

**INSTITUTE OF
ENVIRONMENTAL
SCIENCES AND
TECHNOLOGY**

**Contamination Control Division
Recommended Practice 013.2**

IEST-RP-CC013.2

**Calibration Procedures and
Guidelines for Select Equipment
Used in Testing Cleanrooms and
Other Controlled Environments**

INSTITUTE OF ENVIRONMENTAL SCIENCES AND TECHNOLOGY

1827 Walden Office Square, Suite 400 |
Schaumburg, IL 60173 USA
Phone: (847) 981-0100 • Fax: (847) 981-4130
E-mail: iest@iest.org • Web: www.iest.org



COPYING IS ILLEGAL
Currently in preview, click buy full version

This Recommended Practice is published by the INSTITUTE OF ENVIRONMENTAL SCIENCES AND TECHNOLOGY to advance the technical and engineering sciences. Its use is entirely voluntary, and determination of its applicability and suitability for any particular use is solely the responsibility of the user.

This Recommended Practice was prepared by and is under the jurisdiction of Working Group 0.3 of the IEST Contamination Control Division.

Copyright © 2006 by the **INSTITUTE OF ENVIRONMENTAL SCIENCES AND TECHNOLOGY**

Third printing, July 2017

ISBN 978-0-9747313-9-1

PROPOSAL FOR IMPROVEMENT: The Working Group of the INSTITUTE OF ENVIRONMENTAL SCIENCES AND TECHNOLOGY are continually working on improvements to their Recommended Practices and Reference Documents. Suggestions from those who use these documents are welcome. If you have a suggestion regarding this document, please use the online Proposal for Improvement form found on the IEST website at www.iest.org/proposal/form.html.

INSTITUTE OF ENVIRONMENTAL SCIENCES AND TECHNOLOGY

1825 Walden Office Square, Suite 400 | Schaumburg, IL 60173 USA

Phone: (847) 981-0100 • Fax: (847) 981-4130

E-mail: iest@iest.org • Web: www.iest.org

COPYING IS ILLEGAL
Currently in preview, click buy full version

Calibration Procedures and Guidelines for Select Equipment Used in Testing Cleanrooms and Other Controlled Environments

IEST-RP-CC013.2

CONTENTS

SECTION

1	SCOPE AND LIMITATIONS.....	7
2	REFERENCES.....	7
3	TERMS AND DEFINITIONS.....	8
4	BACKGROUND AND PURPOSE.....	8
5	GENERAL PROCEDURES.....	9
6	AEROSOL GENERATORS.....	10
7	PHOTOMETERS.....	11
8	ANEMOMETERS.....	16

FIGURE

1	DETAILS OF A LASKIN NOZZLE.....	10
2	SETUP FOR VERIFYING A LASKIN-NOZZLE TYPE DOP GENERATOR.....	10
3	100 µg/L AEROSOL SOURCE.....	11
D1	TYPES OF WIND TUNNELS.....	21

TABLE

1	RECOMMENDED INITIAL CALIBRATION INTERVALS.....	9
---	--	---

APPENDIX

A	RELATED STANDARDS AND PUBLISHED PROCEDURES.....	17
B	PROPER INSTRUMENT CARE PROTOCOL.....	19
C	EXAMPLES OF PHOTOMETER TEST PROCEDURES.....	20
D	WIND TUNNELS.....	21
E	BIBLIOGRAPHY.....	22

COPYING IS ILLEGAL
Currently in preview, click buy full version

Calibration Procedures and Guidelines for Select Equipment Used in Testing Cleanrooms and Other Controlled Environments

IEST-RP-CC013.2

1 SCOPE AND LIMITATIONS

1.1 Scope

This Recommended Practice (RP) covers procedures for calibrating and verifying equipment used in characterizing cleanrooms and for determining intervals of calibration. The RP includes general procedures for calibrating photometers, aerosol generators, and anemometers. Where available, references for calibrating other instruments are provided.

1.2 Limitations

Future revisions of this document will include calibration procedures for additional instruments for which procedures are needed.

NOTE: Testing in accordance with this RP may involve hazardous materials, operations, and equipment. This RP does not purport to address all of the safety problems associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use of this RP.

2 REFERENCES

The cited editions of the following documents are incorporated into this RP to the extent specified herein. Users are encouraged to investigate the possibility of applying the most recent editions of the references.

2.1 References and applicable documents

ANSI/NCSL 1540-1-1994: *Calibration Laboratories and Measuring and Test Equipment—General Requirements*.

Fehls, W.H. and J.A. Young. 1963. *Studies of Portable Air-Operated Aerosol Generators*. U.S. Naval Research Laboratory (NRL) Report 5929. Washington, DC.

ISO 10012:2003 *Quality assurance requirements for measuring equipment—Part 1: Metrological confirmation system for measuring equipment*.

2.2 Sources and addresses

ISO

ISO 10012 available from:
Document Center
1504 Industrial Way, Unit 9
Belmont, California 94002, USA
Phone: 650-591-7600
Fax: 650-591-7617
www.document-center.com

NCSL

NCSL International
2995 Wilderness Place, Suite 107
Boulder, Colorado 80301-5404, USA
Phone: 303-440-3339
Fax: 303-440-3384
www.ncsli.org