



UL 153

Underwriters Laboratories Inc.
Standard for Safety

Portable Electric Luminaires



Documents
Document Sharing Hub

**UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL**



Documents

Document Sharing Hub

Underwriters Laboratories Inc. (UL)
333 Pfingsten Road
Northbrook, IL 60062-2096

UL Standard for Safety for Portable Electric Luminaires, UL 153

Twelfth Edition, Dated March 25, 2002

Revisions: This Standard contains revisions through and including February 10, 2009.

Summary of Topics

These revisions to ANSI/UL 153 were issued to incorporate the following new and revised requirements:

- 1. Addition of installation instructions for appliance mounted units.***
- 2. Revision of Tungsten-Halogen Lamp Guard, Lamp Containment Barrier and UV Filter Security Test.***
- 3. Revision of Grounding Continuity Test.***
- 4. Revision of water shield requirements to include silicone rubber boots.***
- 5. Relocation of the G8 lamp base from Table 52.0 to Table 52.0.1.***
- 6. Addition of date code marking for portable hand lights.***
- 7. Addition of GU24 holder and self-ballasted lamp requirements.***
- 8. Revision of convertible unit requirements to include interconnected under-shelf units.***
- 9. Addition of requirements for externally split power supply cord.***
- 10. Revision of push-in requirements for power supply cord.***
- 11. Revision of requirements for accessible uninsulated Class 2 circuits.***
- 12. Clarification of minimum lamp-to-shade spacing.***
- 13. Revision of mounting stake requirements to include zinc.***
- 14. Revision of grounding and bonding requirements.***
- 15. Additional assembly and packaging requirements for fiberglass sleeving over wiring.***
- 16. Additional under shelf unit supply connector requirements.***
- 17. Additional markings on tag because of small physical size of luminaires.***
- 18. Reflector lamps exempted from Abnormal Operation Tests and safety instructions.***

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents

Document Sharing Hub

- 19. Correction of marking reference for tungsten-halogen lamp similar in shape to a Type A incandescent lamp.**
- 20. Addition of UL 60950-1 ITE type power supplies.**
- 21. Clarification of positions to use for portable hand light temperature test.**
- 22. Correction of portable hand light marking reference.**
- 23. Clarification of flame rating required for portable hand lights.**
- 24. Revision of fluorescent lamp replacement marking.**
- 25. Revision of 1.7 to add examples of products that are covered by UL 962 rather than UL 153.**
- 26. Addition of time duration to Transformer Short-Circuit Test.**
- 27. Miscellaneous revisions and clarifications.**
- 28. Revision of torchiere requirements to comply with Federal Energy Policy Act of 2005.**

UL Standards for Safety are developed and maintained in the Standard Generalized Markup Language (SGML). SGML -- an international standard (ISO 8879-1986) -- is a descriptive markup language that describes a document's structure and purpose, rather than its physical appearance on a page. Due to formatting differences resulting from the use of UL's new electronic publishing system, please note that additional pages (on which no requirements have been changed) may be included in revision pages due to relocation of existing text and reformatting of the Standard.

Text that has been changed in any manner is marked with a vertical line in the margin. Changes in requirements are marked with a vertical line in the margin and are followed by an effective date note indicating the date of publication or the date on which the changed requirement becomes effective.

The following table lists the future effective dates with the corresponding reference.

Future Effective Date	References
February 10, 2011	Paragraphs 1.7, 2.42.1, 8.4.1, 38.4, 47A.1.1, 47A.1.2, 47A.1.3, 48.3.1, 54.3.1, 54.3.2, 54.3.3, 54.7.1, 93.3.1, 93.3.2, 93.3.3, 94.1A.1, 94.3.1, 112F.1, 112F.2, 112F.3, 112G.1, 112H.1, 112I.1, 119.2.1, 123B.1.4, 140A.1.1, 140A.2.1, 140A.2.2, 140A.2.3, 140A.2.4, 140A.3.1, 172.1.1, 172.1.1.1, 172.1.4, 177.1, 177.3, 180A.1, 180A.2, 180A.3, 182A.11, 186.2.2, 190.1.1, 192A.1, and 192A.2

The revised requirements are substantially in accordance with UL's Proposal(s) on this subject dated November 30, 2007, April 4, 2008, August 15, 2008, and October 13, 2008.

The revisions dated February 10, 2009 include a reprinted title page (page1) for this Standard.

As indicated on the title page (page 1), this UL Standard for Safety is an American National Standard. Attention is directed to the note on the title page of this Standard outlining the procedures to be followed to retain the approved text of this ANSI/UL Standard.

The UL Foreword is no longer located within the UL Standard. For information concerning the use and application of the requirements contained in this Standard, the current version of the UL Foreword is located on ULStandardsInfoNet at: <http://ulstandardsinfo.net/ulforeword.html>

The master for this Standard at UL's Northbrook Office is the official document insofar as it relates to a UL service and the compliance of a product with respect to the requirements for that product and service, or if there are questions regarding the accuracy of this Standard.

UL's Standards for Safety are copyrighted by UL. Neither a printed copy of a Standard, nor the distribution diskette for a Standard-on-Diskette and the file for the Standard on the distribution diskette should be altered in any way. All of UL's Standards and all copyrights, ownerships, and rights regarding those Standards shall remain the sole and exclusive property of UL.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical photocopying, recording, or otherwise without prior permission of UL.

Revisions of UL Standards for Safety are issued from time to time. A UL Standard for Safety is current only if it incorporates the most recently adopted revisions.

UL provides this Standard "as is" without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability or fitness for any purpose.

In no event will UL be liable for any special, incidental, consequential, indirect or similar damages, including loss of profits, lost savings, loss of data, or any other damages arising out of the use of or the inability to use this Standard, even if UL or an authorized UL representative has been advised of the possibility of such damage. In no event shall UL's liability for any damage ever exceed the price paid for this Standard, regardless of the form of the claim.

UL will attempt to answer support requests concerning electronic versions of its Standards. However, this support service is offered on a reasonable efforts basis only, and UL may not be able to resolve every support request. UL supports the electronic versions of its Standards only if they are used under the conditions and operating systems for which it is intended. UL's support policies may change from time-to-time without notification.

UL reserves the right to change the format, presentation, file types and formats, delivery methods and formats, and the like of both its printed and electronic Standards without prior notice.

Purchasers of the electronic versions of UL's Standards for Safety agree to defend, indemnify, and hold UL harmless from and against any loss, expense, liability, damage, claim, or judgement (including reasonable attorney's fees) resulting from any error or deviation introduced while purchaser is storing an electronic Standard on the purchaser's computer system.

If a single-user version electronic Standard was purchased, one copy of this Standard may be stored on the hard disk of a single personal computer, or on a single LAN file-server or the permanent storage device of a multiple-user computer in such a manner that this Standard may only be accessed by one user at a time and for which there is no possibility of multiple concurrent access.

If a multiple-user version electronic Standard was purchased, one copy of the Standard may be stored on a single LAN file-server, or on the permanent storage device of a multiple-user computer, or on an Intranet server. The number of concurrent users shall not exceed the number of users authorized.

Electronic Standards are intended for on-line use, such as for viewing the requirements of a Standard, conducting a word search, and the like. Only one copy of the Standard may be printed from each single-user version of an electronic Standard. Only one copy of the Standard may be printed for each authorized user of a multiple-user version of an electronic Standard. Because of differences in the computer/software/printer setup used by UL and those of electronic Standards purchasers, the printed copy obtained by a purchaser may not look exactly like the on-line screen view or the printed Standard.

An employee of an organization purchasing a UL Standard can make a copy of the page or pages being viewed for their own fair and/or practical internal use.

The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

New product submittals made prior to a specified future effective date will be judged under all of the requirements in this Standard including those requirements with a specified future effective date, unless the applicant specifically requests that the product be judged under the current requirements. However, if the applicant elects this option, it should be noted that compliance with all the requirements in this Standard will be required as a condition of continued Listing, Recognition, and Follow-Up Services after the effective date, and understanding of this should be signified in writing.

Copyright © 2009 Underwriters Laboratories Inc.

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

This Standard consists of pages dated as shown in the following checklist:

Page	Date
1	February 10, 2009
2-3	December 28, 2005
4-5	February 10, 2009
6	December 28, 2005
7-10B	February 10, 2009
11	December 23, 2004
12	March 25, 2002
13	December 28, 2005
14-16	February 10, 2009
17-18	December 23, 2004
18A	February 10, 2009
18B	December 28, 2005
19	March 25, 2002
20-20B	December 23, 2004
21	February 10, 2009
22-22B	October 10, 2002
23	March 25, 2002
24	February 10, 2009
25	December 28, 2005
26	February 18, 2004
27	December 28, 2005
28-28B	February 18, 2004
29	July 11, 2008
30	March 25, 2002
31	February 18, 2004
32	December 28, 2005
33	December 23, 2004
34	December 28, 2005
35	March 25, 2002
36-36B	February 18, 2004
37	March 25, 2002
38-38B	December 28, 2005
39	July 11, 2008
40	February 10, 2009
41	July 11, 2008
42-43	March 25, 2002
44-44B	February 10, 2009
45	July 11, 2008
46	February 10, 2009
47	March 25, 2002
48-48A	February 10, 2009
48B-49	December 28, 2005
50	July 11, 2008
51-52A	February 10, 2009
52B	December 28, 2005
53-56	March 25, 2002
56A	December 28, 2005
56B-58	February 10, 2009
59	December 28, 2005

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

60-63	March 25, 2002
64	February 10, 2009
65	February 18, 2004
66-68A	February 10, 2009
68B-68D	December 28, 2005
69-70	March 25, 2002
71	February 18, 2004
72-73	December 28, 2005
74	February 18, 2004
75-76	July 11, 2008
76A-76B	December 28, 2005
77-78B	February 10, 2009
79-80B	December 28, 2005
81-82	March 25, 2002
83	December 23, 2004
84-86	March 25, 2002
87-88B	February 18, 2004
89	March 25, 2002
90	February 18, 2004
91-93	March 25, 2002
94-95	December 28, 2005
96	March 25, 2002
97-98B	December 28, 2005
99-100B	July 11, 2008
101-102B	February 10, 2009
103-105	March 25, 2002
106-108A	December 28, 2005
108B-108D	February 10, 2009
109	March 25, 2002
110	December 23, 2004
111	February 18, 2004
112-113	March 25, 2002
114	February 10, 2009
115	March 25, 2002
116	February 10, 2009
117	December 23, 2004
118-118J	February 10, 2009
119	February 18, 2004
120	December 23, 2004
121	July 11, 2008
122-123	March 25, 2002
124	December 28, 2005
124A-124B	February 18, 2004
125	March 25, 2002
126	February 18, 2004
127-130	March 25, 2002
131	December 23, 2004
132	February 10, 2009
132A-132B	December 23, 2004
133	March 25, 2002
134-134B	February 10, 2009
135	December 23, 2004
136-136B	February 18, 2004

137.....	March 25, 2002
138.....	December 28, 2005
139.....	December 23, 2004
140.....	December 28, 2005
140A.....	February 10, 2009
140B.....	December 28, 2005
141.....	March 25, 2002
142.....	February 10, 2009
143-144.....	March 25, 2002
144A-145.....	February 10, 2009
146.....	March 25, 2002
147.....	February 10, 2009
148.....	December 28, 2005
148A-148B.....	February 18, 2004
149.....	March 25, 2002
150.....	December 28, 2005
150A.....	February 10, 2009
150B.....	December 23, 2004
151-165.....	March 25, 2002
166.....	December 28, 2005
167-175.....	March 25, 2002
176-176F.....	December 23, 2004
177-178B.....	February 18, 2004
179-180.....	March 25, 2002
181.....	December 23, 2004
182.....	March 25, 2002
183-186.....	February 10, 2009
187.....	March 25, 2002
188.....	December 28, 2005
188A.....	February 10, 2009
188B.....	December 28, 2005
189.....	March 25, 2002
190-190B.....	February 10, 2009
191.....	December 23, 2004
192.....	February 10, 2009
192A-192B.....	December 23, 2004
193.....	December 28, 2005
194-194B.....	February 10, 2009
195.....	February 18, 2004
196.....	December 23, 2004
197-198.....	February 10, 2009
198A-198B.....	December 28, 2005
199-200.....	February 10, 2009
200A.....	December 28, 2005
200B.....	December 23, 2004
201-202.....	February 18, 2004
203-204.....	March 25, 2002
A1-A2.....	February 10, 2009
SR1-SR2.....	February 10, 2009

No Text on This Page

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM  **Documents**
Document Sharing Hub

MARCH 25, 2002
(Title Page Reprinted: February 10, 2009)



ANSI/UL 153-2009

1

UL 153

Standard for Portable Electric Luminaires

The first through the eleventh editions were titled Portable Electric Lamps.

First Edition – October, 1952
Second Edition – August, 1955
Third Edition – March, 1958
Fourth Edition – September, 1970
Fifth Edition – October, 1976
Sixth Edition – August, 1978
Seventh Edition – April, 1981
Eighth Edition – April, 1982
Ninth Edition – November, 1988
Tenth Edition – May, 1994
Eleventh Edition – May, 1995

Twelfth Edition

March 25, 2002

This ANSI/UL Standard for Safety consists of the Twelfth Edition including revisions through February 10, 2009.

The most recent designation of ANSI/UL 153 as an American National Standard (ANSI) occurred on February 10, 2009. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or effective date information.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <http://csds.ul.com>.

UL's Standards for Safety are copyrighted by UL. Neither a printed nor electronic copy of a Standard should be altered in any way. All of UL's Standards and all copyrights, ownerships, and rights regarding those Standards shall remain the sole and exclusive property of UL.

COPYRIGHT © 2009 UNDERWRITERS LABORATORIES INC.

**UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL**



Documents

Document Sharing Hub

No Text on This Page

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

*UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL*



Documents

Document Sharing Hub

CONTENTS

INTRODUCTION

1 Scope	18A
2 Glossary	18B
3 Organization and Application	22
4 Components	22A
5 Units of Measurement	22A
6 Undated References	23

PART I

CONSTRUCTION

MECHANICAL CONSTRUCTION – GENERAL

7 General	23
8 Assembly and Packaging	23
9 Enclosures	25
10 Metal Thickness for Enclosures	26
11 Corrosion Protection	28
12 Polymeric Enclosures	28
13 Polymeric Decorative Parts	28A
14 Enclosure Openings	29
15 Wireways and Tubing	31
16 Shade Construction	31
17 Strain Relief	32
18 Portable Luminaires Having Play Value	33
19 Resistance to Liquid Damage	33
20 Portable Luminaire Containing Hazardous Substance	33

ELECTRICAL CONSTRUCTION – GENERAL

21 General	34
22 Assembly and Packaging	34
23 Accessibility of Live Parts	34
24 Electrical Spacings	36
25 Insulating Materials	38
26 Electrical Ratings	38
27 Wiring and Conductors	39
27.1 Conductor size	39
27.2 Temperature rating	40
28 Splices and Connections	43
29 Wiring Attached to Movable or Flexible Parts	43
30 Protection of Wiring	44
31 Power-Supply Cords	45
32 Attachment Plugs	46
33 Interconnected Units	48
34 Alternate Power-Supply Connections	48A
35 Polarization and Identification	48A

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents

Document Sharing Hub

36	Grounding and Bonding	50
37	Electronic Circuits	51
38	Secondary Low Voltage Circuits	52
39	Separation of Secondary Circuit Conductors	52
39A	Separation of Communication Circuit Conductors	52A
40	Component Mounting	52A
41	Lampholders	53
41.1	General	53
41.2	Incandescent lampholders	54
42	Switches and Dimmers	55
43	Receptacles	56A
44	Transformers	56B
45	Motors	56B

INCANDESCENT UNITS – SUPPLEMENTARY

46	General	57
47	Temperature Test-Exempt Units	57
47.1	General	57
47.2	Determination of temperature test-exempt status	59
47.3	Shade designation	59
47.4	Lamp-to-shade spacing	61
47.5	Wire insulation temperature rating	65
47.6	Other shade designs	66
47A	Incandescent Torchiere	66
48	Tests	66A
48.1	Normal temperature test	66A
48.2	Incandescent torchiere abnormal operation tests	66A
48.3	Torchiere input test	66B
49	Markings	66B
50	Instructions	66B

TUNGSTEN HALOGEN UNITS – SUPPLEMENTARY

51	General	66B
52	Construction – Mechanical	66B
52.1	General	66B
52.2	Guard	68B
52.3	Guards for torchiere style units	70
52.4	Lamp containment barrier	72
52.5	Ultraviolet (UV) filter	73
52.6	Flexible or articulated arms	74
53	Construction – Electrical	75
53.1	Switches	75
53.2	Interlock switch	76
53.3	Automatic temperature-regulating or limiting control	76
53.4	Tipover switch	76
54	Tests	76A
54.1	Normal temperature test	76A
54.2	Tungsten-halogen lamp adjacent surfaces and overlamping abnormal operation tests	77
54.3	Tungsten-halogen torchiere abnormal operation tests	77
54.4	Guard, lamp containment barrier & UV filter security tests	78
54.5	Polymeric lamp containment test	78

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM



Documents

Document Sharing Hub

54.6 Interlock switch tests	78
54.7 Torchere input test	78
55 Marking	78
56 Instructions	78

FLUORESCENT UNITS – SUPPLEMENTARY

57 General	78A
58 Construction – Electrical	78A
58.1 Ballasts	78A
58.2 Lampholder	78A
58.3 Wire temperature ratings	79
58.4 Power-supply cord	79
58.5 Grounding	79
59 Tests	80
59.1 Normal temperature test	80
59.2 Abnormal operation shorted starter test	80
60 Temperature Test-Exempt Units	80
61 Marking	81

HIGH INTENSITY DISCHARGE UNITS – SUPPLEMENTARY

62 General	81
63 Construction – Mechanical	81
63.1 Metal halide lamp containment and UV filter	81
64 Construction – Electrical	82
64.1 Lampholders	82
64.2 Ballasts	82
64.3 Capacitors	82
64.4 Nonintegral oil-filled capacitors	83
65 Tests	84
65.1 Normal temperature test	84
65.2 Glass impact test	85
65.3 Glass thermal shock/containment test	85
66 Markings	85

SURFACE MOUNTED UNITS FOR WALL, UNDER-CABINET OR APPLIANCE MOUNTING – SUPPLEMENTARY

67 General	85
68 Wall Mounted Units	86
68.1 General	86
68.2 Construction – mechanical	86
68.3 Construction – electrical	87
68.4 Tests	87
68.5 Instructions	87
69 Under-Shelf Mounted Units	87
69.1 General	87
69.2 Mounting means	88
69.3 Construction – electrical	88
69.4 Tests	89
69.5 Markings	89
70 Appliance Mounted Units	89

UL COPYRIGHTED MATERIAL –

NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM



Documents

Document Sharing Hub

70.1 General 89

70.2 Instructions 89

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

No Text on This Page

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents

Document Sharing Hub

CORD AND CHAIN SUSPENDED UNITS – SUPPLEMENTARY

71	General	89
72	Construction – Mechanical	90
72.1	Chains	90
72.2	Support hardware	90
72.3	Maximum weight	91
73	Construction – Electrical	92
73.1	Internal wiring protection	92
73.2	Power-supply cord	92
73.3	Lampholders and switches	93
74	Tests	94
74.1	Mounting means test	94
74.2	Tests for suspended toys	94
75	Markings	94
76	Instructions	94

CLAMP-ON MOUNTED UNITS – SUPPLEMENTARY

77	General	94
78	Construction – Mechanical	94
78.1	Clamp	94
79	Construction – Electrical	94A
79.1	Power-supply cords	94A
79.2	Lampholders and switches	94A
80	Tests	96
80.1	Mounting means test	96

PORTABLE CABINET LIGHTS – SUPPLEMENTARY

81	General	96
82	Construction – Mechanical	96
82.1	Mounting flange	96
83	Construction – Electrical	97
83.1	Power-supply cords	97
83.2	Interconnecting cord	97
83.3	Attachment plugs and receptacles	97
83.4	Lampholders	98
83.5	Low voltage portable cabinet lights	98
83.6	Portable cabinet light accessories	98
84	Tests	98A
84.1	Normal temperature test	98A
85	Markings	98A
86	Instructions	99

UNITS FOR USE WITH OFFICE FURNISHINGS – SUPPLEMENTARY

87	General	99
88	Construction – Mechanical	99
89	Construction – Electrical	99
89.1	Power-supply cords	99
89.2	Plugs and receptacles	100
89.3	Interconnecting cord	100

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents

Document Sharing Hub

89.4 Overcurrent protection	100
90 Markings	100
91 Instructions	100A

CONVERTIBLE UNITS – SUPPLEMENTARY

92 General	101
93 Construction – Mechanical	101
93.1 Swag-to-chandelier conversion kits	101
93.2 Surface mount conversion kits	101
93.3 Under-shelf mounted conversion kits	101
94 Construction – Electrical	102
94.1 Grounding	102
94.1A General	102
94.2 Polarity	102
94.3 Power – Supply Cord	102A
95 Markings	102A
96 Instructions	102A

INTERCHANGEABLE UNITS – SUPPLEMENTARY REQUIREMENTS

97 General	102A
98 Construction – Mechanical	102A
98.1 Mounting	102A
99 Construction – Electrical	103
99.1 Power-supply cords	103
99.2 Polarization	103
99.3 Adapter	103
100 Markings	103

TRACK-STYLE UNITS – SUPPLEMENTARY

101 General	103
102 Construction – Mechanical	104
102.1 Track	104
102.2 Securement of cord and end cap	104
102.3 Mounting means	104
103 Construction – Electrical	105
103.1 Power-supply cords	105
103.2 Polarity	105
103.3 Receptacles	105
104 Tests	105
104.1 Mechanical means of polarity test	105
104.2 Track clip securement test	105
105 Markings	106
106 Instructions	106

PORTABLE LUMINAIRE KIT – SUPPLEMENTARY

107 General	106
108 Construction – Mechanical	106
108.1 General	106
108.2 Shade	106

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents

Document Sharing Hub

109	Construction – Electrical	107
109.1	General	107
109.2	Power-supply cord	107
109.3	Mounting of components	107
110	Tests	108
110.1	Assembly and installation test	108
111	Markings	108
112	Instructions	108

PORTABLE LUMINAIRE SUBASSEMBLIES – SUPPLEMENTARY

112A	General	108
112B	Construction – Electrical	108A
112B.1	General	108A
112B.2	Power-supply cord	108A
112B.3	Mounting of components	108A
112C	Assembly and Installation Test	108A
112D	Markings	108B
112E	Instructions	108B

PORTABLE LUMINAIRE ACCESSORIES – SUPPLEMENTARY

112F	General	108B
112G	Construction	108B
112H	Markings	108C
112I	Instructions	108C

WORK LIGHTS – SUPPLEMENTARY

113	General	108C
114	Construction – Mechanical	108C
114.1	Assembly	108C
114.2	Guards	108D
114.3	Handles	110
114.4	Bases and stands	110
115	Construction – Electrical	111
115.1	Power-supply cords	111
115.2	Grounding type attachment plug	111
115.3	Receptacles	111
115.4	Tipover switches	112
115.5	Integral power supplies	112
116	Tests	112
116.1	Normal temperature test	112
116.2	Tungsten-halogen unit tests	112
116.3	Stability tests	113
117	Markings	113

WET LOCATION USE – SUPPLEMENTARY

118	General	113
119	Construction – Mechanical	113
119.1	Enclosure	113
119.2	Water shields	114

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents

Document Sharing Hub

119.3	Corrosion protection	114
119.4	Drain openings	115
119.5	Gaskets	115
119.6	Mounting stakes	116
120	Construction – Electrical	116
120.1	Power-supply cords	116
120.2	Grounding type attachment plug	116
120.3	Receptacles	116
120.4	Lampholders	117
120.5	Switches	117
120.6	Electrical insulation	117
121	Tests	117
121.1	Wet location tests	117
122	Markings	117
123	Instructions	117

PORTABLE HAND LIGHTS – SUPPLEMENTARY

123A	General	117
123B	Construction – Mechanical	118
123B.1	General	118
123B.2	Assembly and packaging	118
123B.3	Lamp guard	118A
123B.4	Corrosion protection	118B
123C	Construction – Electrical	118B
123C.1	General	118B
123C.2	Assembly	118B
123C.3	Wiring and conductors	118C
123C.4	Protection of wiring	118C
123C.5	Power-Supply Cords	118C
123C.6	Grounding type attachment plug	118D
123C.7	Incandescent lampholders	118D
123C.8	Switches	118E
123C.9	Receptacles	118F
123D	Supplementary Protection	118F
123E	Tests	118G
123E.1	Normal temperature test	118G
123E.2	Abnormal operation tests	118H
123E.3	Mechanical tests	118H
123E.4	Electrical tests	118H
123F	Markings	118H
123G	Instructions	118H

PART II**PERFORMANCE****GENERAL – NORMAL TEMPERATURE TEST**

124	General	118H
125	Test Method – General	118I
125.1	Temperature limits	118I
125.2	Test duration	120
125.3	Temperature measurement by thermocouple	121
125.4	Temperature measurement by change-of-resistance	121
125.5	Ambient temperature measurement	122
125.6	Test voltage, current, and wattage	123
125.7	High intensity discharge lamp nominal test conditions	123
125.8	Incandescent test lamps	124
125.9	Tungsten-halogen test lamps	125
125.10	Fluorescent test lamps	125
125.11	High intensity discharge test lamps	125
125.12	Shade positions and decorative parts	126
126	Specific Test Conditions – Free Standing and Surface Mounted Units	126
126.1	General	126
126.2	Test results	127
127	Specific Test Conditions – Portable Cabinet Lights	127
127.1	Other than pot style	127
127.2	Pot style	129
127.3	Test results	131
128	Specific Test Conditions – Work Lights	131
128.1	General	131
128.2	Test results	131
128A	Specific Test Conditions – Portable Hand Lights	132
128A.1	General	132
128A.2	Test results	132

GENERAL – ABNORMAL OPERATION TESTS

129	Adjustable Position or Multiple Shade Abnormal Operation Test	132A
129.1	General	132A
129.2	Test method – general	132A
129.3	Test method – adjustable or flexible shade position	133
129.4	Test method – multiple shades	133
129.5	Test method – folding position	133
129.6	Test results	133
130	Transformer Short-Circuited Test	134
130.1	General	134
130.2	Test method	134
130.3	Test results	134A
131	Component Fault Test	135
131.1	General	135
131.2	Test method	135
131.3	Test results	136
131A	Conductor Short Circuit and Abnormal Operation Test	136
131A.1	General	136

131A.2 Test method – short circuit	136
131A.3 Test method – abnormal operation	136A
131A.4 Test results	136A

GENERAL – MECHANICAL TESTS

132 Stability Test	136A
132.1 General	136A
132.2 Test method – general	136B
132.3 Test method – units with flexible or articulated arm	137
132.4 Test method – units having provisions for loading	137
132.5 Test results	138
133 Strain Relief Test	138
133.1 General	138
133.2 Test method	138
133.3 Test results	138
134 Drop Test	139
134.1 General	139
134.2 Test method	139
134.3 Test results	139
135 Security of Screws Test	139
135.1 General	139
135.2 Test method	140
135.3 Test results	140
135A Power-Supply Cord Twist Test	140
135A.1 General	140
135A.2 Method	140
135A.3 Results	140

GENERAL – ELECTRICAL TESTS

136 Grounding Continuity Test	140A
136.1 General	140A
136.2 Test method	140A
136.3 Test results	140A
137 Dielectric Voltage-Withstand Test	141
137.1 General	141
137.2 Test method	141
137.3 Test results	141
138 Transformer Voltage Output Test	141
138.1 General	141
138.2 Test method	142
138.3 Test results	142
139 Low Voltage Hinged or Movable Part Cycling Test	142
139.1 General	142
139.2 Test method	142
139.3 Test results	142
140 Resistance to Moisture Test	143
140.1 General	143
140.2 Test method	143
140.3 Test results	144A

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM



Documents

Document Sharing Hub

INCANDESCENT UNIT TESTS

140A Torchiere input test	144A
140A.1 General	144A
140A.2 Test method	144A
140A.3 Test results	144A
141 Lamp Harp Torque Test	144A
141.1 General	144A
141.2 Test method	144B
141.3 Test results	146
142 Lampshade Ease of Ignition Test	146
142.1 General	146
142.2 Test method	146
142.3 Test results	147

TUNGSTEN-HALOGEN UNIT TESTS

143 Tungsten Halogen Lamp Adjacent Surfaces and Overlapping Abnormal Operation Tests	147
143.1 General	147
143.2 Test method – general	148
143.3 Test method – severe condition	148
143.4 Test method – vertical surface	148A
143.5 Test method – supporting surface	149
143.6 Test method – overhead surface	149
143.7 Test method – overlapping	149
143.8 Test results	149
144 Tungsten-Halogen Lamp Guard, Lamp Containment Barrier, and UV Filter Security Test	150
144.1 General	150
144.2 Test method	150
144.3 Test results	150A
145 Tungsten-Halogen Torchiere Abnormal Operation Test	151
145.1 General	151
145.2 Test method	151
145.3 Test results	152
146 Tungsten-Halogen Torchiere Vertical Wall Test	152
146.1 General	152
146.2 Test Method	153
146.3 Test Results	153
147 Tungsten-Halogen Torchiere Stability Test	153
147.1 General	153
147.2 Test Method	154
147.3 Test Results	154
148 Tungsten-Halogen Torchiere Flexible or Articulated Arm Stop Test	154
148.1 General	154
148.2 Test Method	154
148.3 Test Results	154
149 <i>Reserved for future use</i>	154
150 Polymeric Lamp Containment Barrier Test	154
150.1 General	154
150.2 Test method	155
150.3 Test results	155
151 Interlock Switch Endurance Test	156
151.1 General	156

151.2 Test method	156
151.3 Test results	156
152 Heat Flux Density Measurement Test	156
152.1 General	156
152.2 Test method	156
152.3 Test results	157

FLUORESCENT UNIT TESTS

153 Abnormal Operation – Shorted Starter Test	158
153.1 General	158
153.2 Test method	158
153.3 Test results	158

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents

Document Sharing Hub

No Text on This Page

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

*UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL*



Documents

Document Sharing Hub

No Text on This Page

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents

Document Sharing Hub

HIGH-INTENSITY-DISCHARGE UNIT TESTS

154	Glass Impact Test	159
154.1	General	159
154.2	Test method	159
154.3	Test results	159
155	Glass Thermal Shock/Containment Test	159
155.1	General	159
155.2	Test method	159
155.3	Test results	160

SURFACE MOUNTED UNIT FOR WALL OR UNDERSHELF MOUNTING TESTS

156	Mounting Means Test – Surface Mounted Unit	160
156.1	General	160
156.2	Test method	160
156.3	Test results	160

CORD AND CHAIN SUSPENDED UNIT TESTS

157	Mounting Means Test – Chain and Suspended Units	161
157.1	General	161
157.2	Test method – general	161
157.3	Test method – swag unit	161
157.4	Test method – hanging unit	161
157.5	Test results	162
158	Test for Suspended Toys	162
158.1	General	162
158.2	Test method	162
158.3	Test results	163

CLAMP-ON UNIT TESTS

159	Mounting Means Test – Clamp-On Unit	163
159.1	General	163
159.2	Test method	163
159.3	Test results	164

TRACK-STYLE UNIT TESTS

160	Mechanical Means of Polarity Test	164
160.1	General	164
160.2	Test method	165
160.3	Test results	165
161	Track Clip Securement Test	165
161.1	General	165
161.2	Test method	165
161.3	Test results	166

PORTABLE LUMINAIRE KIT AND SUBASSEMBLY TEST

162 Assembly and Installation Test	166
162.1 General	166
162.2 Test method	166
162.3 Test results	166

WORK LIGHT TESTS

163 Guard Securement Test	167
163.1 General	167
163.2 Test method	167

WET LOCATION USE TESTS

164 Rain and Sprinkler Tests	167
164.1 General	167
164.2 Test method – general	168
164.3 Test method – rain test	168
164.4 Test method – sprinkler test	171
164.5 Test results	173
165 Polymeric Thermal Conditioning Test	173
165.1 General	173
165.2 Test method	173
165.3 Test results	174
166 Gasket Accelerated Aging Test	174
166.1 General	174
166.2 Test method A	174
166.3 Test results A	174
166.4 Test method B	174
166.5 Test results B	175
167 Gasket Adhesion Test	175
167.1 General	175
167.2 Test method A	175
167.3 Test results A	175
167.4 Test method B	175
167.5 Test results B	176
168 Paint Adhesion Test	176
168.1 General	176
168.2 Test method	176
168.3 Test results	176

PORTABLE HAND LIGHT TESTS

168A Abnormal Operation Tests	176
168A.1 General	176
168A.2 Continuous operation	176
168A.3 Manual manipulation (following continuous operation)	176A
168A.4 Mechanical manipulation	176A
168B Crush Test	176C
168B.1 General	176C
168B.2 Test method	176C
168B.3 Test results	176D

168C Drop Test	176D
168C.1 General	176D
168C.2 Test method	176D
168C.3 Test results	176D
168D Conductor Secureness Test	176D
168D.1 General	176D
168D.2 Test method	176E
168D.3 Test results	176E
168E Dielectric Voltage-Withstand Test	176E
168E.1 General	176E
168E.2 Test method	176E
168E.3 Test results	176F

PART III

MARKINGS

169 General	176F
169.1 Form	176F
169.2 Form "A" marking label	178
169.3 Tag type markings	178A
169.4 Pictograph type markings	178A
169.5 Manufacturer's identification	179
169.6 Electrical ratings	179
169.7 Mounting orientation	179
169.8 Hot surface marking	179
169.9 Interconnected units	180
169.10 Units with integral shelf, rack, or table	180
169.11 Resemblance to toy	180
169.12 Marking for luminaires containing hazardous substances	181
170 Incandescent Units	181
170.1 Lamp replacement	181
170.2 Incandescent units shipped without lampshade	182
170.3 Removal of dust cover	183
171 Tungsten Halogen Units	183
171.1 Lamp replacement – single envelope lamp	183
171.2 Lamp replacement – double envelope lamp	184
171.3 Risk of fire and injury warnings	184A
171.4 Five foot minimum mounting	184B
171.5 Date code	184B
172 Fluorescent Units	184B
172.1 Lamp replacement	184B
173 High-Intensity-Discharge Units	185
173.1 Lamp replacement	185
173.2 Double-ended metal halide lamp	187
174 Cord and Chain Suspended Units	187
175 Portable Cabinet Lights	187
175.1 Identification	187
175.2 Remote transformer	187
175.3 Shortened cord	188
175.4 Interconnecting receptacle	188
175.5 Portable cabinet light accessory	188

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents

Document Sharing Hub

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

176	Units for Use with Office Furnishings	188
177	Convertible Units	188A
178	Interchangeable Units	189
179	Track-Style Units	189
180	Portable Luminaire Kits and Subassemblies	190
180A	Portable Luminaire Accessory	190
181	Work Light	190
182	Wet Location Use	191
182A	Portable Hand Lights	191

PART IV

INSTRUCTIONS

183	General	192A
183.1	Location	192A
183.2	Assembly instructions	192A
183.3	Polarization instructions	192A
183.4	Interconnected units	192A
183.5	Pin type attachment plug	192B
183.6	Shortened cord	192B
183.7	Alternate supply connection	192B
183.8	Attachment plugs complying with foreign standards	193
184	Incandescent Units	193
184.1	Units shipped without lampshade	193
185	Tungsten-Halogen Units	193
186	Surface Mounted Units	194
186.1	General	194
186.2	Appliance mounting	194
187	Cord and Chain Suspended Units	194A
188	Portable Cabinet Lights	195
188.1	Installation instructions	195
188.2	Markings	197
188A	Portable Cabinet Light Accessory	198
189	Units for Use with Office Furnishings	198
190	Convertible Units	198
190.1	General	198
190.2	Swag to chandelier installation	198
190.3	Surface mount installation	198A
191	Track-Style Units	198A
192	Portable Luminaire Kits and Subassemblies	198B
192A	Portable Luminaire Accessory	199
193	Wet Location Use	199
193A	Portable Hand Lights	199

PART V**MANUFACTURING AND PRODUCTION TESTS**

194	Dielectric Voltage Withstand Test	200
194.1	General	200
194.2	Test method	200
194.3	Test results	202
195	Polarity Test	202
195.1	General	202
195.2	Test method	202
195.3	Test results	203
196	Continuity of Grounding Connection Test	203
196.1	General	203
196.2	Test method	203
196.3	Test results	203

APPENDIX A

Standards for Components.....	A1
-------------------------------	----

No Text on This Page

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents

Document Sharing Hub

This page intentionally left blank.

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

**UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL**



Documents

Document Sharing Hub

INTRODUCTION

1 Scope

1.1 These requirements cover portable luminaires (portable electric lamps) and subassemblies whose primary function is task or ambient illumination. These products are provided with a flexible cord and an attachment plug for connection to a nominal 120-volt, 15- or 20-ampere branch circuit, and intended for use in accordance with the National Electrical Code, ANSI/NFPA 70.

1.2 These requirements also cover dedicated portable luminaires that employ a connector other than an attachment plug that is intended to connect to a compatible connector assembly that is for connection to a nominal 120-volt, 15- or 20-ampere branch circuit, and intended for use in accordance with the National Electrical Code, ANSI/NFPA 70.

1.3 These requirements also cover portable luminaires that are intended for use on standard power systems other than a nominal 120-volt, 15- or 20-amperes.

1.4 These requirements do not cover Christmas tree and decorative lighting outfits, electric candles and candelabras without lamp shades, or portable luminaires with a seasonal decoration and a lamp shade of other than the open top and bottom construction, which are all covered by the Standard for Seasonal and Holiday Decorative Products, UL 588.

1.4 revised July 11, 2008

1.5 These requirements do not cover direct plug-in nightlights, sun and heat lamps, aquarium lamps, medical and dental lights, signs and commercial advertising displays, photographic lamps, germicidal lamps, or portable luminaires for marine use or for use in hazardous locations as defined in the National Electrical Code, ANSI/NFPA 70.

1.5 revised December 28, 2005

1.6 Deleted February 18, 2004

1.7 These requirements do not cover portable decorative illuminated furnishings whose primary function is not task or ambient lighting, which are all covered by the Standard for Household and Commercial Furnishings, UL 962. Examples of products covered by UL 962 are lava lamps and lighted make-up mirrors.

Revised 1.7 effective February 10, 2011

2 Glossary

2.1 For the purpose of these requirements the following definitions apply.

2.2 ADAPTER – A component of a lighting assembly intended to mate with a base and provide mechanical attachment and electrical connection for interchangeable lighting assemblies.

2.3 ADAPTER FOR TRACK STYLE UNIT – A component of a lighting assembly intended to mate with a track and provide mechanical securement and electrical connection for track-style type units.

2.4 BALLAST – A current limiting device required to start and operate fluorescent lamps.

2.5 BASE – A weighted free standing or wall-mounted, cord-connected support that provides the electrical supply to one or more replaceable or interchangeable lighting assemblies.

2.6 BULB (LAMP) – See 2.20.

2.7 CLASS 2 CIRCUIT – An isolated secondary circuit involving a potential of not more than 42.4 volts peak open circuit supplied by:

- a) An inherently-limited Class 2 transformer;
- b) A combination of an isolated transformer secondary winding and a fixed impedance or regulating network that together comply with the performance requirements for an inherently-limited Class 2 transformer; or
- c) One or more combinations of a transformer and an overcurrent protective device that together comply with the performance requirements for a noninherently-limited Class 2 transformer.

However, a circuit derived from a line-connected circuit by connecting impedance in series with the supply circuit as a means of limiting the voltage and current is not determined to be a Class 2 circuit.

2.8 CLEARANCE DISTANCE – The shortest distance measured through air between conductive parts.

2.9 COMBUSTION – Burning; or a chemical process (as an oxidation) accompanied by the evolution of light and heat. Examples of combustion are any blackening or disintegration, glowing, flaming or charring of any material or test indicators such as tissue paper, cheesecloth or wood.

2.10 COMPACT FLUORESCENT LAMP – A fluorescent lamp that is formed such that both ends fit into a support that is inserted into a single lampholder.

2.11 CONVERTIBLE UNIT – A portable luminaire provided with instructions and a kit that converts the portable luminaire to a fixed luminaire (lighting fixture).

2.12 DECORATIVE PART – A part whose total or partial destruction does not affect intended performance of the portable luminaire.

2.13 END CAP – A cover intended to close the open end of a track.

2.14 EXPOSED PART – A part that is not enclosed to prevent contact.

2.15 FRICTION MATERIAL – Rubber or elastomer with or without dimples or ridges. Plastic or metal with or without dimples or ridges is not determined to be a friction material.

2.16 GUARD – That portion of the portable luminaire that prevents inadvertent contact with the lamp. Is able to be integral with the shield.

2.17 HOUSED PART – A part that is prevented from being contacted by a housing that does not meet the requirements for enclosing live parts.

2.18 INTERLOCK SWITCH – A switch that de-energizes the lamps when the portable luminaire is opened or when the lamp is replaced.

2.19 ISOLATED SECONDARY CIRCUIT – A circuit derived from an isolated secondary winding of a transformer and that has no direct connection back to the line-connected circuit (other than through grounding means). A secondary circuit that has a direct connection back to the line-connected circuit is determined to be part of the line-connected circuit.

2.20 LAMP – The device, commonly called a "light bulb" or "bulb" intended to be inserted into a lampholder ("socket") to produce light.

2.21 LAMP CONTAINMENT BARRIER – Any part of a portable luminaire that encloses the lamp.

2.22 LIGHTING ASSEMBLY, INTERCHANGEABLE – An assembly consisting of a lighting unit and an adapter. One or more lighting assemblies is used with a base to make up the portable luminaire for interchangeable lighting assemblies.

2.23 LIGHTING ASSEMBLY, TRACK-STYLE – An assembly consisting of a lighting unit and an adapter. One or more lighting assemblies is used with a track to make up the track-style type unit.

2.24 LIGHTING UNIT, INTERCHANGEABLE – An assembly that includes a lamp enclosure or lamp compartment and any components and parts required for connecting the lamp compartment or enclosure to the adapter for interchangeable lighting assemblies.

2.25 LIGHTING UNIT, TRACK-STYLE – An assembly that includes a lamp enclosure or lamp compartment and any components and parts required for connecting the lamp compartment to the adapter for the track-style type units.

2.26 LINE OF SIGHT – A straight, unbroken, unobstructed, direct line between the eye and an object (for example, the lamp).

2.27 LIVE PART – A metal or other conductive part that has a potential difference during operation with respect to ground or any other conductive part.

2.28 LOW-VOLTAGE CIRCUIT – A circuit involving a potential of not more than 30 volts alternating current (42.4 peak) open circuit.

2.29 NORMAL MAINTENANCE AND USE – The cleaning, adjusting, moving, maintaining, and using of the portable luminaire. Includes items such as:

- a) Replacing a lamp, starter or fuse;
- b) Adjusting an illumination level; and

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents
Document Sharing Hub

- c) Removal or cleaning of all parts not secured by use of tools.

2.30 ORDINARY TOOL – A tool, such as a flat-blade or cross-head screwdriver, a nut driver, or pliers.

2.30.1 PLAY VALUE – A characteristic of products with features that promote a child's interactive exploration and use a child's imagination and ability to pretend to create enjoyable play and incorporates a child's interest to encourage repeat play. Such features may include interactive characteristics similar to those of familiar toys (i.e., stuffed animals, model vehicles with moving parts, buildings, sports equipment, cartoon characters, playhouses, or a "busy box" with lights, sliding or rotating features, or manually actuated music, and similar features), that are attractive to children eight years or less in age. Non-interactive features like decorative displays with pre-set patterns, pictures, or music may be entertaining, but do not necessarily have play value.

2.30.1 added December 23, 2004

2.31 POLYMERIC MATERIAL – A material made of a chemical compound or mixture of compounds formed by polymerization and consisting of repeating structural units. Polymeric materials include thermoplastic, thermosetting, and elastomeric materials. A thermoplastic material is able to be easily softened and resoftened by repeated heating. A thermosetting material cures by chemical reaction when heated and, when cured, is unable to be resoftened by reheating. An elastomeric material is capable of being stretched at room temperature to at least twice its length under low stress and recovers to its original length when released from the stress.

2.32 PORTABLE CABINET LIGHT – A portable lamp intended for final installation into a cabinet (open or enclosed) such as a china hutch, bookcase, bar, console, bed headboard, or similar furniture.

2.32.1 PORTABLE HAND LIGHTS – A complete assembly consisting of a handle, a lampholder assembly, a guard and a power-supply cord.

Added 2.32.1 effective December 23, 2006

2.32.2 PORTABLE HAND LIGHT ACCESSORY – A component of a hand light such as a lampholder assembly, a lamp guard with or without a hook for hanging, or a handle. These accessories are intended for assembly by the user or for use in other portable hand light applications.

Added 2.32.2 effective December 23, 2006

2.33 PORTABLE LUMINAIRE – A portable luminaire, also commonly known as a portable lamp, as defined in the scope of the Standard. For purposes of requirements in the Standard, the term "portable luminaire", "luminaire", and "unit" are used interchangeably.

2.34 POWER-SUPPLY CORD FITTER – That portion of the assembly that terminates the power-supply cord at the track, connecting the conductors to the bus bars in the track.

2.35 REACTANCE BALLAST – A ballast, the impedance of which is provided by:

- a) Inductive reactance;
- b) Capacitive reactance; or
- c) Both inductance and capacitive reactance.

2.36 REACTOR (SIMPLE REACTANCE) BALLAST – A reactance type ballast in which the impedance (inductive reactance) is provided by a single coil and core - not a transformer. A reactor ballast usually has one lead in and one lead out.

2.37 SECONDARY CIRCUIT – A circuit that is supplied by an induced voltage from a primary where a primary circuit is that supplied by a branch circuit.

2.38 SHADE – The portion of the portable luminaire within which the lamp is located. The light from the lamp is diffused, deflected, reflected, transmitted through, or absorbed by the shade. The shade may be a functional or supportive part, or a decorative part.

2.39 SIGN – A self-contained, cord or permanently-connected, electrically illuminated product, usually with advertising or other words or symbols, intended to convey information or attract attention in a commercial setting.

2.40 SODALIME GLASS – Window glass which typically has a greenish tint readily discernible by viewing the glass from the edge. It scratches easily as compared to other types of glass. Sodalime glass is not determined to be heat resistant unless it is tempered.

2.41 SUBASSEMBLY – Consists of all the parts to a portable luminaire in an easy to assemble form either for "building" a unit (such as a craft kit) or rewiring a portable luminaire. They are intended to be assembled by a person presumed to possess little or no knowledge or no knowledge of electrical circuitry.

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

No Text on This Page

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

**UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL**



Documents

Document Sharing Hub

2.42 TEMPORARY – Used only for the amount of time required to complete the job. Not intended for long term use in one location. When the job is complete, the work light is moved to the next work area or stored until the next job.

2.42.1 TORCHIERE – A portable luminaire supported by the floor having a bowl shaped shade with the concave surface facing upward (open top/closed bottom design) intended to provide indirect light. This includes both opaque and translucent type shades. The lamp (bulb) is typically 5 – 6 feet (1.27 – 1.52 m) above the floor and is hidden from direct view by the concave shade. A floor unit that has an adjustable bowl shaped shade where the concave surface of the shade can be directed upward to an angle greater than 45 degrees from the horizontal is also defined as a torchiere.

Revised 2.42.1 effective February 10, 2011

2.43 TRACK – An enclosure that houses the bus bars and that houses or is integral with the bus bar support. Track is usually made of extruded material that usually resembles an "H" in cross section, with two vertical members connected by a horizontal member. The bus bar support and bus bars are factory-mounted in the lower half of the "H" and the connection of lighting assemblies is accomplished through the open bottom.

2.44 TUNGSTEN-HALOGEN DOUBLE ENVELOPE LAMP – See 2.45. The lamp also includes an outer integral glass envelope.

2.44.1 TUNGSTEN-HALOGEN LAMP, SUITABLE FOR USE IN OPEN LUMINAIRE – A lamp that complies with the following:

- a) The lamp containment and UV filter requirements of UL 153 and is identified as a "Classified" lamp; or
- b) The lamp is single enveloped, complies with the ANSI/IEC C78.60432:3, Standard for Incandescent Lamps – Safety Specifications, Part 3, Tungsten Halogen Lamps (non vehicle), and the lamp manufacturer declares on the lamp package that the lamp is suitable for use in an open luminaire; or
- c) The lamp is provided with an integral outer lamp envelope and the lamp manufacturer does not provide a caution requiring an additional lamp containment barrier or UV filter.

Added 2.44.1 effective June 28, 2007

2.45 TUNGSTEN-HALOGEN SINGLE ENVELOPE LAMP – An incandescent lamp with a quartz or glass envelope, filled with a halogen gas, and a tungsten filament.

2.46 ULTRAVIOLET (UV) FILTER – A portion of the portable luminaire that limits ultraviolet (UV) emissions.

2.47 USER SERVICING – See 2.29.

2.48 VISIBLE PART – A part that is able to be partially enclosed and that is accessible.

2.49 WORK LIGHT – A cord and plug connected light for illumination of work areas such as construction sites, loading docks, and machinery work stations. Work lights are not intended to be hand held during use. Work lights are not intended for use in hazardous locations as defined in the National Electric Code, ANSI/NFPA 70.

3 Organization and Application

3.1 The requirements are divided into parts according to the following:

Part I consists of construction requirements:

Sections 7 – 45 – applicable to all portable luminaires; and

Sections 46 – 123 – applicable to specific type units.

Part II consists of performance tests:

Sections 124 – 140 – applicable to all portable luminaires; and

Sections 141 – 168 – applicable to specific type units.

Part III consists of marking requirements:

Section 169 – applicable to all portable luminaires; and

Sections 170 – 182 – applicable to specific type units.

Part IV consists of instruction requirements:

Section 183 – applicable to all portable luminaires; and

Sections 184 – 193 – applicable to specific type units.

Part V consists of manufacturing and production tests:

Sections 194 – 196 – applicable to all portable luminaires.

3.2 A portable luminaire is capable of having multiple supplementary requirements that are applicable. For example, a work light, in addition to complying with the general and the work light sections of the standard, shall also be required to comply with the supplementary requirements for tungsten-halogen and wet location type units when these requirements are applicable. Specific unit features which limit the application of the requirement(s) are identified by headings, subheadings, or the text of the paragraph. When a product type reference is not specified, the requirement is applicable to all portable luminaires.

4 Components

4.1 Except as indicated in 4.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components generally used in the products covered by this standard.

4.2 A component is not required to comply with a specific requirement that:

- a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or
- b) Is superseded by a requirement in this standard.

4.3 A component shall be used in accordance with its rating established for the intended conditions of use.

4.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

5 Units of Measurement

5.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

5.2 Unless indicated otherwise, all voltage and current values specified in this standard are rms.

No Text on This Page

Document Was Downloaded By JASON MA For Use By SHANGHAI LIVE INFORMATION CONSULTING CO LTD 20541 : 7/16/2009 - 4:24 AM

*UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL*



Documents

Document Sharing Hub

6 Undated References

6.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

PART I

CONSTRUCTION

MECHANICAL CONSTRUCTION – GENERAL

7 General

7.1 These requirements apply to all portable luminaires and shall be used in conjunction with the applicable supplementary requirements in this standard.

8 Assembly and Packaging

8.1 Any portion of a portable luminaire that is detachable, for shipping purposes or otherwise, shall be constructed such that it is only able to be assembled in the intended manner.

Exception: A part that is capable of being detached and assembled without compromising the mechanical or electrical integrity of the unit is capable of being assembled in more than one manner.

8.2 A portable luminaire shall be shipped from the factory in a carton or as an unpackaged complete assembly. Unassembled parts, such as glassware, chains, and similar components, when required elsewhere in the standard to accompany the product, shall be included. Decorative glassware is not required to be mounted in a frame or holder and is able to be separately wrapped to protect it from breakage during shipment.

8.3 A portable luminaire is not required to be completely mechanically assembled when:

- a) All parts required to assemble the product, other than an ordinary tool, are provided with the unit;
- b) Splices or electrical connections are not exposed nor require completion in the assembly;
- c) The integrity of the strain relief at all wiring terminations is intact (see Strain Relief Test, Section 133);
- d) Assembly instructions are provided in accordance with 183.2; and
- e) When assembled in accordance with the manufacturer's instructions, the unit complies with the requirements in this standard.

Exception No. 1: A splice or connection is capable of being exposed or incomplete when it consists of interlocking plug/receptacle parts where the means of maintaining polarity and strain relief are inherent to the construction of the interlocking parts.

Exception No. 2: An insulation-piercing or crimp connector is capable of being exposed during the assembly operation when:

- a) All live parts of the connector and the conductors are insulated; and

b) The splice is located such that it and the conductors connected to it are unable to inadvertently snagged or grabbed.

8.4 When wires pass through a joint between sections of a portable luminaire that are separable for packing purposes, the joint shall be such that rotation of one section with respect to the other during the assembly of the sections is limited to not more than 360 degrees. Friction alone does not meet the intent of the requirement to prevent rotation.

Exception: When all of the following conditions exist, rotation between sections of a portable luminaire is not limited to 360 degrees:

- a) The internal diameter of the tubing through which the wires pass is 1/2 inch (12.7 mm) or more or the Power Supply Cord Twist Test, Section 135A is conducted with acceptable results; and*
- b) The rotation during assembly is limited to not more than one revolution for each 3 inches (76 mm) of unobstructed tubing length through which the wires pass, when such rotation does not place any stress on the conductors; and*
- c) The conductors do not involve splices unless the splices are:*
 - 1) Inaccessible during assembly in accordance with Accessibility of Live Parts, Section 23; and*
 - 2) Secured and provided with strain relief that has been shown to be reliable and not easily defeated by the user.*

8.4 revised December 28, 2005

8.4.1 When fiberglass sleeving is provided for reducing the risk of cutting or abrasion of wiring between sections of a portable luminaire separable for packing purposes as noted in 8.3 and 8.4, the sleeving shall be secured in place by means other than friction. Unless the assembly is obvious between potential pinch points, the sleeving should not require careful positioning by the user to avoid damage to the wiring.

Added 8.4.1 effective February 10, 2011

8.5 When a splice or an electrical connection is located in a section of a portable luminaire that is separable for packing purposes, as noted in 8.3 and 8.4, the unit shall be provided with strain relief to reduce the risk of stress being transmitted to the splice or electrical connection during unpackaging and assembly of the luminaire. The strain relief shall be reliable and not easily defeated by the user. See the Strain Relief Test, Section 133.

8.6 When in any position of adjustment, a spring-loaded or adjustable section of a pole unit shall not transmit stress to a splice or wiring within any section of the unit either during assembly or when completely assembled. For example, the stem of an adjustable height floor unit shall raise and lower without binding or crimping the wiring of the unit.

9 Enclosures

9.1 A portable luminaire shall be constructed so that it has the mechanical strength required to resist the abuses to which it is subjected, without resulting in a risk of fire, electric shock, or injury to persons due to total or partial collapse of any part with resulting reduction of spacings (electrical or thermal), loosening or displacement of parts, or other serious defects.

9.2 A portable luminaire shall be constructed so that all user servicing is completed without subjecting any wiring, component, or part to mechanical damage, or reducing electrical spacings.

9.3 A portable luminaire shall be constructed of material such as glass, metal, urea, porcelain, phenolic composition, plastic or wood.

Exception: A decorative part, the failure of which does not interfere with the performance of the unit, is able to be constructed of any material.

9.4 A decorative part is able to be constructed of any material.

9.5 A part such as a splice, a tap, a wire, a transformer, a capacitor, a ballast, a current-carrying part, or a device with an exposed live part shall be contained in an enclosure constructed of metal, glass, ceramic, porcelain, or polymeric material during normal maintenance and use.

Exception No. 1: A current-carrying part of a wiring device (such as the screw shell and center contact of a lampholder, and the lampholder contacts, started holder contacts, and similar components of a fluorescent lamp) that are normally fitted with a functional component (a lamp, a starter, and similar components during use of the unit is not required to be additionally enclosed.

Exception No. 2: A component, such as a ballast, that has an integral outer housing that has been evaluated as an enclosure is not required to be additionally enclosed.

Exception No. 3: The power-supply cord is not required to be contained within the unit.

Exception No. 4: A wire with minimum 0.030 inch (0.76 mm) thermoplastic insulation is not prohibited from being exposed for 2 inches (50.8 mm) or less when it is securely held in place and is routed in close proximity to a portion of the lamp such that the risk of being inadvertently snagged is minimized.

Exception No. 5: A wire or bundle of wires for a lamp supported lampholder is not prohibited from being exposed when:

- a) The exposed wire or bundle of wires is covered with a glass fiber sleeve or thermoplastic tubing that extends from a point inside the enclosure to within 1/2 inch (12.7 mm) of the lampholder, and the sleeving has a wall thickness of at least 0.017 inch (0.42 mm);*
- b) The hole in the housing through which the nonenclosed wires emerge is not larger than 5/8 inch (15.9 mm) diameter, or has an area of 0.31 square inch (200 mm²) when other than round in shape; and*
- c) The wires are provided with a strain relief device at the portable luminaire end, and the device complies with the Strain Relief Test in Section 133.*

Exception No. 6: A wire or cord with a minimum 0.030 inch (0.76 mm) thermoplastic insulation and an insulation-piercing or a crimp connector having all live parts of the connector and the conductors insulated are only required to be housed within the unit such that they are unable to be grasped, pulled, or inadvertently snagged. For instance, it meets the intent of the requirement to have a metal base with a felt pad for a bottom cover where the felt pad is secured by an adhesive and the weight of the unit.

9.5 revised February 18, 2004

10 Metal Thickness for Enclosures

10.1 The thickness of sheet metal used in a portable luminaire shall not be less than specified in Table 10.1.

Exception No. 1: A form of construction that uses metal having a thickness less than specified is able to be used when investigated and found to comply with the applicable tests in Metal Thickness Equivalency Tests, in the Standard for Luminaires, UL 1598.

Exception No. 2: The thickness of metal is not specified for:

- a) A decorative part;*
- b) A reflector part that does not form part of the enclosure; or*
- c) Any part not required to serve as the enclosure, provide structural integrity, or act as support of a wiring device.*

Table 10.1
Thickness of sheet metal

Largest dimension	Conditions of use	Minimum thickness of sheet metal					
		Uncoated		Zinc-coated		Copper, brass, or aluminum	
		Inch	(mm)	Inch	(mm)	Inch	(mm)
Not more than 26 inches (660 mm)	Component Support	0.020	(0.51)	0.023	(0.58)	0.025	(0.64)
		0.016 ^a	(0.41) ^a	0.019 ^a	(0.48) ^a	0.020 ^a	(0.51) ^a
	No Component Support	0.016	(0.41)	0.019	(0.48)	0.020	(0.51)
		0.013 ^a	(0.33) ^a	0.016 ^a	(0.41) ^a	0.016 ^a	(0.41) ^a
Not more than 50 inches (1.27 m)	Component Support	0.026	(0.66)	0.029	(0.74)	0.032	(0.81)
		0.020 ^a	(0.51) ^a	0.023 ^a	(0.58) ^a	0.025 ^a	(0.64) ^a
	No Component Support	0.020	(0.51)	0.023	(0.58)	0.025	(0.64)
		0.016 ^a	(0.41) ^a	0.019 ^a	(0.48) ^a	0.020 ^a	(0.51) ^a
More than 50 inches (1.27 m)	Component Support	0.042	(1.07)	0.045	(1.14)	0.050	(1.27)
		0.031 ^a	(0.79) ^a	0.034 ^a	(0.86) ^a	0.040 ^a	(1.02) ^a
	No Component Support	0.031	(0.79)	0.034	(0.86)	0.040	(1.02)
		0.026 ^a	(0.66) ^a	0.029 ^a	(0.74) ^a	0.032 ^a	(0.81) ^a

^a Only when the surface involved is curved, ribbed, flanged, or reinforced with additional metal. A surface is determined to be flanged when the two opposite longer sides are bent at right angles to the surface to form 1/2 inch (12.7 mm) or wider flanges.

10.2 Table 10.1 applies to any single surface or single flat sheet. Values for the thickness of sheet steel are based on uncoated material. Rigid members consisting of 1/2 by 1/2 inch (12.7 by 12.7 mm), 90 degree angle strips formed of sheet steel not less than 0.031 inch (0.79 mm) thick, or flat steel bars not less than 3/8 inch (9.5 mm) wide and 1/8 inch (3.2 mm) thick shall be used to reinforce and divide a larger area into sections for which lighter metal is able to be used. Such reinforcement, unless along the greater dimension of the surface, shall also be secured to the adjacent sides of the enclosure. A single sheet of metal having a bent corner that forms an angle of not more than 120 degrees is determined to be reinforced at that corner, and the thickness is based on the length and area of the maximum flat surface involved.

10.3 The minimum thickness of cast metal shall be in accordance with Table 10.2.

Exception: A form of construction that uses metal having a thickness less than specified is able to be used when investigated and found to comply with the applicable tests in Metal Thickness Equivalency Tests, in the Standard for Luminaires, UL 1598.

10.3 revised December 28, 2005

Table 10.2
Thickness of cast metal

Metal	Minimum thickness, inch (mm)	
	At unreinforced areas	At all other areas ^a
Die-cast metal	5/64 (2.0)	3/64 (1.2)
Cast malleable iron or permanent mold cast aluminum	3/32 (2.4)	1/16 (1.6)
Other cast metal	1/8 (3.2)	3/32 (2.4)
^a Applicable for the base of threads, and for surfaces that are curved, ribbed, or otherwise reinforced so as to meet the intent of the requirements, or for a surface of such shape or size that the required mechanical strength is provided.		

10.4 Metallic tubing shall not be less than 0.040 inch (1.02 mm) thick when cut threads are employed.

10.5 Unthreaded metallic tubing or metallic tubing having rolled threads shall not be less than 0.025 inch (0.64 mm) thick.

10.6 The thickness of tubing is to be measured with a round-nose micrometer.

10.7 An enclosure, a frame, a guard, a handle, or similar part shall not be sufficiently sharp to constitute a risk of injury to persons in normal maintenance and use.

10.7 revised February 18, 2004

11 Corrosion Protection

11.1 Each external iron or steel surface of a portable luminaire enclosure or wireway shall be protected from corrosion.

Exception No. 1: Enclosed steel pipe stems are not required to be protected against corrosion.

Exception No. 2: Threaded holes and the cut edges and punched holes of an enclosure, and similar parts, formed of galvanized stock are not required to be protected against corrosion.

Exception No. 3: Cast materials are not required to have corrosion protection.

12 Polymeric Enclosures

12.1 A polymeric material, used as a part or all of the enclosure of a portable luminaire as specified in Enclosures, Section 9, shall have:

- a) Mechanical temperature indexes (including impact) as a result of long term aging as described in the Standard for Polymeric Materials – Long Term Property Evaluations, UL 746B; and
- b) Been evaluated for use in portable luminaires in accordance with the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C.

Exception No. 1: A polymeric material used as an enclosure for a dry location unit does not require the volume resistivity test.

Exception No. 2: The distortion under load test is not required when the mold stress relief test is conducted.

Exception No. 3: For units which are not mounted to a surface, the impact test shall include the drop test, and the ball impact test is not required.

Exception No. 4: The mold-stress relief distortion test shall be conducted using the air-oven method only. The test-cell method is not required.

Exception No. 5: The input after mold stress relief distortion, the abnormal conditions test, and the severe conditions test are not required.

Exception No. 6: The mold stress relief distortion test is not required on extruded or protruded materials.

12.2 A polymeric material is relied upon to provide all or a portion of the strain relief, shall comply with the requirements of the Strain Relief Test, Section 133, after the Mold Stress Relief Distortion Test in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C.