

# American National Standard

*American National Standard  
for Safe Use of Lasers  
in Health Care*

---



This is a preview. [Click here to purchase the full publication.](#)



**ANSI®**  
**Z136.3 – 2018**  
Revision of  
**ANSI Z136.3-2011**

**American National Standard  
for Safe Use of Lasers  
in Health Care**

**Secretariat**  
**Laser Institute of America**

**Approved May 25, 2018**  
**American National Standards Institute, Inc.**

This is a preview. [Click here to purchase the full publication.](#)

**American  
National  
Standard**

An American National Standard implies a consensus of those substantially concerned with its scope and provisions. An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an American National Standard does not in any respect preclude anyone, whether or not he or she has approved the standard, from manufacturing, marketing, purchasing, or using products, processes or procedures not conforming to the standard. American National Standards are subject to periodic review and users are encouraged to obtain the latest editions.

**CAUTION NOTICE:** This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard no later than five years from the date of publication. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

Published by

**Laser Institute of America  
13501 Ingenuity Drive, Suite 128  
Orlando, FL 32826**

ISBN: 978-1-940168-16-6

Copyright © 2018 by Laser Institute of America.  
All rights reserved.

No part of this publication may be copied or reproduced in any form, including an electronic retrieval system or be made available on the Internet, a public network, by satellite, or otherwise, without the prior written permission of the publisher.

Printed in the United States of America.

This is a preview. [Click here to purchase the full publication.](#)

**Foreword** (This introduction is not a normative part of ANSI Z136.3-2018, *American National Standard for Safe Use of Lasers in Health Care*.)

In 1968, the American National Standards Institute (ANSI) approved the initiation of the Safe Use of Lasers Standards Project under the sponsorship of the Telephone Group.

Prior to 1985, Z136 standards were developed by ANSI Committee Z136 and submitted for approval and issuance as ANSI Z136 standards. Since 1985, Z136 standards have been developed by the ANSI Accredited Standards Committee (ASC) Z136 for Safe Use of Lasers. A copy of the procedures for development of these standards can be obtained from the secretariat, Laser Institute of America, 13501 Ingenuity Drive, Suite 128, Orlando, FL 32826, or viewed at [www.z136.org](http://www.z136.org).

The present scope of ASC Z136 is to protect against hazards associated with the use of lasers and optically radiating diodes.

ASC Z136 is responsible for the development and maintenance of this standard. In addition to the consensus body, ASC Z136 is composed of standards subcommittees (SSC) and technical subcommittees (TSC) involved in Z136 standards development and an editorial working group (EWG). At the time of this printing, the following standards and technical subcommittees were active:

|        |   |
|--------|---|
| SSC-1  | Safe Use of Lasers (parent document)                              |
| SSC-2  | Safe Use of Lasers and LEDs in<br>Telecommunications Applications |
| SSC-3  | Safe Use of Lasers in Health Care                                 |
| SSC-4  | Measurements and Instrumentation                                  |
| SSC-5  | Safe Use of Lasers in Educational Institutions                    |
| SSC-6  | Safe Use of Lasers Outdoors                                       |
| SSC-7  | Eyewear and Protective Barriers                                   |
| SSC-8  | Safe Use of Lasers in Research, Development, and Testing          |
| SSC-9  | Safe Use of Lasers in Manufacturing Environments                  |
| SSC-10 | Safe Use of Lasers in Entertainment, Displays, and<br>Exhibitions |
| TSC-1  | Biological Effects and Medical Surveillance                       |
| TSC-2  | Hazard Evaluation and Classification                              |
| TSC-4  | Control Measures and Training                                     |
| TSC-5  | Non-Beam Hazards  |
| TSC-7  | Analysis and Applications   |
| EWG    | Editorial Working Group   |

The eight standards currently issued are:

ANSI Z136.1-2014, *American National Standard for Safe Use of Lasers*

ANSI Z136.2-2012, *American National Standard for Safe Use of Optical Fiber Communication Systems Utilizing Laser Diode and LED Sources*

ANSI Z136.3-2018, *American National Standard for Safe Use of Lasers in Health Care*

ANSI Z136.4-2010, *American National Standard Recommended Practice for Laser Safety Measurements for Hazard Evaluation*

ANSI Z136.5-2009, *American National Standard for Safe Use of Lasers in Educational Institutions*

ANSI Z136.6-2015, *American National Standard for Safe Use of Lasers Outdoors*

ANSI Z136.8-2012, *American National Standard for Safe Use of Lasers in Research, Development, or Testing*

ANSI Z136.9-2013, *American National Standard for Safe Use of Lasers in Manufacturing Environments*

This American National Standard is intended to ensure the safe use of lasers in health care, and has been published as part of the ANSI-approved Z136 series of laser safety standards. The base document of the series is the *American National Standard for Safe Use of Lasers*, ANSI Z136.1. The procedures and methodologies described in this standard are based on requirements previously established in ANSI Z136.1 and are intended to give more specific processes for accomplishing laser safety in health care. The purpose of this standard is to provide user guidance for establishing, implementing, and monitoring a laser safety program. The standard provides relevant information on protecting staff, patients, and others who may be at risk for exposure to the hazards associated with the use of medical lasers, regardless of application, specialty use, or setting, including hospital facilities, individual medical, dental and veterinarian offices, and non-medical locations such as salons and spas.

In general, this standard may be used independently of ANSI Z136.1. Instances where additional guidance contained in ANSI Z136.1 is required are noted in the text of this document. The body of this standard is normative and applies to all health care laser use. The appendices are informative providing examples and discipline specific supplementary information.

It is expected that this standard will be periodically revised as new information and experience in the use of lasers are gained. Future revisions may have modified content and the use of the most current document is highly recommended.

While there is considerable compatibility among existing laser safety standards, some requirements differ among state, federal, and international standards and regulations. These differences may have an effect on the particulars of the applicable control measures.

Occasionally questions may arise regarding the meaning or intent of portions of this standard as it relates to specific applications. When the need for an interpretation is brought to the attention of the secretariat, the secretariat will initiate action to prepare an appropriate response. Since ANSI-approved Z136 standards represent a consensus of concerned interests, it is important to ensure that any interpretation has also received the concurrence of a balance of interests. For this reason, the secretariat is not able to provide an instant response to interpretation requests except in those cases where the matter has previously received formal consideration. Requests for interpretations and suggestions for improvements of the standard are welcome. They should be sent to ASC Z136 Secretariat, Laser Institute of America, 13501 Ingenuity Drive, Suite 128, Orlando, FL 32826.

This standard was developed by Standards Subcommittee 3 (SSC-3) “Safe Use of Lasers in Health Care” and approved by ANSI Accredited Standards Committee (ASC) Z136 for Safe Use of Lasers. Committee approval of the standard does not necessarily imply that all members voted for its approval.

Robert Thomas, Committee Chair  
Sheldon Zimmerman, Committee Vice-Chair  
Edward Early, Committee Secretary

**Notice**

(This notice is not a normative part of ANSI Z136.3-2018, *American National Standard for Safe Use of Lasers in Health Care*.)

Z136 standards and recommended practices are developed through a consensus standards development process approved by the American National Standards Institute. The process brings together volunteers representing varied viewpoints and interests to achieve consensus on laser safety related issues. As secretariat to ASC Z136, the Laser Institute of America (LIA) administers the process and provides financial and clerical support to the committee.

The LIA and its directors, officers, employees, members, affiliates, and sponsors, expressly disclaim liability for any personal injury, property, or other damages of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, or reliance on this document or these standards. The LIA's service as secretariat does not constitute, and LIA does not make any endorsement, warranty, or referral of any particular standards, practices, goods, or services that may be referenced in this document. The LIA also makes no guarantee or warranty as to the accuracy or completeness of any information published herein. The LIA has no power, nor does it undertake to police or enforce compliance with the contents of this document.

In issuing and making this document available, the LIA is not undertaking to render professional or other services for or on behalf of any person or entity. Nor is the LIA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.



**Participants** At the time it approved this standard, ASC Z136 had the following members:

| <i>Organization Represented</i>                                 | <i>Name of Representative</i> |
|---|-------------------------------|
| Academy of Laser Dentistry                                      | Scott Benjamin                |
| Altos Photonics, Inc.   | Lucian Hand                   |
| American Dental Association                                     | Harvey Wigdor                 |
| American Glaucoma Society                                       | Michael Berlin                |
| American Industrial Hygiene Association                         | Stephen Hemperly              |
| American Society for Laser Medicine & Surgery                   | David Sliney                  |
| American Society of Safety Engineers                            | David McDaniel (Alt)          |
|   | Walter Nickens                |
|   | Steven Ramiza (Alt)           |
| American Veterinary Medical Association                         | Kenneth Sullins               |
| American Welding Society  | Mark McLear                   |
| Association of periOperative Registered Nurses (AORN)           | Patti Owens                   |
| Association of Surgical Technologists                           | Kevin Frey                    |
| Buffalo Filter  | Joseph Lynch                  |
| Camden County College   | Fred Seeber                   |
| Daniel Laser Safety   | Paul Daniel, Jr.              |
| Emory Healthcare  | Evangeline Dennis             |
| Engility Corporation  | Edward Early                  |
| Federal Aviation Administration (FAA)                           | Lee Abbott                    |
| Federal Bureau of Investigation/Criminal Investigative Division | Louis Sager                   |
| Fort Hays State University                                      | C.D. Clark III                |
| Health Physics Society  | Ken Barat                     |
|   | Thomas Johnson (Alt)          |
| High-Rez Diagnostics  | Richard Hughes                |
| Institute of Electrical and Electronics Engineers (SCC-39)      | Ron Petersen                  |
| International Council on Surgical Plume                         | Penny J. Smalley              |
| International Laser Display Association (ILDA)                  | Patrick Murphy                |
| L*A*I International   | Thomas Lieb                   |
| Laser Institute of America                                      | Gus Anibarro                  |
| Laser Product Safety, LLC                                       | Peter Boden                   |
| Lawrence Berkeley National Laboratory                           | Greta Toncheva                |
|   | Robert Fairchild (Alt)        |
| Lawrence Livermore National Laboratory                          | Jamie King                    |
| Los Alamos National Laboratory                                  | Joanna Casson                 |
| National Aeronautics and Space Administration                   | Angel Plaza                   |
| National Institute of Standards and Technology (NIST)           | Kurt Geber (Alt)              |
|   | Joshua Hadler                 |

| <i>Organization Represented</i>  | <i>Name of Representative</i> |
|--|-------------------------------|
| NoIR LaserShields  | David Bothner                 |
| North American Association for<br>Photobiomodulation Therapy (NAALT)                           | Raymond Lanzafame             |
| Photon Manufacturing   | Roberta McHatton              |
| Power Technology, Inc.   | William Burgess               |
| Rockwell Laser Industries  | William Ertle                 |
| Salem Veterans Affairs Medical Center  | Damien Luviano                |
| SLAC National Accelerator Laboratory   | Michael Woods                 |
| Underwriters Laboratories, Inc.  | Winn Henderson                |
| University of Chicago,<br>School of Dentistry  | Michael Colvard               |
| University of Texas,<br>Southwestern Medical Center  | John Hoopman                  |
| U.S. Department of Health and Human<br>Services, Center for Devices and<br>Radiological Health | Richard Felten                |
| U.S. Department of Labor, Occupational<br>Safety & Health Administration                       | Jeffrey Lodwick               |
| U.S. Department of the Air Force,<br>Air Force Research Laboratory                             | Benjamin Rockwell             |
| U.S. Department of the Air Force,<br>Surgeon General's Office                                  | Robert Thomas (Alt)           |
| U.S. Department of the Army,<br>Army Public Health Center (APHC)                               | Edward Kelly                  |
| U.S. Department of the Army,<br>Army Institute of Surgical Research                            | Bret Rogers (Alt)             |
| U.S. Department of the Navy,<br>Naval Air Systems Command                                      | Jeffrey Pfoutz                |
| U.S. Department of the Navy,<br>Naval Sea Systems Command                                      | Penelope Galoff (Alt)         |
|  | Brian Lund                    |
|  | James Sheehy                  |
|  | Sheldon Zimmerman             |
| <i>Individual Members</i>  | Robert Aldrich                |
|  | Richard Crowson               |
|  | Jerome Dennis                 |
|  | David Dewey                   |
|  | Ben Edwards                   |
|  | Mark Festenstein              |
|  | Joseph Greco                  |
|  | Donald Haes                   |
|  | Robert Handren, Jr.           |
|  | Jennifer Hunter               |
|  | Ami Kestenbaum                |
|  | David J. Lund                 |
|  | Martin Mainster               |
|  | Wesley Marshall               |