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Sample preparation for measurement of mercury level in fluorescent lamps and low-pressure mercury UV radiation sources

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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SAMPLE PREPARATION FOR MEASUREMENT OF MERCURY LEVEL IN FLUORESCENT LAMPS AND LOW-PRESSURE MERCURY UV RADIATION SOURCES

FOREWORD

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IEC 62554 edition 1.2 contains the first edition (2011-08) [documents 34A/1484/FDIS and 34A/1502/RVD], its amendment 1 (2017-10) [documents 34A/1997/CDV and 34A/2028/RVC] and its amendment 2 (2025-02) [documents 34A/2398/CDV and 34A/2427/RVC].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendments 1 and 2. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 62554 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document and its amendments will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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INTRODUCTION

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning Cold spotting given in 5.4.1.

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According to IEC SMB 136/7 decision, the technical committee decided to remove designation of a reference method.

INTRODUCTION to Amendment 1

IEC 62554 specifies the method of sample preparation for the measurement of mercury level in fluorescent lamps. It refers to IEC 62321:2008 for the technique for determining the amount of mercury.

In the meantime it has been found that for fluorescent lamps, some of the techniques specified in IEC 62321 can lead to inaccurate and misleading results and in addition this standard has been split into several parts.

In bilateral discussions between members of subcommittee 34A and technical committee 111, it was agreed to update the relevant part of IEC 62321 and the reference made to it in IEC 62554. Amendment 1 to IEC 62321-4 has now been published (IEC 62321-4:2013/AMD1:2017).

SAMPLE PREPARATION FOR MEASUREMENT OF MERCURY LEVEL IN FLUORESCENT LAMPS AND LOW-PRESSURE MERCURY UV RADIATION SOURCES

1 Scope

This International Standard specifies sample preparation methods for determining mercury levels in new tubular fluorescent lamps (including single capped, double capped, self-ballasted and cold cathode fluorescent lamp (CCFL) for backlighting) and new low-pressure mercury UV radiation sources, containing 0,1 mg mercury or more. The intended resolution of the methods described in this ~~standard~~ document is of the order of 5 %.

Mercury level measurement of spent lamps is excluded, as during lamp operation, mercury gradually diffuses into the glass wall and reacts with the glass materials. The test method of this standard does not recover mercury that is diffused into or reacted with or otherwise incorporated irreversibly with the glass wall of discharge tubes.

This standard does not contain information on measurement. Measurement is specified in IEC 62321.

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/IEC 17025:2005, *General requirements for the competence of testing and calibration laboratories*

~~IEC 62321:2008, *Electrotechnical products – Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers)*~~

IEC 62321-4:2013, *Determination of certain substances in electrotechnical products – Part 4: Mercury in polymers, metals and electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS*
IEC 62321-4:2013/AMD1:2017

ISO 3696:1987, *Water for analytical laboratory use – Specification and test methods*

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