron beam irradiation sample application has a certain energy in the irradiated area inspired Each element of X-rays of different wavelengths, by X-ray crystal spectrometer spectroscopic spectral components, characteristic X-ray intensity of each detection element, and, and Characteristic X-ray intensity of the standard sample under the same test conditions is compared, by the correction calculation, thus obtaining a specimen area of \u200b\u200beach element is excited Prime quality scores.

4 instruments and auxiliary equipment

4.1 electron microprobe analyzer or spectrometer configuration of a scanning electron microscope

4.2 optical microscope and sample grinding and polishing apparatus

4.3 ultrasonic cleaning device

5.1 Standards should be formed similar to the known component is chemically pure metal or alloy or compound with the specimen.

6 Sample

6.1 Analysis of the sample surface should be lapping, polishing, polishing surface microstructure obtained, check the sample surface at 200 to 500 times microscope Analysis of the site should be clean, wear marks and other defects.

6.2 when measured plating or diffusion layer components in cross-section, the specimen shall be inlaid or clamped with a jig and then ground and polished to ensure that the test edge Area without chamfer.