

ICS 17.240
CCS A 58

JJF

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

JJF 1480-2014

**Calibration Specification for Liquid-scintillation Counting
System
(English Translation)**

Issued on: August 25, 2014

Implemented on: November 25, 2014

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

Table of Contents

Introduction (II)
1 Scope (1)
2. References (1)
3 Terminology and units of measurement (1)
3.1 The term (1)
3.2 Units of measurement (2)
4 Overview (2)
5 Metrological characteristics (2)

3 Terminology and units of measurement (1)

3.1

The term (1)

5 Metrological characteristics (2)

Energy range 5.1 (2)

5.5 Repeatability (2)

Calibration Condition 6 (2)

9 Recalibration interval (4)

Appendix A liquid scintillation counter calibrated recording format recommended (5)

Appendix B liquid scintillation counter within the calibration certificate pages (6)

Appendix C liquid scintillation counter detection efficiency calibration 3H Uncertainty
Evaluation Example (7)

Introduction

The main basis for this specification in accordance with JJF 1071-2010 "National Calibration Specifications writing rules" written preparation of GB/T 10259-2013 "liquid scintillation counter," and refer to the International Electrotechnical Commission standard IEC 61304:1994 "Nuclear Instrument Performance Verification liquid scintillation counter" (Nuclearinstrumentation-Liquid-scintillationcountingsystems-Performanceverification) and

the American National Standards AN-SIN42.15.1990 "liquid scintillation counting system performance test" (Performance verification of liquid-1986 sealed radioactive "for liquid scintillation counter. scintillation counting system), AN-SIN42.16 Check supply specifications "(Specifications for Sealed Radioactive Check Sources Used in Liquid-Scintillation Counters).

As radionuclide activity measurement instruments used in a liquid scintillation counter more beta-ray emitting nuclide, in particular Low energy beta-ray measurements of radionuclide ^3H and ^{14}C activity in. This specification defines a liquid scintillation counter calibrated measuring ^3H and ^{14}C Radionuclide detection efficiency calibration method is also applicable to other radionuclide detection efficiency calibration.

The specification for the first time to develop.

Liquid scintillation counter calibrated specifications

1 Scope

This instruction applies to radionuclide activity measurement range (0 ~ 105) Bq liquid scintillation counter (Analysis Meter) calibration.

2. References

This specification references the following documents.

JJF 1001-2011 common measurement terms and definitions GB/T 4960.1-2010 nuclear science and technology terms - Part 1. Nuclear Physics and Chemistry GB/T 4960.6-2008 nuclear science and technology - Part 6. Nuclear instrumentation GB/T 10259-2013 liquid scintillation counter IEC 61304:1994 Nuclear Instrument Performance Verification liquid scintillation counter (Nuclear instrumentation-Liquid-scintillation counting systems-Performance verification) Above dated references, only the dated edition applies to this specification.

3 terminology and units of measurement

3.1 Terms

JJF 1001-2011, GB/T 4960.1-2010, GB/T 4960.6-2008 defined and the following terms and Definitions apply to this specification.

3.1.1 The background count rate Instrument unit time count measurement floor samples.

3.1.2 detection efficiency Instrument count rate divided by the standard source of activity.

3.1.3 Liquid Scintillation standard source liquid scintillation reference source the activity of certain radionuclides known scintillation liquid miscible with the sealed glass vial of standard size, for determining Given liquid scintillation counter detection efficiency of standard sources.

3.1.4 Flashing substance scintillating material Ionizing radiation, capable of flashing

light-emitting substance radiation.

3.1.5 quencher quenching agent can reduce the emission intensity of the phosphor material.

3.1.6 quenching standard source quenched standard source Factors reducing the light output with standard source.

3.1.7 No quenched standard source unquenched standard source with a small (negligible) impact standard light source output factors.