



THE LASER INSTITUTE

LIA

Z136

STANDARDS COMMITTEE

Editorial Checklist

for the EWG

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FORMAT

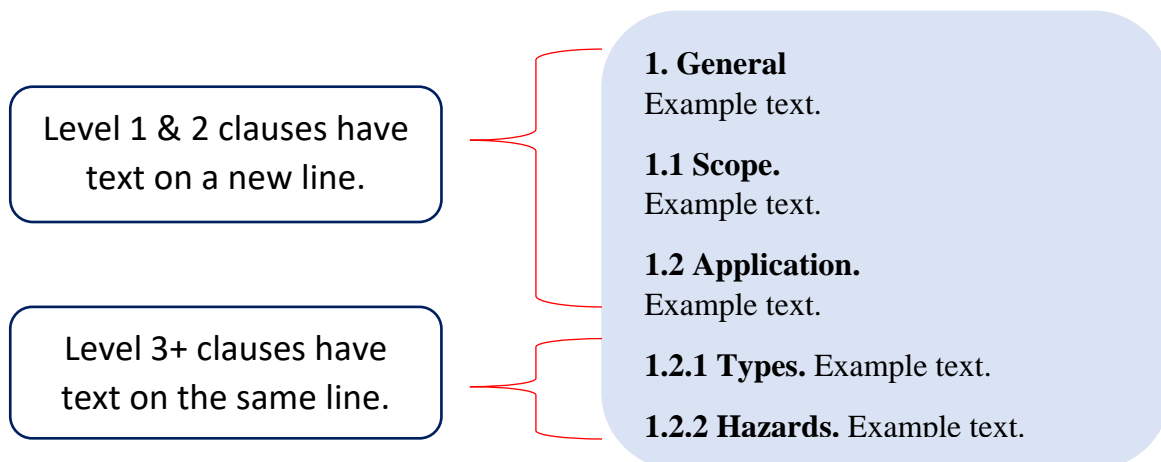
General formatting

- ❑ **Line Numbers** on CDV1 are continuous
- ❑ **Page numbers** in the footer of all pages
- ❑ **Track Changes** is used for any changes to the text
- ❑ Draft does not include cover, front matter, or full table of contents or index.

Clauses & sub-clauses

For readability, clauses and sub-clauses must be **bold**. Do *not* use MS Word heading styles, those will be added later.

- ❑ Clause numbers and sub-clause numbers are consecutive (no missing numbers)
- ❑ All sub-clauses are followed by at least one other sub-clauses of the same level (for example, 1.1 should only exist if there is a 1.2)
- ❑ Level 1 and level 2 clauses are followed by text that begins on a new line.
- ❑ Level 3+ clauses are followed by text beginning on the same line.



Acronyms & Definitions

Acronyms and Definitions *always* appear in section 2.

- ☐ Terms are lower-case and end in a period unless followed by an abbreviation.
- ☐ Not capitalized unless a formal term or title
- ☐ Terms are bold
- ☐ Definitions are sentence case, not bold.
- ☐ Each term has a hanging indent (0.25")
- ☐ Abbreviations are in parentheses following the term. A period follows the parentheses.
- ☐ Terms are in alphabetical order

2.1 Abbreviations and Acronyms.

AEL – accessible emission limit

2.2 Definitions.

accessible emission limit (AEL). The maximum accessible emission level permitted within a particular laser hazard class.

- ☐ Acronyms and definitions must have the same wording as Z136.1 (latest revision).
- ☐ Only acronyms and definitions used in the standard shall be listed.
- ☐ For synonyms not in the definitions, the word “*Syn*” is used, followed by a colon; both are italicized. The word(s) following the colon are bold, not italic, followed by a period.
- ☐ For units (e.g., Watt (W)), the word “*Unit*” is used, followed by a colon; both are italicized. Following the colon is the unit abbreviation in parentheses, not italic, then followed by a period. “Unit” is listed before synonym.
- ☐ Symbols are placed after cross-references. The word “*Symbol*” is italicized, followed by a colon.
- ☐ When a synonym appears in the definitions, a “See” reference can be used to redirect the reader to the matching definition rather than duplicating the definition.
- ☐ When a closely related term appears in the definitions, a “See also” reference may be used to direct readers to the definition.

Acronyms & Definitions continued

average power. The total energy in an exposure or emission divided by the duration of that exposure or emission. *Symbol:* Φ

controlled area. An area where the occupancy and activity of those within is subject to control and supervision. *See also:* **laser controlled area.**

reflectance. The ratio of total reflected radiant power to total incident power.
Unit: (dimensionless). *Syn:* **reflectivity.**

reflectivity. *See:* **reflectance.**

Examples

- ☐ Example labels are bold and italic
- ☐ Example text is bold
- ☐ Begin on the same line as the label
- ☐ Text following the example is bold

Example 1. The optical density is...

Notes

- ☐ Never bold or italic
- ☐ Always informative
- ☐ Never mandatory (no “shalls”)
- ☐ Multiple notes in sequence are numbered
- ☐ Each note immediately follows the table, figure, or paragraph to which it belongs on a new line.
- ☐ Aligned left justified, never centered.

NOTE—This is a note.

NOTE 1—This is the first note.

NOTE 2—This is the second

Solutions & Steps

- Solution, step, and number are bold
- Text following solution or step on the same line and not bolded

Solution. The MPE for a single 100 fs (100×10^{-15} s) pulse at

Step 1. Determine and evaluate the NHZ of...

Step 2. Determine the extent of....

Rules

- Rule number and label are bold
- Text following is not bold.

Rule 3. Pulse Correction Factor, C_P . C_P does not apply for corneal exposure.

Lists

- Review for correct information
- First level is a lowercase letter followed by parenthesis
- Second level is an Arabic numeral followed by a period.
- Third level is a lowercase Roman numeral, followed by a period.

Sample List:

- a) First item in list.
 - 1. First sub-item.
 - i. Last item.

Footnotes

- Footnotes in Text body
 - Informative
 - Never include mandatory requirements
 - Footnotes are not used for citations or references

Here is a sentence with a footnote¹.

- Footnotes in Tables & Figures
 - Normative when in a normative table
 - Placed immediately below the table or figure
 - Uses letters instead of numbers

Column Heading ^a	Column Heading
Column Text	Column Text ^b
^a Example footnote. ^b Example footnote.	

REFERENCES

In-text citations

- Refer to the current edition of the Publication Manual of the American Psychological Association (APA)
- All in-text citations should have a corresponding reference
- All references should have a corresponding in-text citation
- All references should be reviewed to ensure the most current information is being provided
- **Normative Reference**
 - Any document cited in the standard that is essential to the application of the standard is listed in “References”
- **Informative Reference**
 - All non-normative references are cited in the “Bibliography”

¹ This is the text for the footnote. Footnotes can be generated using the “References” tab in MS Word.

Referring to other standards

- ❑ Referring to standard **without** the year (undated standard)
 - Used when referring to broad subject matter or scope of a standard.
- ❑ Referring to a standard **with** the year
 - Dated references should be used when specificity is required, such as reference to a specific clause, sub-clause, figure, or table of another standard.

Undated reference to a standard

“...see Z136.3 (latest revision) for MPEs for the eye and skin.”

Dated reference to a standard

“...see Example B7.2 in Z136.1-2014”

“...requires the use of a limited aperture diameter of 7 and 3.5 for the eye and skin, respectively (Z136.1-2014).”

Cross References

- ❑ Includes section number
- ❑ The words “Section”, Figure, Table begins with an uppercase letter, followed by the number and period.
- ❑ May be used in parentheses if not part of the sentence.
- ❑ Used infrequently

“For more information, see Section 2.”

“For examples, see Figure D4.”

“Classification of highly diverging beam lasers (for example, many laser diode emitters) requires determination of effective power or energy at the specified distance (see Section 9).”

CONVENTIONS

Numbers

- ❑ Numbers spelled out if:
 - 1 – 9
 - Common fractions
 - Begins a heading or sentence
- ❑ Numerals used if:
 - Numbers 0, 10 and above
 - When number immediately precedes a unit of measurement
- ❑ Use commas between groups of three digits in
- ❑ most figures of 1,000 or more. For additional clarification, see the APA manual

“There are two factors...”

“When there are two-thirds...”

“Fifteen lists...”

“There are at least 11...”

“With 1.54 cm of space...”

“The number of digits is 1,025,042 ...”

Should, Shall, May, Can

- ❑ Should
 - Indicates a recommendation, but is not required
- ❑ Shall
 - Indicates mandatory action to comply with the standard
 - Is not to be used in informative Appendices, Glossary, or Notes; only “should” is used
- ❑ May
 - Indicates a course of action permissible within the limits of a standard
- ❑ Can
 - Used for statements of capability and possibility, whether causal, material, or physical
 - Comparable to “is able to”



Changing ‘should’ to ‘shall’, or ‘shall’ to ‘should’ or adding a ‘shall’ in a standard is considered a substantive change.

Since, Because & Due To

- ❑ “Since” refers to time and is used to mean “after” chronologically. In other words, something already occurred.
- ❑ In most instances, “because” or “because of” should be used to indicate a rationale for something. “Because of” modifies a verb.
- ❑ “Due to” modifies a noun and is usually preceded by the verb “to be” (is, are, were...). If you are unsure if it has been used correctly, you can substitute “due to” with “caused by” as a test. If the substitution does not work, then “because of” may be more appropriate.

“**Since** last week, we’ve performed the same service on that laser 500 times.”

“**Because** the system is still not working, we need to continue to perform the same service.”

“It was noisy **because of** the heavy construction.”

“The noise **is due to** the heavy construction.”

In Order To

- ❑ Reduce using only the word “to”; the full phrase is a waste of words and space in a document.

“Activate the laser **in order to**...”

is revised to “Activate the laser **to**...”

e.g., i.e., and etc.

- ☐ The acronyms e.g. and i.e. shall not be used
- ☐ Any instances of e.g. must be spelled out as “For example,”
- ☐ Any instances of i.e. must be spelled out as “that is”
- ☐ The abbreviation “etc.” shall not be used.
- ☐ For additional clarification, see the APA Manual

Incorrect: This situation may be appropriate (e.g., medical or research and development environments).

Correct: This situation may be appropriate, for example, in medical or research and development environments

Incorrect: (i.e., the total radiant exposure of all pulses within any time T shall not exceed the MPE for the time T.)

Correct: That is, the total radiant exposure of all pulses within any time T shall not exceed the MPE for the time T.

That and Which

- ☐ The two words are **not** interchangeable
- ☐ “That”
 - Creates an essential/restrictive clause that is ‘essential’ to the meaning of the sentence
 - Is not preceded by a comma
- ☐ “Which”
 - Creates a non-restrictive clause that can be left off a sentence without changing its meaning
 - A comma always precedes “which”

Tip: *if the words following “which” can be removed without changing the meaning of the sentence, it’s non-restrictive. If the words are essential, use “that”*

Restrictive clause: “Dogs **that bark** are noisy.”

Nonrestrictive clause: “Dogs, **which are furry**, can bark.”

“Defining the beam parameters provides a better understanding of the steps **that are necessary to complete the process.**”

“Defining the beam paramters provides a better understanding of these steps, **which are explained in A1.3 through A1.7**”

Classes

- In most circumstances, “Class” is singular when describing multiple lasers. “Class 1” is an adjective phrase describing the noun “laser”. Adjectives cannot be plural, but nouns can be.
- The plural, “classes”, is used to describe multiple lasers when it follows the word “laser”. “Laser classes” is a noun phrase and may be plural.

“This standard applies to Class 3b and 4 laser systems...”

“Laser classes 2, 2M, and 4 were...”

Equations

- Check equation for accuracy
- Check solution for accuracy
- Note if any equation is outdated
- Only variables are italicized
- Subscripts are not italicized unless it is a variable.
- Units and words are not italicized
- The symbol “•” is used for the multiplication sign.
- Each equation is consecutively numbered. The number is placed on the right side of the page in parentheses.

$$\text{Pupil length} = \sqrt{(8/2)^2 + 11.3^2} \cdot \cos(35.5) = 9.76 \quad (17)$$

Figures

- Figure labels and captions are bold and centered **BELOW** figure
- Figures referred to in the text (example, “See Figure 1”).
- Figure label numbers are in correct sequence
- Figures section follow Tables section



**Figure 1c. Sample ANSI Z535.2 Compliant Class 4
Laser Controlled Area Danger Sign Format.**

Tables

- ☐ Table label and caption bold and center **ABOVE** table
- ☐ Column headers are bold
- ☐ Notes are part of the table
- ☐ Footnotes are numerical and follow the alphabetical footnotes
- ☐ Tables section must precede Figures section
- ☐ Tables referred to in the normative text

Table 6a. Wavelength Dependent Parameters and Correction Factors

Parameter/Correction Factor		Wavelength λ (nm)	Graph	Notes
C_A	1.0	400 to	Fig. 8a	NOTE 2
	$10^{0.002(\lambda-700)}$	700 to 1050		
	5.0	1050		
C_B	1.0	400 to	Fig. 8b	NOTE 2
	$10^{0.02(\lambda-450)}$	450 to		
C_C	1.0	1050	Fig. 8c	NOTE 2
	$10^{0.018(\lambda-1150)}$	1150		
	$8 + 10^{0.04(\lambda-1200)}$	1200		
T_1	$10 \times$	450 to	Fig. 9a	NOTES 1, 2
$K\lambda$	$10^{0.01(1400-\lambda)}$	1200	Fig. 15	NOTE 2
NOTE 1— $T_1 = 10$ s for $\lambda = 450$ nm and $T_1 = 100$ s for $\lambda = 500$ nm.				
NOTE 2—Wavelengths must be expressed in nanometers for calculations.				

General Abbreviations

ACLS	advanced cardiac life support	MPE	maximum permissible exposure
AEL	accessible emission limit	MSDS	see "SDS"
BLS	basic life support	NBH	non-beam hazard
CFR	Code of Federal Regulations	Nd:YAG	neodymium doped yttrium-aluminum garnet
CPR	cardio-pulmonary resuscitation	NEC	National Electric Code
CW	continuous wave	NHZ	nominal hazard zone
DLSO	deputy laser safety officer	NLR	non-laser radiation
FLPPS	Federal Laser Product Performance Standard	NOHD	nominal ocular hazard distance
Hz	hertz	OD	optical density
IR	infrared	OFCS	optical fiber communication system
J	joule	PPE	personal protective equipment
JO	joint order	PRF	pulse repetition frequency
LASER	light amplification by stimulated emission of radiation	SDS	safety data sheet
LCA	laser-controlled area	SI	International System of Units (metric system)
LGAC	laser generated airborne contamination	SOP	standard operating procedure
LIDT	laser-induced damage threshold	TL	threshold limit
LEP*	laser eye protection	UV	ultraviolet
LPE**	laser protective eyewear	VLT	visible luminous transmission
LSO	laser safety officer	W	watt
LTIR	laser-targeted interaction radiation		

* LEP is a generic, generalized term used to refer to anything used to protect the eyes from lasers

** LPE should be used when referring specifically to protective eyewear such as goggles and spectacles.

Government and Professional Organization Abbreviations

ACS	American College of Surgeons	FDA	Food and Drug Administration
ANSI	American National Standards Institute	IEC	International Electrotechnical Commission
AORN	Association of periOperative Registered Nurses	IEEE	Institute of Electrical and Electronics Engineers
ASLMS	American Society for Laser Medicine & Surgery	ILSC	International Laser Safety Conference
AST	Association of Surgical Technologists	LIA	Laser Institute of America
BLS	Board of Laser Safety	NCLS	National Council on Laser Certification
CDRH	Center for Devices and Radiological Health	NFPA	National Fire Protection Association
FAA	Federal Aviation Administration	OSHA	Occupational Safety and Health Administration

Z136 Procedural Abbreviations

ADCOM	Administrative Committee	PINS	Project Initiation Notification System
ASC	Accredited Standards Committee	SCDV	Subcommittee Draft for Vote
BSR	Board of Standards Review	SPIR	Subcommittee Project Initiation Request
CBBG	Consensus Body Balloting Groups	SSC	Standards Subcommittee
CDV	Committee Draft for Vote	TSC	Technical Subcommittee
EWG	Editorial Working Group		

Compound Words (Reference Guide)

Incorrect	Correct
beamsplitter; beam-splitter	beam splitter
multipulse	multiple pulse
post-exposure; post exposure	postexposure
pre-exposure	preexposure
pulsewidth; pulse-width	pulse width
repetitively pulsed laser	repetitive pulsed laser
spotsize; spot-size	spot size
ultra short; ultra-short	ultrashort
wave length; wave-length	wavelength