

American National Standard

*American National Standard
for Safe Use of Lasers
in Educational Institutions*



**Laser Institute
of America**
Laser Applications and Safety



Contents

SECTION

PAGE

1. General.....	1
1.1 Scope.....	1
1.2 Purpose.....	1
2. Definitions.....	4
3. Hazard Evaluation and Classification.....	11
3.1 General.....	11
3.2 Laser and Laser System Hazard Classification.....	11
3.3 Environment in Which the Laser is Used.....	13
3.4 Laser Pointers.....	16
3.5 Common Causes of Laser Accidents.....	16
4. Control Measures.....	17
4.1 General Considerations.....	17
4.2 Controls by Grade Level.....	18
4.3 Multi-Use Laser Facility.....	19
4.4 Judging a Project Containing a Laser.....	20
4.5 Laser Pointers.....	20
4.6 Engineering Controls.....	20
4.7 Administrative and Procedural Controls.....	23
4.8 Personal Protective Equipment.....	24
4.9 Service and Repair of Lasers.....	26
5. Laser Safety Programs and Student Training.....	26
5.1 General.....	26
5.2 Educational Laser Safety Committee (ELSC).....	26
5.3 Student Laser Safety Training.....	27
5.4 Faculty and Staff Laser Safety Training.....	27
6. Medical Examinations.....	28
6.1 Examinations Following a Suspected or Actual Laser-Induced Injury.....	28
6.2 Medical Surveillance.....	28
6.3 General Procedures.....	28
6.4 Frequency of Medical Examinations.....	29
7. Non-Beam Hazards.....	29
7.1 General.....	29
7.2 Fire and Explosion Hazards.....	29
7.3 Waste Disposal.....	29
7.4 Laser Dyes.....	29
7.5 Limited Workspace.....	30
7.6 Laser Generated Air Contaminants (LGAC).....	30
7.7 Electrical Hazards.....	30
7.8 Optical Fiber Hazards.....	31
7.9 Non-Beam Ultraviolet Hazards.....	31

Contents

SECTION	PAGE
8. Criteria for Exposure of Eye and Skin.....	31
9. ANSI Z136 Standards.....	32
Tables	
Table 1. LSO Requirements for Laser Classes.....	2
Table 2. Comparison of Laser Classifications.....	13
Table 3. Controls Requirements.....	17
Table 4. Summary of Control Measures for Lasers and Laser Systems.....	25
Table 5. Suggested Laser Safety Committee Representation.....	27
Table 6. Typical Laser Hazard Classification, Continuous Wave (CW) Lasers.....	33
Table 7. Sample Optical Densities.....	33
Appendices	
Appendix A	
Maximum Permissible Exposure (MPE) for the Eye.....	34
Table A1. Point Source MPEs for the Eye for Commonly Used Lasers.....	34
Table A2. MPE for the Eye for Selected Single Pulse Lasers.....	34
Appendix B	
Control Measures for Laser Classes.....	35
Table B1. Engineering Controls.....	35
Table B2. Administrative and Procedural Controls.....	36
Appendix C	
Nominal Ocular Hazard Distance (NOHD) for Selected Lasers.....	37
Table C1. NOHD for Various Lasers and Exposure Criteria.....	37
Table C2. Criteria Used for the Calculations in Table C1.....	37
Appendix D	
Warning Signs.....	38
Figure D1. Sample Area Warning Sign for Temporary Controlled Area.....	38
Figure D2. Sample Area Warning Sign for Class 2 and 2M Lasers.....	39
Figure D3. Sample Area Warning Sign for Class 3R, 3B, and 4 Lasers.....	40
Figure D4. IEC Warning Logo and Information Label.....	41
Appendix E	
Entryway Controls and Laser Installations.....	42
Figure E1. Area/Entryway Safety Controls for Class 4 Lasers Utilizing Entryway Interlocks.....	42
Figure E2. Entryway Safety Controls for Class 4 Lasers Without Entryway Interlock....	43
Figure E3. Unsupervised Laser Installation for Demonstration Laser (Side View).....	44
Figure E4. Supervised Laser Installation for Demonstration Laser (Side View).....	45
Figure E5. Supervised Laser Installation for Demonstration Laser (Top View).....	46

Contents

SECTION	PAGE
Appendix F	
Guide for the Organization and Implementation of Laser Safety and Training Programs..	47
F1. Responsibility and Authority of Laser Safety Officer (LSO).....	47
F2. Lesson Plan Approvals.	48
F3. General Laser Safety Rules List.	49
F4. References.	49
Appendix G	
Medical Surveillance	50
G1. Purpose of Medical Surveillance.	50
G2. Medical Examinations.	50
G3. Medical Referral Following a Suspected or Known Laser Injury.	52
G4. Records and Record Retention.....	52
G5. Access to Records.	53
G6. Epidemiological Studies.	53
G7. References.....	53
Appendix H	
Laser Laboratory Layouts.....	55
Figure H1. Suggested Low Power Visible Laser Laboratory Class 2, 2M.....	55
Figure H2. Suggested Class 3R Laser Laboratory	56
Figure H3. Suggested Class 3B and Class 4 Laser Laboratory.....	57
H4. References.....	58
Appendix I	
Operating Instructions and SOPs.....	59
I1. Recommended Operating Instructions for Class 1M, 2, 2M, and 3R Visible Lasers and Laser Systems	59
I2. Sample Operating Instructions for the Use of Class 1M, 2, 2M, and 3R Lasers	59
I3. Sample Standard Operating Procedures (SOPs) for Class 3B or 4 Lasers.....	60
Index	62

American National Standard for Safe Use of Lasers in Educational Institutions

1. General

1.1 Scope.

This standard addresses laser safety concerns and situations characteristic of the educational environment. This standard is not a substitute for ANSI Z136.1-2007, which is required for a full understanding of laser safety officer duties and laser hazard evaluation. Environments characteristic of educational institutions wherein lasers may be found include teaching laboratories, classrooms, lecture halls, science fairs, museums, and student projects on and off campus. This standard is intended for faculty and students using lasers at primary, secondary, and college levels of education excluding graduate level research laboratories (these laboratories should comply with the latest version of ANSI Z136.1). The wavelength range of interest includes the ultraviolet, visible, and infrared regions of the electromagnetic spectrum, specifically the wavelength range from 0.18 micrometer (μm) to 1 millimeter (mm).

1.2 Purpose.

The purpose of this standard is to provide reasonable and adequate guidance for the safe use of lasers in educational environments by evaluating and minimizing hazards associated with laser radiation. That educational environment excludes the graduate level research laboratory; graduate level research laboratories should comply with the latest version of ANSI Z136.1. The hazard evaluation procedure used in this standard is based on the classification (Class 1 through Class 4) of the laser or laser system, which is related to the ability of the laser beam to cause biological damage to the eye or skin during intended use. The amount of laser radiation emitted from Class 1 lasers and laser systems is considered to be non-hazardous; Class 4 lasers and laser systems possess the highest potential hazard.

1.2.1 Laser Classification. Lasers and laser systems are classified by their potential hazard in ANSI Z136.1-2007 by using a scheme of Class 1 through Class 4. The scheme is based on the laser beam's ability to cause biological damage to the eye and skin, and pose a fire hazard. Class 1 lasers and laser systems' beams are considered non-hazardous while Class 4 lasers possess the highest potential hazard. This laser hazard classification scheme is outlined in Section 3 and detailed in ANSI Z136.1-2007. Hazard controls relative to the class of the laser or laser system are discussed in Section 4 of this standard. Lasers placed into commerce after 1976 are classified by the manufacturer in accordance with the Federal Laser Product Performance Standard (FLPPS) 21 CFR Part 1040.10.

Classification of a laser or laser system that was either developed at the academic institution or has been modified such that the class may change is the responsibility of the laser safety officer (LSO) (see Section 1.2.2).

Index

A

accessible emission limit 4, 12
 alignment procedures 17, 23, 36, 60
 authorized personnel 23, 36
 aversion response 4, 12, 59

B

barrier 3, 20, 24, 30, 36
 beam diameter 5

C

Class 1 1-2, 12-19, 21-23, 28, 59
 Class 1M 2, 12-15, 17, 28, 59
 Class 2M 2, 12-15, 28, 39
 Class 3B 2-4, 12-28, 33, 35-36, 40, 47-48, 51, 57, 60
 Class 3R 2, 12-14, 18-20, 23, 26-28, 33, 40, 47, 56, 59
 Class 4 1-4, 6, 13, 18-30, 33, 35-36, 40, 42-43, 47-48, 51, 57, 60
 collecting optics 12, 21, 35
 continuous wave *see* CW
 control measures 3, 17, 24-25, 35-36, 48
 CW 5, 12, 14-15, 31, 33-34, 51

D

danger 16, 23, 57, 59
 diffuse reflection 5, 12, 13, 19
 divergence 5, 7, 37
 dyes 29

E

education 6, 20, 24
 educational institution 2, 11, 13, 15, 26, 30, 48, 51, 58
 Educational Institution 49
 educational institutions 1

engineering controls 3, 12, 18, 20, 23-25, 35
 exhaust 24, 30
 exposure duration 4, 31, 34
 extended source 6
 eye protection 12, 16, 20, 25, 47

F

federal laser product performance standard 1, 20, 22
 FLPPS *see* federal laser product performance standard

H

hazard evaluation 1, 3, 11, 20, 29, 48

I

infrared 1, 6, 12, 31, 50
 interlock 6, 17, 20-21, 25, 35, 42, 57, 60-61
 intrabeam 6
 invisible laser 12-14

L

laser classification 1, 13, 28
 laser controlled area 17-18, 22-24
 laser generated air contaminants 7, 30
 laser installation 3, 42, 44-46
 laser laboratory 14, 27, 48, 55-57
 laser operation 24, 47, 49
 laser pointer 7, 14, 16, 20, 59
 laser safety officer 1-4, 7-8, 11-24, 26-29, 35-36, 47-48, 59
 lesson plan 2-3, 14, 17-19, 23, 25, 27, 47-48
 LGAC *see* laser generated air contaminants
 LSO *see* laser safety officer

M

maximum permissible exposure *see* MPE
 measurement 14, 51
 medical surveillance 4, 28, 50-54
 MPE 6, 8-9, 14, 19, 21-25, 34-37

N

NHZ *see* nominal hazard zone
 NOHD *see* nominal ocular hazard
 distance
 nominal hazard zone 3, 8, 17, 19, 21-22,
 24, 28, 35-36, 47-48
 nominal ocular hazard distance 8, 37
 non-beam hazard 3, 8, 11, 27, 29

O

optical density 8, 25

P

photochemical 16
 plasma radiation 11
 point source 6, 9, 34
 protective equipment 3, 11, 18, 23-25,
 28, 36, 47
 protective eyewear 8, 21, 24-25, 36

protective housing 6, 9, 17, 20, 22, 25-26,
 30, 35
 pulsed 5-6, 9, 34

R

repetitive pulse 31, 34
 retinal hazard region 28, 31

S

signs and labels 3, 16, 22-23, 25, 35-36,
 38-41, 47, 56-57, 59
 single pulse 9, 34
 skin 1, 8, 12-13, 16-17, 19, 25, 29-31, 47,
 51-53, 59
 spectator 10, 15, 24, 36, 50

U

ultraviolet 1, 6, 10, 12, 19, 28, 31, 50-53

V

visible laser 12, 14, 16, 19, 55, 59

W

warning 3, 21-23, 25, 31, 35-36, 38-41,
 56



Laser Institute of America

Laser Applications and Safety

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American National Standard

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