
ANSI Standards Update

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Laser Applications and Safety

Outline

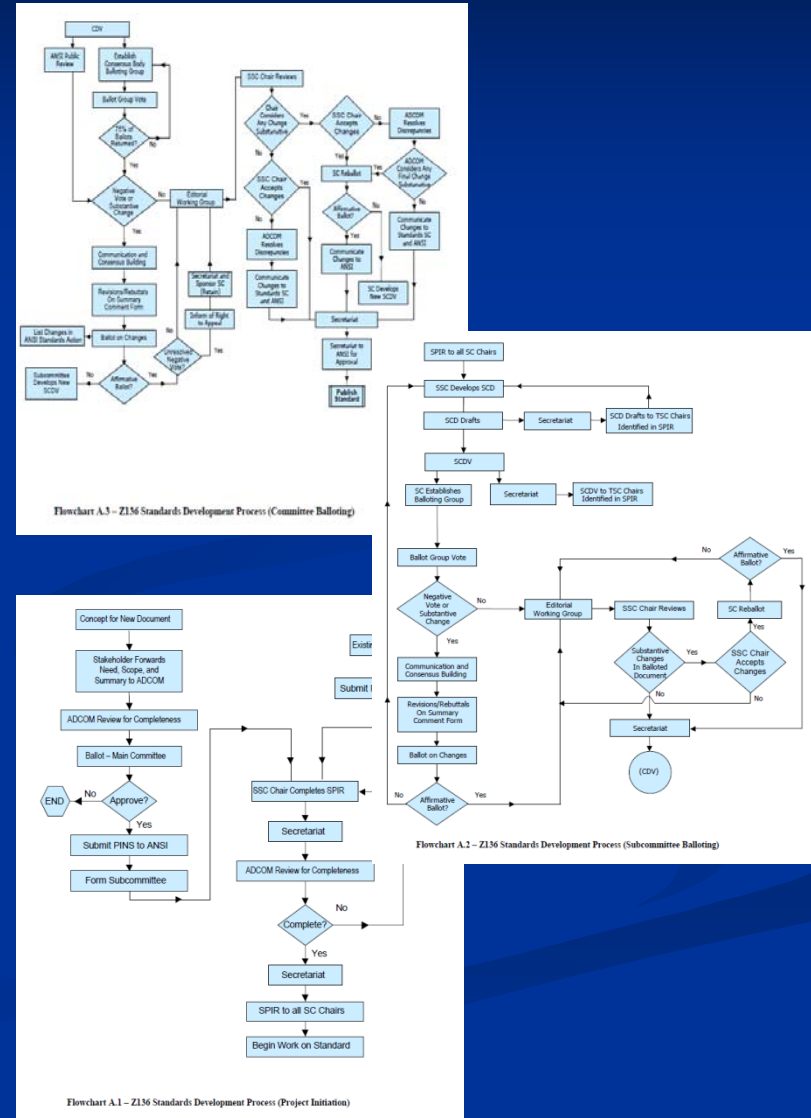
- Provide a quick review the ANSI ASC Z136 standards development process based on the March 2010 revision of the Procedures for the Development of Z136 American National Standards
- Provide an update on the current status of the Z136 series of laser safety standards
- Highlight the Z136.org website

ASC Z136 Standards Development Process

Note: The document “ASC Z136 *Procedures for the Development of Z136 American National Standards*” is available @ www.z136.org

ASC Z136 Process

- Project Initiation
- Subcommittee Level Development and Balloting
- ASC Balloting / Public Comment
- Editorial (2x)
- ANSI Approval ☺



ASC Z136 Process (1)

- Project Initiation – for new standard or revision of a standard. “New” requires balloting.
- Subcommittee Level - the SSC develops and maintains its specific standard with assistance from the applicable TSCs. Mature documents are balloted at the SC level for consensus and then the document goes to the EWG for review. Concurrent with EWG review, the Secretariat establishes the consensus body balloting group.

ASC Z136 Process (2)

- Consensus Body Balloting
- Concurrent with balloting at the consensus body level, the document is made available for public review in order to provide the opportunity for public comment.
- Attempts will be made to reconcile all negative ballots; all comments associated with affirmative votes will be considered.

ASC Z136 Process (3)

- All non-editorial comments and changes incorporated to reconcile negative votes and each non-reconciled negative ballot will be circulated with a rebuttal to the entire balloting group to allow each member to confirm or change their vote or comment. **NOTE: 2nd Public Review, etc.**
- The completed approved document is forwarded to the EWG for a final review for style and consistency. Any change proposed will be reviewed by the SSC Chair and ADCOM prior to incorporation. Any proposed change deemed substantive will be recirculated to the balloting group via default ballot.

ASC Z136 Process (4)

- Final ASC approved document is submitted to the American National Standards Institute (ANSI) for approval.
- ANSI approval signifies that the document was developed in accordance with the Institute's essential requirements for openness, balance, consensus and due process.
- For more information, see www.ansi.org
 - Click – about ANSI
 - Click – Introduction to ANSI

American National Standard Z136 Series

Z136.1 for Safe Use of Lasers



Z136.3

Health Care
Facilities



Z136.4

Measurements



Z136.5

Educational
Institutions



Z136.6

Outdoors

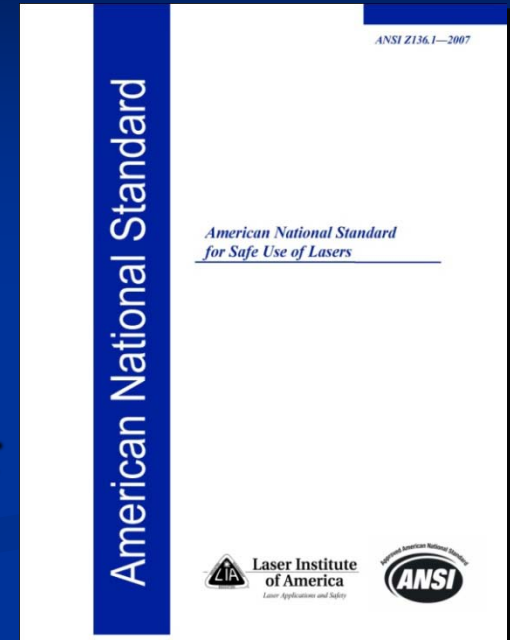


Z136.7

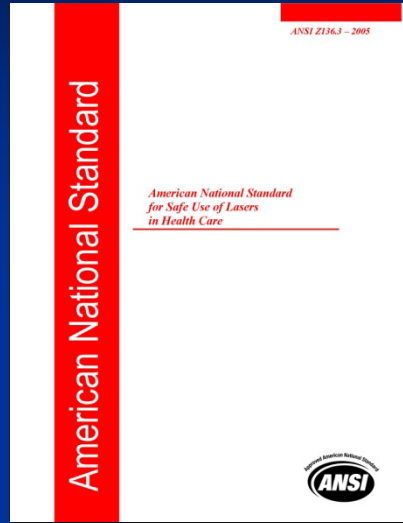
Laser
Protective
Equipment

ANSI Z136.1 (2007)

- Current version published in 2007
- Revision now at SCDV2 comment resolution
- Following comment resolution, advances to Editorial Working Group for review
- Concurrent with EWG review, the Consensus Body Balloting Group will be established
- Following EWG review, will go out to ballot as a Committee Draft for Vote (CDV)
(Estimated publication: 2013)

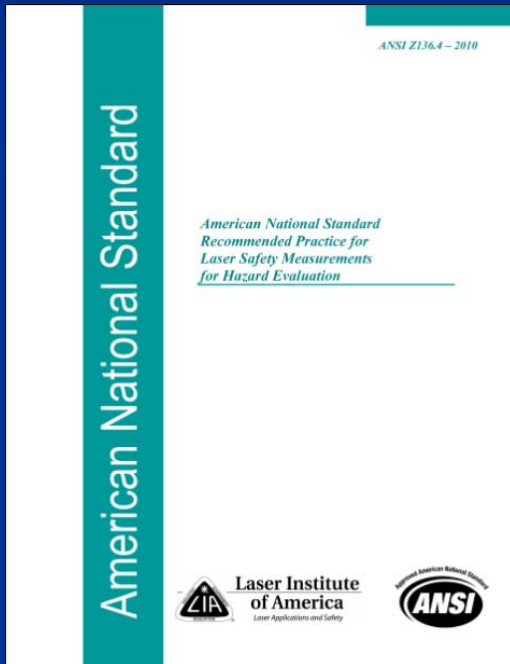


ANSI Z136.3 (2005)



- Current version published in 2005
- Revision CDV approved June, 2011
- Following EWG review, the document will be submitted to ANSI for approval
- Estimated publication: Winter 2011/2012

ANSI Z136.4 (2010)



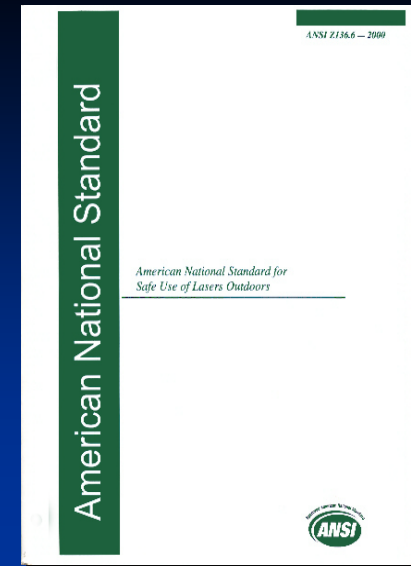
- The revision of the Z136.4 was approved by ANSI and published in April, 2010
- The only Recommended Practice in the Z136 series, this document provides guidance for measurement procedures used for classification and hazard evaluation of lasers. Evaluation consists of comparing measured exposure levels with the appropriate MPE levels found in the dot 1, based on the ability of the laser beam or its reflection or scattering to cause biological damage to the eye or skin.

ANSI Z136.5 (2009)



- The Z136.5 revision was approved by ANSI and published in February, 2009
- This standard addresses laser safety concerns and situations characteristic of the educational environment. This standard is intended for faculty and students using lasers at primary, secondary and college levels of education excluding graduate level research laboratories.

ANSI Z136.6 (2005)



- The current version was published in 2005
- ...for the safe use of lasers in an outdoor environment, including laser products granted a variance or exemption from the provisions of the FLPPS, e.g., laser light shows, lasers used for outdoor scientific research and military lasers. It also provides guidance for controlling disability glare from exposure to non-injurious levels of visible light, and guidance for manufacturers of these open-beam laser systems (excludes free-space optical telecommunications).
- The revision SCDV passed unanimously; numerous affirmative comments to be addressed and then sent for editorial review.

ANSI Z136.7 (2008)

- The current version was published in 2008
- Provides guidance for the testing and labeling of laser protective equipment such as laser eye protection, filters, windows and barriers for use with lasers and laser systems. Emphasis is given to ensure adequate testing of laser protective eyewear, e.g., absorptive, interference/reflective and hybrid filter technologies.
- Subcommittee to be re-established to begin revision



Standards in Progress

- Safe Use of Optical Fiber Communication Systems Utilizing Laser Diode and LED Source
 - Although the laser safety community will recognize this proposed standard as the replacement of the Z136.2, ANSI considers this a “new” document due to the withdrawal of the 1997 version (overage requirement).
 - This document is at the CDV comment resolution stage. It is anticipated that the recirculation ballot will take place during the August/September 2011 timeframe.

Standards in Progress

- Safe Use of Lasers in Research, Development or Training
 - Designated Z136.8, the objective of this standard is to provide reasonable and adequate guidance for the safe use of lasers and laser systems in research, development and testing environments, where safety controls common for commercial lasers may be either missing (nonexistent) or disabled.
 - In response to comment resolution, the CDV recirculation ballot for this document closed 25 July 2011, with the second public review closing 5 September 2011. It is anticipated this document will be published following the Z136.3 revision.



Z136.8 Laser Safety in the Research, Development or Testing Environment

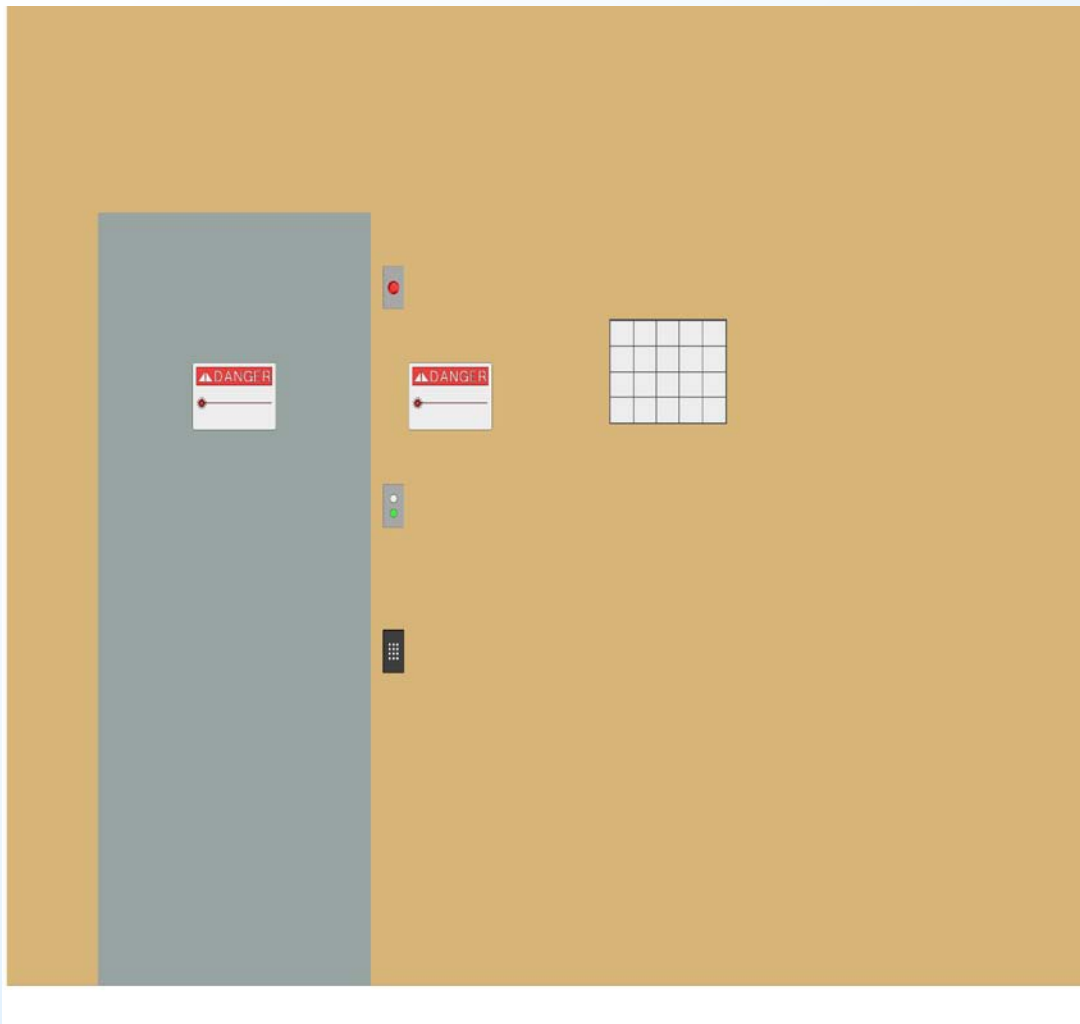
- Work on standard start Feb 2007- final vote ended 7/25/11
- Chair Ken Barat
- Present status
- Draft has passed all votes, waiting on public comment period to end Sept 5, then on road to publication
- Will look very different from other standards in Z136 series, until new Z136.1 comes out which will close the gap
- Should have major impact on research settings



Short list of new items

- Recognizes alignment eyewear
- Introduces new signs and format
 - Warning
- Sets new hazard evaluation parameters
- Deletes many CDRH controls from E& A control sections
- New improved diagrams
- Contains sample audit and program forms
- Mentions export controls
- Fiber optic controls
- Enhances LSO judgment
- Recognizes not certified laser use
- Improved robotics section
- Set use locations, in particular where access is not possible or allowed
- And more

New Diagrams



- **Elements of Figure 2A
LCA entrance**
- Printed laser warning sign on door
- Illuminated laser warning sign on side of door, near eye height, not over 6 feet (2 meters) from the floor
- Eyewear holder (can be located either inside or outside of LCA or both locations)
- Key Pad for interlock by-pass or authorized user entry
- Door bell, intercom or permission to enter device
- Emergency Entry device (unlocks door, may drop power or laser shutters), place out of random reach (or guarded to prevent random activation).

New sign options



DANGER



Laser Radiation
Avoid Eye or Skin Exposure to Direct or Scattered
Radiation

Access for authorized individuals only

Wavelength

Optical Density

LSO or contact information

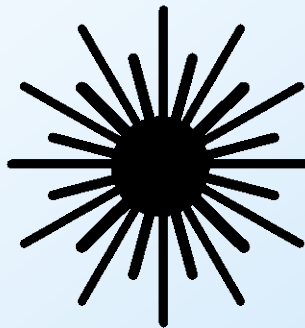
Class 4



First time use of Warning sign and label



Unattended Laser in Operation



**Access by authorized individuals only.
For emergency access and shut-down
see separate instructions**

In an emergency contact:

Name:

Phone

Standards in Progress

- Safe Use of Lasers in Manufacturing Environments
 - Designated Z136.9, the scope of this standard is to provide recommendations for the safe use of lasers and laser systems that operate at wavelengths between 0.18 μm (180 nm) and 1 mm (1 000 000 nm) in the manufacturing environment. These laser applications include, but are not limited to: laser alignment, leveling, inventory, metrology, fabrication, material processing, and machine vision.
 - This document has been approved at the subcommittee level (SCDV) and undergone the initial editorial review. Comments from the EWG are currently being addressed.

Standards in Progress

- Safe Use of Lasers in Entertainment, Displays and Exhibitions
 - Designated Z136.10, the purpose of this standard is to provide reasonable guidance on the safe use of lasers and laser systems operated for use in entertainment and displays, or for exhibition at trade shows or other types of exhibitions.
 - This document is currently in the development stage.

Z136.org Website

Z136.ORG - Microsoft Internet Explorer

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Z136.ORG

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Chair Administration

This block appears for administrators and committee chairs, vice-chairs, and secretaries only.

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Standards Subcommittees

- ADCOM**
- ASC Z136 - General**
- SSC-1 Safe Use of Lasers**

Welcome to Z136.ORG

Z136.ORG is the administrative website of the American National Standards Institute Accredited Standards Committee (ASC Z136) and related subcommittees. The [ANSI Z136 Standards](#) are the United States National Consensus Standards for laser safety. This site provides a means for organizing events, documents, and other information related to the establishment of the ANSI Z136 series standards. If you are visiting this site in hope of participating in the development of the Z136 Standards, please apply for subcommittee membership by clicking the link at the top of the page.

Recirculation ballot results for revision to ASC Z136 Procedures


The recirculation ballot for approval of revisions to ASC Z136 Procedures for the Development of Z136 American National Standards closed Friday, June 24, 2005 at close-of-business, 5:00pm EDT. Of the possible 55 eligible votes of the Committee, 43 were returned prior to close-of-business representing 78% of the Committee. The action for "adoption of ASC procedures, categories of interest, or revisions thereof" requires approval by at least two thirds of those voting, excluding abstentions. Of the 43 votes received, 41 were approve or approve with comments and two were abstentions. Therefore, the ballot was unanimously approved by those who responded. A copy of the summary of consensus body balloting group by interest category is posted on the site for your review.

**Z136
ASC**

Posted by [rthomas](#) on Tuesday, June 28, 2005 @ 18:09:33 MDT (74 reads)
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Notification of Meeting of ANSI Z136 Ad-Hoc Committee on Additional Standards

This is a formal call for the subject meeting on Monday and Tuesday 22-23 August, with an extension for an ad hoc drafting meeting on Wednesday 24 August for those interested. Fred Seeber, as noted below will likely call a meeting of his SSC on Wednesday as well. I spoke to Bill Ertle and he will notify his TSC of a possible brief meeting on Wednesday. It is emphasized that only a proposal to the ANSI Z136 is to be formally produced. However, some draft outlines with some suggestions for actual text changes could hopefully be produced just to provide members with the options. Hotels are not expensive here at Edgewood, MD, but rental cars will be necessary--as was generally the case in past Cincinnati meetings. BWI airport is the closest airport.



Upcoming Events

- o [ANSI Z136 Ad-Hoc Committee on Additional Standards](#)

August 2005

	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31					

Past Articles

Monday, February 14

- [Z136.4 Standard Now Available!](#) (2)

Sunday, December 26

- [Ancillary Meetings Scheduled During ILSC 2005](#) (0)

Internet

Z136.org Website

- Many sections are open to guests
- Apply to join a committee (SSC or TSC)
- Send comments to a Committee Chair
- Check status of standards
- Review Events Calendar

Committee Participation

- Two ways to participate in the development and revision processes of the Z136 series of laser safety standards:
 - Join one (or more) of the standards or technical subcommittees by logging on to www.z136.org and applying for membership online.
 - For membership on the ASC Z136 consensus body, send your application to the Secretariat (LIA), outlining your interests and qualifications.
 - For more information contact Barbara Sams at bsams@lia.org or call 407-380-1553.

Proposed Changes in SCDV of Z136.1

Changes Throughout

- Units changed to nanometers for all wavelengths shorter than 2,999 nm (180 nm to 2,999 nm) and microns for longer wavelengths (3 μm to 1,000 μm).
- Tables within the text of the document have been renumbered with a dash (e.g. Table 1-1 is the first table in Section 1). Tables after the normative text portion are now numbered Tables 1- 11

Proposed Changes in SCDV of Z136.1

Section 1: General

- Statement that vertical standards take precedence over this document (within the scope of that standard).

Section 2: Definitions

- Added some new definitions
- Deleted some definitions

Proposed Changes in SCDV of Z136.1

Section 3: Hazard Evaluation and Classification

- Included optics transmission in hazard classification of lasers (explicitly done by including them in section 3.2.3.4.2(2) and Table 9)

Proposed Changes in SCDV of Z136.1

Section 4: Control Measures

- Section completely re-written and re-arranged
- Use of laser eye protection for Class 3B is proposed as required (shall) instead of advisory (should)- see Section 4.4.4.2 and Table 10c
- Changes in signage
- Time base for LEP selection (recommendation) was changed to be 100 seconds for UV intrabeam exposures (see Table 2)

Proposed Changes in SCDV of Z136.1

Section 5: Education and Training

- No significant changes

Section 6: Medical Examinations

- Significant portions of text removed and all text clarified (both text and appendix).

Section 7: Non-Beam Hazards

- Section completely rewritten

Proposed Changes in SCDV of Z136.1

Section 8: Criteria for Exposures of Eye and Skin

- Changes to MPE

Section 9: Measurements

- No significant changes

Tables:

- Renumbered and updated

Proposed Changes in SCDV of Z136.1

Appendices:

- Appendix B updated to reflect changes in standard
- Control measures removed from Appendix C
- Section on “Alternate Labeling” added to Appendix D
- Appendix E on Medical Examination restructured
- Appendix F reduced to informative material on LGACs; other general NBH content relocated to Section 7
- Appendix G updated

Thank you.



Laser Applications and Safety