

Incandescent Lighting Fixtures

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April 30, 1996

Revision pages for

Standard for

Incandescent Lighting Fixtures

UL 1571, Fourth Edition

Attached to this transmittal notice is a revision of the Fourth edition of UL 1571.

A CHANGE ON A PAGE DATED APRIL 30, 1996 IS INDICATED BY A SMALL PRINT NOTE FOLLOWING THE AFFECTED ITEM, PRECEDED AND FOLLOWED BY AN ASTERISK.

THESE NEW AND REVISED REQUIREMENTS ARE NOW IN EFFECT EXCEPT FOR THOSE PARAGRAPHS, SECTIONS, TABLES, AND FIGURES HAVING FUTURE EFFECTIVE DATES AS INDICATED IN THE SMALL PRINT NOTE FOLLOWING THE AFFECTED ITEM. TO RETAIN THE REQUIREMENTS IN EFFECT UNTIL THESE FUTURE EFFECTIVE DATES, DO NOT DISCARD THE PAGES REPLACED BY THOSE HAVING FUTURE EFFECTIVE DATES UNTIL THOSE DATES.

As of May 3, 1999, marine lighting fixtures Listed by UL must comply with the requirements in this Standard. Between April 30, 1996 and May 3, 1999, new submittals to UL for marine lighting fixtures may be evaluated under all requirements in this Standard or, if requested in writing, evaluated under presently effective requirements only. The presently effective requirements are contained in the Seventh edition of UL 595.

The following revisions were also issued to include Type W cords as an alternative to W-A cords for outside use; publish the requirements that must be applied in order to obtain a c-UL Mark (Canadian Requirements Comparison Guide - CRG (1571)); and correct miscellaneous errors.

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

The new and revised requirements are substantially in accordance with UL's bulletins on this subject dated May 26, 1995 and April 16, 1996.

Attention is directed to the note on the title page of this standard outlining the procedure to be followed to retain the Department of Defense approved text of UL 1571.

Revised and/or additional pages may be issued from time to time.

(Continued)

April 30, 1996 – UL 1571

With the inclusion of the accompanying material, the standard consists of pages dated as shown in the following checklist:

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2	–
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4A, 5	April 30, 1996
6 – 10	July 26, 1995
11	April 30, 1996
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43	April 30, 1996
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SA9 – SA11	July 26, 1995
SA12	April 30, 1996
SA13	July 26, 1995
SB1 – SB7	April 30, 1996
A1, B1, B2	July 26, 1995
CRG1 – CRG7	April 30, 1996

JULY 26, 1995

(Title Page Reprinted: April 30, 1996)

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UL 1571

Standard for

Incandescent Lighting Fixtures

Prior to the first edition, the requirements for the products covered by this standard were included in the Standard for Electric Lighting Fixtures, UL 57.

First Edition – December, 1979

Second Edition – February, 1984

Third Edition – October, 1991

Fourth Edition

July 26, 1995

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

The Department of Defense (DoD) has adopted UL 1571 on January 18, 1985. The publication of revised pages or a new edition of this Standard will not invalidate the DoD adoption.

Revisions of this standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest published set of revision pages.

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FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. A product employing materials or having forms of construction differing from those detailed in the requirements of this Standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be judged to comply with the Standard.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

2.32 **WATER SHIELD** — A structural part of a wet location fixture relied upon to reduce or prevent the entrance of water into a fixture or onto current-carrying parts and investigated for such use during a rain, sprinkler, or immersion test.

2.33 **WIRE BINDING SCREW** — A screw used as a post around which a wire is to be wrapped.

3 Components

3.1 Except as indicated in 3.2, 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.

3.2 A component need not comply with a specific requirement that:

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

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

3.4 Specific components are recognized as being 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 for which they have been recognized.

4 Units of Measurement

4.1 If a value for measurement is followed by a value in other units in parentheses, the second value may be only approximate. The first stated value is the requirement.

4.2 Unless indicated otherwise, all voltage and current values mentioned in this standard are root mean square (rms).

5 Assembly and Packaging

5.1 A fixture shall be completely wired with all splices and connections completed.

Exception No. 1: The arm(s) of a fixture or stem(s) of a stem-pendant fixture may be disconnected from the body of the fixture if it is marked or provided with instructions as specified in 33.4.

Exception No. 2: A stem- or chain-pendant fixture, for which incomplete assembly for packaging or shipment is essential, may be shipped in a form that requires wiring after the fixture leaves the factory, but shall be unwired only to the extent required by the shipping assembly, if made the subject of an investigation and marked or provided with instructions as specified in 33.4.

Exception No. 3: Recessed fixture sections that comply with Rough-In and Finishing Sections for Recessed Fixtures, Section 49 need not be completely assembled.

5.1 revised April 30, 1996

5.2 A fixture shall be constructed with all electrical components mounted in place.

Exception: A lampholder mounted by a snap fit construction may be unmounted if:

- a) Instructions for proper assembly are provided as specified in 33.1.4; and
- b) No electrical assembly or connections need be made, or
- c) The assembly is made the subject of an investigation.

5.3 A fixture shall be completely assembled when shipped from the factory.

Exception No. 1: Recessed fixture sections that comply with Rough-In and Finishing Sections for Recessed Fixtures, Section 49, need not be assembled together.

Exception No. 2: Trims need not be secured to the fixture.

Exception No. 3: Fixture fittings that comply with Section 48, need not be completely assembled.

Exception No. 4: A stem- or chain-pendant fixture, or a fixture of similar construction, for which incomplete assembly is essential for packaging or shipment, may be unassembled only to the extent necessary to facilitate packaging for shipment or to make connection to the source of power supply.

Exception No. 5: Wireway channels, diffusers, and other parts that do not support electrical components need not be attached to the fixture when shipped if the parts are shipped in the same package as the remaining parts of the fixture or in a separate package that is securely attached to the fixture package.

5.4 A fixture shall be shipped from the factory in a carton or as an unpackaged complete assembly. Unassembled parts, such as stems, chains, and the like, if required elsewhere in the standard to accompany the fixture, shall be included. Glassware need not be actually mounted in a frame or holder but may be separately wrapped to protect it from breakage during shipment.

Exception No. 1: A lens or diffuser that does not provide structural or enclosed functions as required in 7.1 need not be included.

Exception No. 2: Fixtures may be bulk packed if all unassembled parts are included.

5.5 If the acceptability of a fixture is dependent on the size or shape of a diffuser, the diffuser (glass, plastic, metal, and the like) shall be packed and shipped together with the remainder of the fixture in one carton that contains only one complete fixture, or in a bulk carton that contains fixtures that are compatible with all diffusers in the carton.

5.6 As specified in 5.4, a carton is a box of cardboard, pasteboard, shrink film, or the like (but not newspaper, wrapping paper, tissue paper, and the like). It need not be rectangular in form, since the so-called "Pinch Pack" of cardboard wrap with ends pinched together and stapled is considered a carton. Parts banded or otherwise secured to a carton need not be located inside the carton.

5.7 A part that must be removed to assemble stems or connect a fixture in the intended manner to the supply circuit need not be fastened, but the construction shall be such, and the hardware shall be provided, to permit field assembly.

23.1.2 An equipment grounding means shall be provided on the cross-bar (mounting strap), if the cross-bar and the fixture are conductively connected after installation. Otherwise, the equipment grounding means shall be provided on the fixture.

Exception: A grounding means need not be provided on a post-mounted fixture if it is shipped with, or marked for use with, fixture fittings (a post as specified in Section 48, Fixture Fittings, or a post arm) that are conductively connected to the fixture. See 34.1.11.

23.1.3 A means to connect the equipment grounding conductor of the branch circuit to the fixture as noted in 23.1.2 shall be provided. This shall consist of a pigtail lead, a pressure terminal connector, a wire binding screw, the grounding contact of a receptacle or the grounding pin of an attachment plug or the equivalent. The grounding means shall be at the same location as the power supply connection means.

Exception: A fixture that is marked in accordance with 46.25 and provided with a fitting as specified in 44.1.4 need not be provided with a grounding conductor or terminal.

23.1.4 A fixture equipment grounding conductor shall not be smaller than the gauge of wire used for the fixture's supply connections nor smaller than No. 18 AWG (0.82 mm²). If insulated, this conductor, where visible to the installer, shall have a braid of continuous green color with or without a yellow tracer or, if no braid is employed, the insulation on the conductor shall be green with or without one or more yellow stripes. A conductor having green insulation and a braid of other than green may be employed if the green insulation is readily visible where connection to the branch-circuit supply wires will be made.

23.1.5 A fastener (screw, rivet or other device) used to terminate the fixture equipment grounding conductor shall not also be used to fasten another component part, including a bonding conductor.

Exception No. 1: The equipment grounding conductor of a chain pendant fixture may be secured to a ring terminal that is, in turn, secured to a threaded nipple and a screw collar loop.

Exception No. 2: A grounding conductor may be secured to the same screw as the bonding conductor if the grounding conductor is separately secured such that it need not be loosened or removed during replacement or disconnection of any bonding conductor.

Exception No. 3: An equipment grounding conductor may be secured to a lampholder. If the equipment grounding conductor is secured to a snap-fit lampholder it shall comply with 23.2.3 or 23.2.4.

23.1.6 The reliability of the grounding system shall be maintained as follows:

- a) Positive means of maintaining contact between conductive surfaces are required, e.g. screws, rivets, welding, etc.
- b) If the reliability of a grounding connection is questioned it shall be subjected to the test in Section 28, Grounding Continuity Test.
- c) Thermoplastic materials used in a grounding system shall comply with Section 57, Polymeric Materials.

23.1.6 revised April 30, 1996

23.1.7 The cord of a cord-connected fixture shall contain an equipment grounding conductor complying with 23.1.4 and 23.1.5.

Exception: A pendant-type fixture construction in which a 2-wire cord and separate equipment grounding conductor are intended to be interwoven though the chain need not comply with 23.1.5.

23.1.8 A pressure-type grounding terminal for field connection shall comply with the requirements in the Standard for Equipment Wiring Terminals for Use With Aluminum and/or Copper Conductors, UL 486E.

23.1.9 A wire binding screw intended for field connection of the branch circuit equipment grounding conductor shall comply with the following:

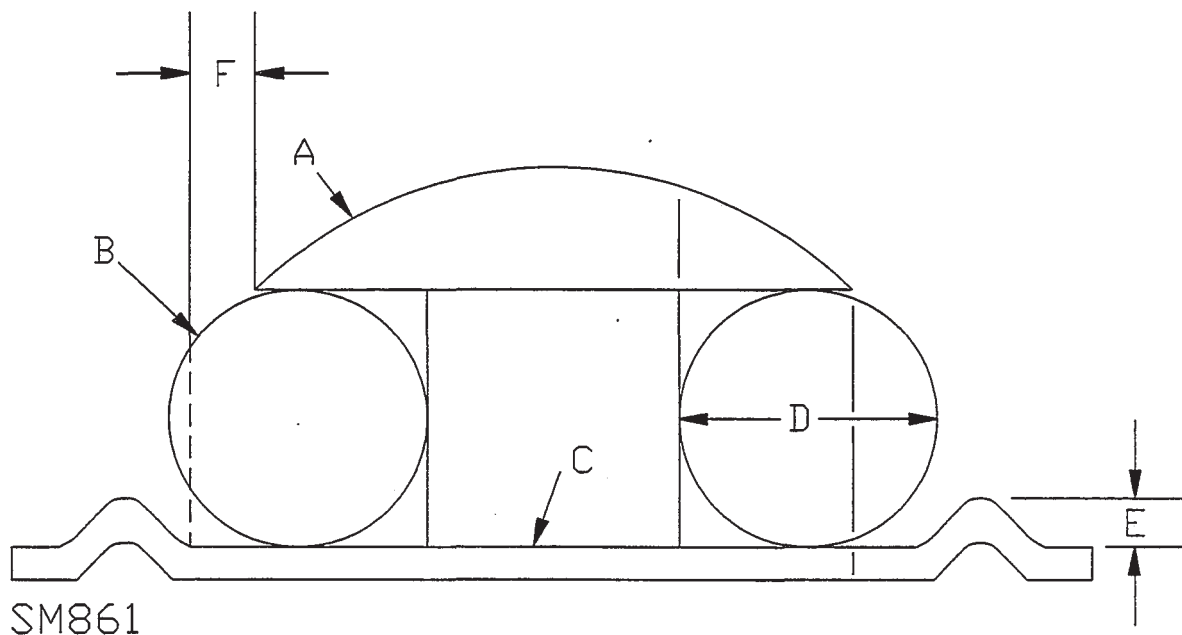
- a) The screw shall be No. 8 (4.2 mm major diameter) or larger.
- b) The screw head shall be colored green and have a hexagonal shape, slotted, or both.
- c) The screw shall not be used to secure more than one wire except as permitted by Exception No. 2 to 23.1.5.
- d) A sheet metal screw shall not be used.

23.1.10 A cupped washer shall be provided to hold the wire under the head of the screw.

Exception No. 1: A cupped washer need not be provided if there are two raised areas around the tapped hole that are minimum 1/4 inch (6.4 mm) apart (on center) and comply with Figure 23.1.

Exception No. 2: Other means may be used to hold the wire if investigated and found to be equivalent.

Figure 23.1
Terminal-conductor relationship



A – Wire binding Screw

B – Conductor

C – Terminal Plate

D – Maximum conductor diameter, but not less than 0.08 inch (2 mm)

E – Minimum height of raised areas = 0.04 inch (1.0 mm)

F – The horizontal dimension from the edge of the screwhead to the inside edge of the raised area = 0 to 1/4 D

34.1.9 A fixture having a pressure wire terminal for the connection of an equipment grounding conductor shall be marked, in Form B-3, adjacent to the terminal or screw "GROUND," "GRND," or "GND." The electrical symbol for grounding alone is not acceptable.

34.1.10 A fixture that employs a 2-wire, parallel blade, nongrounding type receptacle shall be marked in Form B-4 "For replacement use only. Do not use this fixture to replace grounded fixture."

34.1.11 A fixture not provided with a grounding means as described in the exception to 23.1.2 shall be marked in Form B-3 with the following or equivalent: "Mount this fixture only to metallic posts which are provided with a grounding means, such as a ground screw or ground wire."

34.2 Installation instructions

34.2.1 A fixture shall be provided with installation instructions. The instructions shall be secured, attached, or captured to the fixture so as to be visible before or during installation of the fixture. These instructions shall include a circuit diagram that describes the proper method of making connections to a power supply, including the proper method of connecting the grounding means and maintaining polarity.

Exception No. 1: The instructions need not be attached to the fixture if a tag or other similar means is secured to the fixture that directs the installer to the installation instruction sheet for making the wiring connections.

Exception No. 2: A fixture need not be provided with the instructions as specified if the fixture carton is marked with the word "WARNING" and the following or equivalent: "Risk Of Fire And Electric Shock. This Product Is To Be Installed By A Qualified Electrician Only" in letters at least 1/4 inch (6.4 mm) in height.

34.2.2 A fixture that employs a 3-wire receptacle shall be provided with the proper grounding instructions in accordance with 34.2.1 and shall be marked on the instructions with the following or equivalent wording: "This fixture employs a grounded type receptacle and is not intended for connection to a two-wire, ungrounded source of supply."

Exception: A fixture need not be provided with the marking if the fixture carton is marked with the word "WARNING" and the following or equivalent: "Risk Of Fire And Electric Shock. This Product Is To Be Installed By A Qualified Electrician Only" in letters at least 1/4 inch (6.4 mm) in height.

34.2.3 A fixture that is:

- a) Intended to be connected to or over an outlet box; and
- b) Marked in accordance with the requirements in 34.1.6 for supply connections rated 75°C (167°F) or 90°C (194°F);

shall include the word "WARNING" and the following or equivalent wording: "Risk Of Fire. Most Dwellings Built Before 1985 Have Supply Wire Rated 60°C. Consult A Qualified Electrician Before Installing." This warning shall be located on the fixture carton (in Form H-7) and on the installation instructions described in 34.2.1.

Exception No. 1: The marking need not be provided if the fixture is marked in Form B-4 or D-4, "Not for use in dwellings."

Exception No.2: A fixture need not be provided with this warning if the fixture carton is marked with the word "WARNING" and the following or equivalent: "Risk Of Fire And Electric Shock. This Product Is To Be Installed By A Qualified Electrician Only" in letters at least 1/4 inch (6.4 mm) in height.

34.2.4 A fixture rated for less than 277 V that complies with the accessibility requirements in the exception to 21.1.1 shall be marked in Forms C-3 and H-7 "Not for Residential Use."

34.2.4 revised April 30, 1996

35 Lamp Replacement

35.1 A fixture that employs a lampholder that operates at higher than nominal 120 volts shall be marked "Use _____ volt lamps". This marking may be combined with, but is in addition to, the markings required in 40.3, 40.4, or 46.18. The marking shall be in Form A-6.

35.2 A wattage marking for a medium base lamp shall not exceed 300 watts.

35.3 A fixture with a single-ended tungsten-halogen lamp that complies with the exception to 59.2.1 shall be marked in Form A6 with the word "CAUTION" and the following or the equivalent: "To reduce the risk of fire do not use a lamp identified for use in enclosed fixtures."

PART 2 – SURFACE-MOUNTED AND RECESSED FIXTURES

SURFACED-MOUNTED FIXTURES

36 General

36.1 In addition to the requirements in Sections 1 – 35, a surface-mounted fixture shall comply with the requirements under this heading.

37 Construction – Mechanical

37.1 Enclosures

37.1.1 A surface-mounted, outlet-box connected fixture shall be provided with a back enclosure that may contain an opening with a maximum area of 180 square inches (1161 cm²). The back enclosure shall comply with 7.1 and the dimensions of the opening shall be as specified in (a) or (b).

a) For a circular opening the diameter shall be no greater than 15 inches (381 mm), as shown in Figure 37.1.

b) For a non-circular opening, the maximum linear dimension (including a diagonal dimension) shall be no greater than 26 inches (660 mm), as shown in Figure 37.2.

Exception: The fixture need not be provided with a back enclosure if the back of the canopy is less than 180 square inches in area and has overall dimensions less than those specified in (a) or (b).

45.4.1.8 If a fixture is provided with a screen or shield so that insulation cannot contact the recessed housing of the fixture, the plywood test box is to be spaced 8-1/2 inches (216 mm) from the screen or shield. The screen or shield is to be rigidly attached, and of sufficient strength to support the field installed insulation and to withstand normal handling without reduction of intended spacings.

Exception: The screen or shield is to be removed from the fixture if it is not attached to the fixture in a permanent manner such as with rivets, weldings, or a means that requires the use of tools.

45.4.2 Insulation

45.4.2.1 The cellulosic insulation is to be rated for a thermal resistance of 3.75 – 3.85 R/inch with a conditioned density of 2.0 – 2.5 pounds per cubic foot (32 – 40 kg/m).

45.4.2.1 revised April 30, 1996

45.4.2.2 The insulation is to be conditioned through a blowing or vacuum machine before being placed around the test fixture. The blowing or vacuum machine shall be capable of conditioning the insulation to the density specified in 45.4.2.1.

45.4.2.2 revised April 30, 1996

45.4.2.3 Insulation that has been conditioned through a blowing machine can be blown to allow it to fall into the test box around the fixture or into a storage container. The insulation conditioned by a blowing machine into a storage container or by the vacuum machine into a storage container is to be placed in the test box around the fixture by hand or scoop in a manner to minimize packing or settling.

45.4.2.4 The insulation is to be placed into the space between the test box and fixture in a uniform manner such that all areas surrounding the mounting brackets, incidental projections on the fixture, and the like, are free of large air pockets or cavities. Small cavities such as 1/2 inch (12.7 mm) high spaces between the brackets and the test box are not required to be filled other than through natural filling as a result of placing the insulation around the area.

45.5 Abnormal temperature test

45.5.1 General

45.5.1.1 A Type IC fixture shall be subjected to the abnormal temperature test described in 45.5.4.1 – 45.5.4.5 under the conditions specified in 45.4.1.4 – 45.4.1.8 and 45.5.1.2 – 45.5.3.1.

Exception: If the thermal protector required in 44.3.1 is:

- a) Located on and secured to the inside or outside surface of the recessed housing within 1-1/2 inches (38.1 mm) of the geometric center of the top; and
- b) Rated for an opening temperature of not more than 110°C (230°F), the fixture need not be subjected to all of the test conditions described in 45.5.1.2 — 45.5.3.1.

45.5.1.2 The abnormal temperature test shall be conducted separately for each lamp in a multilamp fixture. For each test condition under which the fixture is operated, test results shall comply with the requirements in 45.5.5.1 or 45.5.5.2.

45.5.1.3 A fixture is to be operated and tested with the trim that resulted in the lowest recessed housing or point-of-support (or both) temperatures as determined during the normal temperature test.

45.5.2 Test conditions-overlamping

45.5.2.1 A fixture marked and specified for use with nominal 120 volt lamp(s) is to be operated and tested as follows:

- a) If the fixture is rated for Type A or Type R lamp(s), a lamp as indicated in Table 45.1 is to be used and the voltage is to be set as specified in 45.5.4.1 and 45.5.4.2.
- b) If the fixture is rated for other than Type A or Type R lamp(s), a lamp rated either:
 - 1) 150 percent of the lamp wattage specified; or
 - 2) The next higher common lamp rating closest to 150 percent of the specified wattage is to be used.

Table 45.1
Lamp wattages to be used for overlamping test conditions

Lamp type							
Arbitrary (Type A)				Reflector (Type R) ^a			
Lamp		Test lamp		Lamp		Test lamp	
Rating	Size	Wattage	Size	Rating	Size	Wattage	Size
40	A19	60	A19	50	R20, R30	75	R20
60	A19	75	A19	75	R20, R30	100	R30
75	A19	100	A19	100	R30, R40	150	R40
100	A19	150	A21	150	R40	300	R40
150	A21	200	A23	200	R40	300	R40
200	A23	300	PS25	300	R40	—	—
300	PS25	—	—	—	—	—	—

^a Use test lamp specified in Table 45.2 where applicable.

Figure 46.1
Trim number lamp replacement marking example

WARNING – RISK OF FIRE, USE WITH (MFR. NAME) TRIMS ONLY FOR EACH LAMP TYPE AND WATTAGE INDICATED. SEE TRIM FOR NO.		
TRIM NO. ^a	LAMP SIZE AND TYPE ^a	
A100	60 WATT, A MAX.	
A201	100 WATT, A MAX.	
R50	50 WATT, A MAX.	
DDO29	75 WATT, A MAX.	
JWR36	150 WATT, A MAX.	
LET29	150 WATT, PAR MAX.	

^a The trim catalog numbers and lamp size and types in this figure are examples of the information to be provided.

Figure 46.1 revised April 30, 1996

46.18 For a fixture that requires the same wattage and lamp type for all available trims, the marking shall be one of the following as appropriate:

- a) "1 – (TO REDUCE THE) RISK OF FIRE.(.) USE ONLY 4 5 TYPE 6 LAMP(S), 2 WATTS MAX(IMUM)."
- b) "1 – (TO REDUCE THE) RISK OF FIRE.(.) USE ONLY TYPE 3 LAMP(S), 2 WATTS MAX(IMUM)."
- c) "1 – (TO REDUCE THE) RISK OF FIRE.(.) USE ONLY 4 5 TYPE 6 LAMP(S), 2 WATTS MAX(IMUM), OR ONLY TYPE 3 LAMP(S), 2 WATTS MAX(IMUM)."

The blanks are to be filled in as designated below:

- ¹ "CAUTION" or "WARNING."
- ² Tested lamp wattage or less.
- ³ Tested lamp abbreviation and symbol A .
- ⁴ Tested lamp type abbreviation and size (examples: R30, ER40, PAR36, G16-1/2).
- ⁵ Tested lamp type name (examples: "Reflector," "Elliptical Reflector," "Parabolic Reflector," "Globe").
- ⁶ Tested lamp type symbol (examples: , .

The use of the expressions in parentheses in the marking is optional. The marking shall be in Form E-6 as specified in 31.1.

46.18 revised April 30, 1996

46.19 A fixture shall be marked in Form A with the word "CAUTION" or "WARNING" and with the following: "RISK OF FIRE. USE ONLY THE LAMP SPECIFIED ON THE TRIM". The marking shall be located as specified in 46.21.

46.20 In conjunction with 46.19, a fixture trim or finishing section shall be marked in Form E "Use 1, 2 Type, 3". The blanks are to be filled in as designated below:

¹ Tested lamp wattage or less.

² Tested lamp type and size (examples: A19, R40, PAR36).

³ Tested lamp shape symbol (examples: , , ).

The marking shall be located as specified in 46.21.

46.21 A lamp replacement marking shall be located such that when a fixture consisting of:

- a) A fixture and a trim;
- b) A rough-in section and a finishing section; or
- c) A rough-in section, a finishing section, and a trim is assembled as intended, the lamp replacement marking system is visible during relamping.

For a fixture or a rough-in and finishing section fixture provided with several trims, the marking system shall be of the same type and similar location for all trims. For trims with lamps in which the lamp can be replaced without lowering or removing the trim, the lamp replacement marking shall be located so that it is visible without lowering or removing the trim.

Exception No. 1: A fixture provided with a trim having a socket type reflector such that the inside back surface of the recessed housing is not visible during relamping need not be provided with the part of the marking specified in 46.19 visible during relamping.

Exception No. 2: A lamp replacement marking may be located behind the trim if it complies with 46.22.

46.22 A lamp replacement marking may be located behind the trim if the fixture is marked "WARNING – RISK OF FIRE" and the following or equivalent statement: See other side of trim for relamping instructions. The marking shall appear in Form E-6.

46.23 A fixture shall be marked on the fixture housing or finishing section "CAUTION – Risk of fire. Use with (manufacturer's name) (catalog number) trims only" in Form B-5.

Exception No. 1: The fixture housing marking may be provided as an integral part of the lamp replacement marking specified in 46.18.

Exception No. 2: The trim catalog marking may be provided as an integral part of the lamp replacement marking specified in 46.19 and 46.20.

46.24 A recessed fixture may be marked in Form B-2, "Suitable for use in suspended ceilings."

49.8 If a light diffuser is not provided there shall be a marking on the finishing section in Form A-6 to indicate that the fixture must not be used with a light diffuser.

49.9 Each rough-in and each finishing section shall be packaged in a separate container. The finishing section shall include any light diffuser intended for use with the fixture.

Exception: Glassware may be in a separate carton, and shipped with the carton containing the rest of the finishing section.

49.10 The parts in each carton need not be completely assembled (for example, the glassware need not be mounted in the frame) if the degree of disassembly would comply with the standard when the complete fixture was shipped in one carton.

50 Convertible Recessed Fixtures (Non-IC/IC)

50.1 General

50.1.1 Convertible recessed fixtures are recessed fixtures, as defined in 2.24, which can be installed in either insulated (IC) or non-insulated (Non-IC) recessed wall or ceiling applications. The same rough-in section or fixture housing is used for both IC and Non-IC applications. The finishing section or trim and the light source determine the application of the fixture.

50.2 Construction and performance

50.2.1 A fixture of the type described in 50.1.1 shall comply with the requirements for recessed fixtures as specified in Sections 41 – 44.

50.2.2 A fixture of the type described in 50.1.1 shall be tested in accordance with the performance requirements for both Type Non-IC, and Type IC fixtures, as specified in Section 45, Performance.

50.3 Markings and instructions

50.3.1 A fixture of the type described in 50.1.1 shall comply with the marking requirements specified in Section 46, Markings.

50.3.2 A rough-in section for a convertible recessed fixture shall be marked in Form B-4 (see 31.1) with the following information: "Rough-In Section ____ of Convertible Recessed Fixture For Use With Finishing Section ____." The first blank space is to be filled in with the type, catalog, part, or other appropriate designation for the rough-in section. The second blank space is to be filled in with the type, catalog, part, or other appropriate designation for the finishing section.

Exception: The second blank space may be filled in with the phrase "Catalog Numbers Specified Below." The catalog number shall be provided immediately below the marking on the same label.

50.3.3 A finishing section for a convertible recessed fixture shall be marked in Form B-4 with the following information "Finishing Section ____ of Convertible Recessed Fixture For Use With Rough-In Section ____." The first blank space is to be filled in with the type, catalog, part, or other appropriate designation for the finishing section. The second blank space is to be filled in with the type, catalog, part, or other appropriate designation for the rough-in section.

50.3.4 The trim/finishing sections shall be provided with correlation markings which will identify the sections and their proper installation application, Type IC or Non-Type IC. The marking shall be in Form A-5, and located inside the trim/finishing section.

50.3.4 revised April 30, 1996

50.3.5 The relamping instructions specified in 46.17 may be located with the correlation markings.

50.3.6 The marking specified in 46.12 shall be provided in Form B-2, and located on the back of the housing or rough-in section. The label shall be easily removable for situations in which the fixture is installed in an IC application.

50.3.7 The marking specified in 46.13 shall not be provided.

50.3.8 Installation instructions shall be provided with each housing/rough-in section.

50.3.9 The installation instructions shall include a statement defining each type of installation. For example:

- a) Type IC installation – Fixture housing/ rough-in section is in direct contact with insulation;
- b) Type Non-IC – Insulation does not cover top of fixture housing/rough-in section and is spaced 3 inches (76.2 mm) from all sides.

50.3.10 The installation instructions shall state the following or equivalent:

"NOTICE – FOR IC INSTALLATIONS REMOVE THE PEEL OFF LABEL ON TOP OF HOUSING SECTION WHICH READS 'WARNING RISK OF FIRE. DO NOT INSTALL INSULATION OVER TOP OR WITHIN 3 IN. OF THE SIDES OF THE HOUSING.'"

50.3.11 Details for making the proper choice of finishing section/trim and lamp appropriate for the application must be provided in the installation instructions provided with the rough-in section/fixture housing.

51 Raceways

51.1 General

51.1.1 The requirements under this heading apply to a surface mounted or recessed fixture that is intended to serve as a raceway for conductors of a circuit other than those of the branch-circuit supplying the fixture.

51.1.2 The raceway portion of a fixture shall comply with the Standard for Surface Metal Raceways and Fittings, UL 5, insofar as they apply. The requirements of UL 5 preclude constructions in which a lampholder is located in the raceway.

51.1.3 The investigation mentioned in 51.1.2 shall include a temperature test:

- a) With the fixture operating with the maximum number, type, and size of wires for which the fixture is designed and marked, installed in the raceway; and
- b) With each wire carrying rated current, consideration being given to the applicable derating factor based on the number of conductors involved.

69.2 Enclosures

69.2.1 An enclosure or enclosures shall be so constructed as to prevent the wetting of live parts or electrical components or wiring not identified for use in contact with water, and to reduce the risk of electric shock due to weather exposure. Parts identified for use in contact with water include flexible cords marked "W-A", liquid tight flexible metal conduit, outlet boxes marked for use in wet locations, and rigid conduit.

Exception No. 1: Wetting of the outer surface of the glass envelope of a lamp is not prohibited.

Exception No. 2: The marking "W" is an alternative designation for "W-A."

69.2.1 revised April 30, 1996

69.2.2 A wall-mounted recessed fixture shall be constructed so it prevents the entrance of any water into the enclosure. The enclosure shall be intended for permanent connection to watertight supply connection fittings. Installation instructions as specified in 72.7 shall be provided with the fixture.

Exception: If a drain hole as described in 69.4.2 is provided to drain water from the front of the fixture, water may enter the fixture if there is no wetting of live parts as described in 69.2.1.

69.2.3 To determine compliance with 69.2.1 and 69.2.2 a complete assembly is to be subjected to the rain, sprinkler, or immersion test as specified in Section 71, Construction — Electrical.

69.3 Gaskets and bushings

69.3.1 A gasket or bushing employed to comply with the requirements for wet locations shall comply with the requirements of the thermal conditioning test described in 71.9.2 and 71.9.3.

Exception: Gaskets or bushings tested while installed in the fixture as described in 71.9.4 need not be subjected to the test described in 71.9.2.

69.3.2 A gasket shall be so secured that removal of a lamp from the fixture or opening of glassware or a frame for relamping will not cause the gasket to loosen. Clips or a clamping ring are acceptable means of securement. An adhesive or other means shall be investigated.

69.3.3 If an adhesive is used to secure a gasket as described in 69.3.2, the gasket assembly shall comply with the gasket adhesion test described in 71.10.1.

69.4 Openings

69.4.1 An opening for the connection of conduit or for an auxiliary part shall be threaded.

Exception No. 1: If the rain and sprinkler tests as described in Section 71, Construction — Electrical show no entrance of water into the fixture with the opening(s) open, the opening(s) need not be threaded.

Exception No. 2: If a conduit fitting intended for use in wet locations is provided that complies with the requirements in the Standard for Fittings for Conduit and Outlet Boxes, UL 514B, the opening(s) need not be threaded.

69.4.2 An open drain hole shall be provided on all fixtures to prevent the accumulation of water above a level that would result in the wetting of an electrical part or opening for the connection of conduit for an auxiliary part. The hole shall be as specified in Table 69.2.

Exception No. 1: A fixture that has been subjected to the rain or sprinkler test as required in 71.1.1 — 71.1.4 need not be provided with a drain hole if no water enters the fixture.

Exception No. 2: A ground-mounted recessed fixture shall not be provided with a drain hole.

Exception No. 3: A drain hole is not required on a wall-mounted recessed fixture as described in 69.2.2.

Table 69.2

Size of drain holes

Opening shape	Minimum dimension		Minimum area		Maximum dimension		Maximum area	
	Inch	(mm)	Inch ²	(mm ²)	Inch	(mm)	Inch ²	(cm ²)
Slot	1/8	3.2 (width)	0.012	7.74	3/8	9.6 (width)	1-1/2	9.68
Square	1/8	3.2 (side)	—	—	1/2	12.7 (side)	—	—
Round	1/8	3.2 (diameter)	—	—	1/2	12.7 (diameter)	—	—
Irregular	—	—	0.012	7.74	—	—	1-1/2	9.68

Table 69.2 revised April 30, 1996

69.5 Water shields

69.5.1 A material, not including wood, used as a water shield, whether provided as a lens, diffuser, or opaque part, shall:

- Be classified at least 94HB in accordance with the Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94, if of polymeric material;
- Comply with the exposure to ultraviolet light test in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, if of polymeric material; and
- Be subjected to impact conditioning as specified in 71.2.1 – 71.2.4 before the fixture is subjected to the rain, sprinkler, or immersion tests as required by 71.4.1.

69.5.2 A wood water shield shall be subjected to the impact conditioning described in 71.2.1 – 71.2.4 before the fixture is subjected to the rain, sprinkler, or immersion tests as required in 71.4.1.

Exception: Wood that is at least 1/2 inch (12.7 mm) thick need not be subjected to the impact conditioning.

70 Construction – Electrical

70.1 The fixture shall comply with the requirements in 66.1 and 66.2.

70.2 Any cord exposed outside of a surface mount fixture shall be marked "W-A" after the type designation.

Exception: The marking "W" is an alternative designation for "W-A."

70.2 revised April 30, 1996

70.3 A switch, other than the photoelectric type, shall be enclosed inside the fixture.

70.4 A fixture provided with a receptacle shall be constructed to prevent the entrance of water into the receptacle with or without any provided cover in place and with or without an attachment plug in place.

Exception: If water is not excluded during the rain or sprinkler tests with the receptacle cover open, the cover shall close automatically when not in use.

70.5 In a ground-mounted fixture, a receptacle shall be located at least 6 inches (152.4 mm) above ground level.

71 Performance

71.1 General – tests required

71.1.1 A fixture shall be subjected to the appropriate rain, sprinkler, and immersion test(s) as required in 71.1.2 – 71.1.4 and specified in 71.3.1 – 71.4.1. A summary of the tests required is provided in Table 71.1.

Table 71.1
Required tests for wet location fixtures

Type of fixture	Rain	Sprinkler	Immersion
Non-Pendant Surface-Mounted Ceiling	Yes ^a	Yes ^b	No
Cord- or Chain-Pendant Surface-Mounted Ceiling	Yes	No	No
Recessed Ceiling	Yes ^a	Yes	No
Surface-Mounted Wall	Yes	No ^c	No
Recessed Wall	Yes	No ^c	No
Pole- or Post-Mounted and Ground-Mounted	Yes	No ^c	No
Ground-Mounted Recessed	No	No	Yes
^a Test not required if the fixture is marked for covered ceiling installation only as specified in 71.1.3. ^b Test not required if rain test conducted as described in 71.1.3. ^c Test required if the fixture is marked for use 4 feet (1.22 m) or less from ground or on a post-mounted fixture (including bollards) with lamp or other electrical components less than 4 feet above ground as specified in 71.1.2.			

71.1.2 A wall-mounted surface fixture, a wall-mounted recessed fixture, and a pole- or post-mounted fixture shall be subjected to the rain test. If the fixture is:

- a) Intended for mounting within 4 feet (1.22 m) of the ground and marked as specified in 72.2; or
- b) A post-mounted fixture (such as a bollard) with the lamp or other electrical component mounted less than 4 feet from the ground;

the bottom surface of the fixture shall be subjected to the sprinkler tests.

Exception: The rain and sprinkler tests are not required if the construction features of the fixture are such that it is readily apparent water will not enter it when it is used in the intended manner. For example, a pole-mounted fixture intended for installation with a diffuser facing down and provided with a top and side enclosure having all seams continuously welded would not need to be subjected to the rain test.

71.1.3 A ceiling-mounted fixture shall be subjected to the rain and sprinkler tests.

Exception No. 1: A recessed ceiling-mounted fixture and a non-pendant surface-mounted ceiling fixture need not be subjected to the rain test if it is marked "For covered ceiling installation only" in accordance with 72.4.

Exception No. 2: The rain and sprinkler tests are not required if the construction features of the fixture are such that it is readily apparent water will not enter the fixture when it is used in the intended manner.

Exception No. 3: A cord- or chain-pendant surface-mounted ceiling fixture need not be subjected to the sprinkler test.

Exception No. 4: A fixture subjected to the rain test with no ceiling above the fixture during the rain test need not be subjected to the sprinkler test.

71.1.4 A recessed fixture which can be mounted in the ground or below grade level shall be subjected to the immersion test described in 71.7.2.

Exception: A recessed fixture marked as specified in 72.4 need not be subjected to the test.

71.2 Water shield impact conditioning

71.2.1 For a ground-mounted recessed fixture having a nonmetallic water shield as described in 69.5.1 and 69.5.2, the water shield shall be mounted in its intended manner on the fixture and subjected to a single 3-foot-pound (4.1 N·m)-impact on any surface that can be exposed to a blow during intended use. This impact is to be produced by dropping a steel sphere, 2 inches (50.8 mm) in diameter and weighing 1.18 pounds (0.54 kg), from the height necessary to produce the desired impact force. For surfaces other than the top of a water shield, the steel sphere is to be suspended by a cord and swung as a pendulum, dropping through the vertical distance necessary to produce the desired impact force.

Table SA6.1
Requirements needing engineering
investigation

Paragraph number	Comment
1.3	
1.4	
3.1	See SA7.1
5.1 Exception No. 2	
5.2 Exception(c)	
5.3 Exception Nos. 1 and 3	
5.5	
6.1.1 Exception	
6.1.2 Exception	
7.2	For polymeric materials
8.1.1 Exception No. 2	
Table 8.1 Footnote "c"	
9.2 Exception Nos. 3 and 5	
11.1 Exception Nos. 1 and 2	
12.1.1	For adhesives only
12.2.8 Exception	
12.3.1	
12.4.1 (e) and (f)	
15.8	
15.9	
17.6	
18.4.4 Exception	
19.1 Exception	
Table 20.1 Footnote "a"	Second Sentence
21.2.1 (b) and (c)	
21.4.2	
21.4.3	
22.1 Exception Nos. 1 and 2	
22.3	For other means only
22.5	
21.1.10 Exception No. 2	
23.2.2	
23.2.7(d)	
24.3.1 Exception	See SA6.3 for exception
24.3.3 Exception Nos. 1 and 2	
24.3.4	
24.3.6	
Sec. 27	
28.2	Alternate Method
30.8	
31.3	See SA7.1(a) for exception

(Continued)

Table SA6.1 (Cont'd)
Requirements needing engineering
investigation

Paragraph number	Comment
37.2.7	
37.2.8 Exception No. 2	
37.3.2(d)	
39.1.1.1 – 39.1.7.1	
40.8, 40.9, 40.11	
Sec. 41	
Sec. 42	
Sec. 43	
Sec. 44	
Sec. 45	
Sec. 46	
Sec. 48	
Sec. 49	
Sec. 51	
Sec. 52	
Sec. 53	
Sec. 54	
Sec. 55	
56.1.1 – 56.4.2	
Sec. 57	
Sec. 58	
Sec. 59	
Sec. 60	
Sec. 61	
Sec. 62	
69.1.1 Exception Nos. 1 and 5	For equivalent only
Table 69.1	See SA7.1(c) for exception
69.2.1 – 69.5.2	
Sec. 70	
71.1 – 71.8	
Sec. 73	

Table SA6.1 revised April 30, 1996

SA8.8 Grounding

SA8.8.1 To verify that a grounding or bonding screw threads into metal a minimum of two full threads in accordance with 23.2.7, multiply the metal thickness in inches by the screw pitch. For example:

$$\begin{aligned} & \text{Metal (thickness) } \times \text{ pitch} = \text{threads} \\ \text{i.e., } & 0.065 \text{ inch } \times 32 \text{ threads/inch} = 2.08 \text{ threads} \\ & 0.056 \text{ inch } \times 36 \text{ threads/inch} = 2.02 \text{ threads} \end{aligned}$$

SA8.8.2 The screw referenced in 23.1.9 that is intended for connection of the grounding conductor may also have a green colored, slotted, round head.

SA8.8.3 A canopy, mounting strap (cross-bar), chain, stems, and associated mounting hardware may be unassembled. If the grounding means is provided by a wire binding screw to the mounting strap (cross-bar), the screw need not be installed in the mounting strap (cross-bar) if instructions for proper assembly and wiring are provided.

MARKING

SA9 Required Markings

SA9.1 Markings on or with a fixture shall be of a type and minimum height designated by one of the form letters in Table 31.1, and shall be in one of the locations designated by the form numbers in Table 31.2. The wording, form letter, and form number shall also be in accordance with the specifications given elsewhere in the Standard for the particular case.

SA9.2 Paragraph references for the markings associated with fixtures requiring a Procedure description or markings which require specific values developed as the result of an investigation are provided in Table SA9.1. Reference shall be made to the Procedure for authorization to use these markings. The form, size, and wording of a marking shall be as specified in the Standard. The blank spaces are to be filled in with information provided in the Procedure.

Table SA9.1
Markings needing engineering investigation

Paragraph number	Paragraph number
33.5	49.5
34.1	50.17 – 50.19
34.6	52.4
35.3	53.7
40.2 Exception No. 1	54.9
40.3	54.10
40.4	56.14
40.7 – 40.10	56.16
40.12	57.29
46.2 – 46.14	57.30
46.16 – 46.18	58.3
46.20 – 46.23	58.4
47.3	68.1 – 68.7
48.4 – 48.8	69.5
49.4	

Table SA9.1 revised April 30, 1996

SA9.3 The field representative shall review the shipping carton and the installation instructions to determine that there is no information or representation that conflicts with any required markings. For example, a fixture marked for use in dry locations shall not show a picture of an outdoor installation on the carton or a wall-mounted fixture shall not show a picture of a ceiling installation on the carton.

SA10 Listing Mark

SA10.1 General

SA10.1.1 One appropriate Listing Mark shall be applied to each complete fixture. One Listing Mark shall be applied to each rough-in and finishing section (as appropriate) of a two-section lighting unit which is not shipped as a complete fixture. Such two-section units may bear one Listing Mark only when both sections are packed (completely wired) and shipped in a single carton.

SA10.1.2 The Listing Mark shall be so located on the exterior of the fixture that it will normally be visible when the fixture is installed. In the case of residential fixtures only, the Listing Mark may be located at the point where it will be visible when making and inspecting the connections to the branch-circuit supply wires. In any case, the location of the Listing Mark is considered to be acceptable when only the removal of the lamp, glassware, or a drop canopy is required for the Listing Mark to be visible. It is recommended that the Listing Mark be located on the exterior of residential fixtures when practicable.

SA10.1.3 The field representative shall not permit the attachment of Listing Marks to products not covered by the Procedure, unless special authorization for such action is received from the certification organization.

SUPPLEMENT SB - MARINE USE ELECTRIC LIGHTING FIXTURES

INTRODUCTION

SB1 Scope

SB1.1 In addition to complying with the construction, performance and marking requirements in this standard, an electric lighting fixture intended for use on a marine vessel shall comply with the requirements in Sections SB2 – SB17.

Added SB1.1 effective May 3, 1999

SB1.2 These requirements cover electric lighting fixtures for installation on marine vessels utilizing grounded systems in accordance with United States Coast Guard Electrical Engineering Regulations 46 CFR, Parts 110 – 113, Subchapter J and, insofar as it applies; the National Electrical Code, ANSI/NFPA 70-1996; and the Recommended Practice for Electrical Installations on Shipboard, IEEE 45.

Added SB1.2 effective May 3, 1999

SB1.3 These requirements do not cover marine lighting fixtures for use in hazardous locations, as defined in the National Electrical Code, emergency lighting marine fixtures, or low voltage marine fixtures (less than 50 volts) supplied solely by a battery, transformer, converter or similar power supply source.

Added SB1.3 effective May 3, 1999

SB2 Glossary

SB2.1 For the purpose of this supplement the following definitions apply.

Added SB2.1 effective May 3, 1999

SB2.2 INSIDE DRIPPROOF-TYPE FIXTURE – A fixture intended for use on a marine vessel in an inside damp or wet location and subject to oil or water drippage.

Added SB2.2 effective May 3, 1999

SB2.3 INSIDE-TYPE FIXTURE – A fixture intended for use on a marine vessel in an inside dry or damp location.

Added SB2.3 effective May 3, 1999

SB2.4 OUTSIDE-TYPE FIXTURES – A fixture intended for use outside or in other severely wet locations on a marine vessel.

Added SB2.4 effective May 3, 1999

CONSTRUCTION

SB3 General

SB3.1 All electrical components shall comply with the requirements specified in Section 66, Damp Location Construction – Electrical, and Section 70, Wet Location Construction – Electrical, of this Standard as follows:

- a) Inside-Type fixtures shall comply with the damp location requirements of Section 66, Construction – Electrical.
- b) Inside Dripproof-Type and Outside-Type fixtures shall comply with the wet location requirements of Section 70, Construction – Electrical.

Added SB3.1 effective May 3, 1999

SB3.2 Thermal protection specified in 47.3 of the Standard is not required for recessed fixtures.

Added SB3.2 effective May 3, 1999

SB4 Convenience Receptacles, Switches, and Fuses

SB4.1 A pull-chain switch or lampholder shall not be provided.

Added SB4.1 effective May 3, 1999

SB4.2 A receptacle shall not be provided, except for Inside-Type wall mounted fixtures.

Added SB4.2 effective May 3, 1999

SB4.3 A fuse shall not be provided in a fixture, except as protection internal to a ballast.

Added SB4.3 effective May 3, 1999

SB5 Lampholders

SB5.1 A porcelain part of a lampholder shall not be rigidly mounted unless a silicone rubber gasket, or equivalent, at least 0.05 inch (1.27 mm) thick is provided between the porcelain and mounting means. The gasket material shall have a relative thermal index (RTI) at least equal to the maximum lampholder temperature obtained during the Temperature Test, Section 27.

Exception: A gasket is not required when the lampholder assembly does not show any signs of damage which impairs normal operation when subjected to the Shock Test of Section SB16.

Added SB5.1 effective May 3, 1999

SB5.2 A fixture shall not rely upon the screw shell of a lampholder as a means of support for the fixture.

Added SB5.2 effective May 3, 1999

SB6 Wiring And Conductors

SB6.1 All fixture wiring and conductors shall be stranded.

Added SB6.1 effective May 3, 1999

SB6.2 A power supply cord shall comply with the electrical construction requirements for surface-mounted fixtures specified in 38.1 – 38.5 of the Standard.

Added SB6.2 effective May 3, 1999

SB7 Power Supply Connections

SB7.1 A fixture shall be provided with an outlet box or shall have an opening for the connection of marine-type cable.

Exception No. 1: A fixture which is intended for cable connections and shipyard drilling and installation is not required to be provided with an outlet box or an opening for connection of marine-type cable.

Exception No. 2: Cord-equipped adjustable fixtures (such as desk lamps and floor lamps) are not required to be provided with an outlet box or an opening for connection of marine-type cable.

Exception No. 3: Cord-equipped adjustable fixtures (such as desk lamps and floor lamps) provided with an attachment plug are not required to be provided with an outlet box or an opening for connection of marine-type cable.

Added SB7.1 effective May 3, 1999

SB7.2 The opening for marine-type cable shall comply with 24.2.1 – 24.2.7 of this Standard for conduit connections. Unless the fixture is Indoor-Type, the openings shall be threaded.

Added SB7.2 effective May 3, 1999

SB7.3 Cord connected fixtures shall be 3-conductor type.

Added SB7.3 effective May 3, 1999

SB7.4 A fixture shall not be used as a connection box for a circuit other than the branch circuit supplying the fixture.

Added SB7.4 effective May 3, 1999

SB8 Corrosion Protection

SB8.1 All inside and outside surfaces of cast ferrous metal, sheet steel or ferrous tubing shall comply with the following requirements:

- a) Inside-Type – The corrosion protection means shall comply with the damp location requirements of Section 65, Construction – Mechanical, of the Standard.
- b) Inside Dripproof-Type – The corrosion protection means shall comply with the wet location requirements of Section 69, Construction – Mechanical, of the Standard.
- c) Outside-Type – The corrosion protection means shall comply with the Standard Test Method of Salt Spray (Fog) Testing, ASTM B117-94 for 200 hours. The material shall not show pitting, cracking, or other deterioration more severe than that resulting from a similar test on passivated AISI type 304 stainless steel.

Exception: An Outside-Type fixture marked for fresh water use only in accordance with SB17.4 that has a corrosion protection means which complies with the wet location requirements of Section 69, Construction — Mechanical, of the Standard meets the intent of this requirement.

Added SB8.1 effective May 3, 1999

SB8.2 All inside and outside surfaces of cast aluminum, sheet aluminum or aluminum tubing shall comply with the following requirements:

- a) Inside-Type or Inside Dripproof-Type – shall comply with the following as applicable:
 - 1) Unplated Sheet Aluminum – material shall be an alloy of the 5000 series as given in the Standard Specification for Aluminum-Alloy Sheet and Plate, ANSI/ASTM B209-1995.
 - 2) Unplated Cast Aluminum – material shall be one of the alloys included in Table SB8.1.

3) Painted or Plated Aluminum – use of other aluminum alloys requires an additional corrosion protection means which complies with the wet location requirements of Section 69, Construction – Mechanical, of the Standard.

4) Other unplated aluminum alloys equivalent in corrosion resistance to (1) or (2).

b) Outside-Type – the unplated, plated, or painted aluminum alloy shall have a copper content of 0.4 percent or less.

Exception: When the material complies with SB8.1(c), the copper content limit of 0.4 percent is not applicable.

Added SB8.2 effective May 3, 1999

Table SB8.1
Aluminum alloys

Sand-Cast	Permanent-Mold Cast	Die-Cast	Machined Bar and Rod Stock
353.0	356.0	360.0	5052
356.0	A356.0	A360.0	5056
A356.0	A357.0	A413.0	5456
A443.0	A443.0	C443.0	6061
B443.0	B443.0	518.0	
512.0	512.0		
514.0	535.0		
520.0			
710			
NOTE – These designations conform with those given in the specifications of the ANSI H35.1.			

Added Table SB8.1 effective May 3, 1999

SB8.3 The use of other corrosion resistant materials such as silver, corrosion-resistant stainless steel, copper, brass, bronze, and copper-nickel alloys do not require any additional corrosion protection.

Added SB8.3 effective May 3, 1999

SB9 Openings

SB9.1 There shall be no openings in a fixture except as indicated in SB9.2 and SB9.3.

Added SB9.1 effective May 3, 1999

SB9.2 An Inside-Type surface mounted fixture shall have no openings in the wireway exposed to the mounting surface.

Added SB9.2 effective May 3, 1999

SB9.3 An Inside-Type surface mounted fixture, 26 inches (660 mm) or less in length, shall have not more than two open mounting holes exposed to the mounting surface. Each hole shall be not larger than 1/4 by 1/2 inch (6.4 by 12.7 mm) or 0.40 inch (10.2 mm) in diameter. Each additional 24 inches (610 mm) of length or fraction thereof qualifies the fixture for two additional mounting holes.

Added SB9.3 effective May 3, 1999

SB9.4 An Inside-Type recessed fixture shall have no openings in the wireway that contains uninsulated live parts. A slot or louver located in the recessed portion of the enclosure shall not exceed 3/8 inch (9.5 mm) in width and not more than 1-1/2 square inches (9.7 cm²) in area, and any other ventilating hole provided in the recessed portion of the enclosure shall not be more than 1 inch (25.4 mm) in diameter. The total area of ventilating openings shall not be more than 15 percent of the area of the surface in which they are located.

Added SB9.4 effective May 3, 1999

SB10 Joints And Gaskets

SB10.1 A seam or joint in a fixture enclosure, for other than the Inside-Type, shall be provided with a gasket or shall be otherwise constructed to exclude oil or water drippage.

Added SB10.1 effective May 3, 1999

SB10.2 Gaskets relied upon to exclude oil or water drippage shall comply with the thermal conditioning test described in 71.9.1 – 71.9.5 of the Standard.

Added SB10.2 effective May 3, 1999

SB11 Means For Mounting

SB11.1 A fixture shall be provided with a permanent mounting means.

Exception: A fixture intended for mounting by means of mounting holes which are drilled at the shipyard complies with this requirement.

Added SB11.1 effective May 3, 1999

SB11.2 A fixture that is intended for outlet box mounting shall be provided with the outlet box.

Added SB11.2 effective May 3, 1999

SB11.3 A pendant fixture shall be of the rigid metal conduit stem-suspended type only.

Added SB11.3 effective May 3, 1999

PERFORMANCE

SB12 Glass And Lamp Support

SB12.1 Glassware shall be securely mounted in a frame or held by a clamp-type fitter.

Added SB12.1 effective May 3, 1999

SB13 Temperature Test

SB13.1 A surface mounted fixture shall comply with the temperature test requirements for surface-mounted fixtures specified in Section 39, Surface Mounted Fixtures – Performance, of the Standard, with the exception that the test ceiling for ceiling mounted fixtures is not required to be filled with insulation.

Added SB13.1 effective May 3, 1999

SB13.2 A recessed mounted fixture shall comply with the Type Non-IC normal temperature test requirements for recessed fixtures specified in Section 45. Abnormal operation tests with insulation are not required.

Added SB13.2 effective May 3, 1999

SB13.3 Marked supply wire ratings shall not exceed 110°C (230°F).

Added SB13.3 effective May 3, 1999

SB14 Drippage Test

SB14.1 An Inside Dripproof-Type fixture shall be subjected to the test described in SB14.2. No water shall contact wiring devices or lamps after exposure to the drippage for 1 hour.

Exception: An alternative to this test is the rain test described in 71.6.1 — 71.6.3.

Added SB14.1 effective May 3, 1999

SB14.2 To determine whether a fixture complies with the requirement in SB14.1, it is to be tested as follows. A glass globe or a plastic panel not provided with a gasket is to be removed for the test. With the top of wire entrances sealed, the fixture is to be mounted directly beneath a shower head (as described in SB14.3), vertically oriented. The water pressure is to be such that the area of water drippage covers the entire cross section of the fixture or, in the case of a fluorescent-lamp fixture, the entire width of the fixture. When the fixture is provided with means for adjustment of position, it is to be adjusted as far from the vertical position as possible. With the adjustment complete, the fixture, including the portion that is normally vertical, is to be tilted to make the normally vertical part 15 degrees from the vertical. The direction of tilt and adjustment is to provide the maximum exposure of lamps and wiring devices. The test is also to be conducted with the fixture in any more-upright position when required.

Added SB14.2 effective May 3, 1999

SB14.3 The showerhead of SB14.2 shall be as shown in Figure 71.3.

Added SB14.3 effective May 3, 1999

SB15 Moisture Resistance Test

SB15.1 An Outside-Type fixture shall be subjected to a moisture resistance test. Water shall not enter the compartment that houses wiring, wiring devices, or lamps under any condition of exposure other than submersion.

Added SB15.1 effective May 3, 1999

SB15.2 To determine whether an enclosure complies with the requirement in SB15.1, a complete fixture is to be mounted as in actual service with any factory-threaded conduit holes plugged, and a solid stream of water from a nozzle not less than 1 inch (25.4 mm) in diameter and under a pressure of 15 pounds per square inch (103 kPa) at the nozzle is to be directed at the enclosure from a distance of 10 feet (3.05 m) for 5 minutes.

Added SB15.2 effective May 3, 1999

SB15.3 At the end of the test, any water on the exterior of the enclosure is to be removed with a cloth and the enclosure then opened and examined for any evidence of leakage.

Added SB15.3 effective May 3, 1999

SB16 Shock Test

SB16.1 A sample of a porcelain lampholder assembly not provided with a gasket shall not show any signs of physical damage which impairs normal operation; damages mountings, displaces components, or reduces electrical spacings when subjected to the test outlined in SB16.2.

Added SB16.1 effective May 3, 1999

SB16.2 One sample of the lampholder assembly is to be mounted as intended to a rigid test fixture and fitted with a lamp of the maximum rated wattage. The test fixture is then to be subjected to 5000 shock impacts, each having a 25 g peak acceleration and a 20 – 25 ms duration, as measured at the base of the half-sine shock envelope. The test assembly is then to be inspected for signs of damage.

Added SB16.2 effective May 3, 1999

MARKINGS

SB17 General

SB17.1 All fixtures shall be marked in accordance with the Standard except as described in this section.

Added SB17.1 effective May 3, 1999

SB17.2 A fixture that complies with the Inside-Type requirements of this supplement shall be marked in Form D-1 "Inside Type."

Added SB17.2 effective May 3, 1999

SB17.3 A fixture that complies with the Inside Dripproof-Type requirements of this supplement shall be marked in Form D-1 "Inside Dripproof Type."

Added SB17.3 effective May 3, 1999

SB17.4 A fixture that complies with the Outside-Type requirements of this supplement shall be marked in Form D-1 "Outside Type" or "Outside Type (Salt Water)."

Exception: Outside-Type fixtures which have been evaluated only for fresh water are marked "Outside Type (Fresh Water)."

Added SB17.4 effective May 3, 1999

CANADIAN REQUIREMENTS COMPARISON GUIDE **CRG (1571)**

**UL AND CANADIAN
STANDARDS FOR**

INCANDESCENT LIGHTING FIXTURES



Product Category: Incandescent Lighting Fixtures

UL Category Control Numbers: IEYV2, IEZR, IEZX, IFGW

UL Standard: Standard for Incandescent Lighting Fixtures
UL 1571
Fourth Edition

Canadian Standard: Luminaires
CAN/CSA-22.2 No. 9-M1989
Seventh Edition

This Canadian Requirement Comparison Guide is only intended to identify Canadian requirements that must be applied in addition to the requirements in the UL Standard to obtain a C-UL Mark. The guide is not intended to replace a thorough review and comparison of the requirements applicable to the product category as contained in the applicable UL and Canadian Standards. Where requirements are not specifically addressed, compliance with the requirements in the UL Standard satisfy the requirements in the Canadian Standard.

The actual requirements applied for a C-UL product investigation may differ from those identified in this guide based on the specific features, characteristics, components, materials, or systems used in the product.

CRG: 1571
Issue No.: 1
Issue Date: April 30, 1996

Revisions of this guide will be made by issuing revised or additional pages bearing their date of issue. A Canadian Requirement Comparison Guide is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest set of revision pages for the Guide.

The following outlines the requirements contained in CSA 22.2 No. 9-M1989 that are in addition to the requirements in UL 1571 that must be met in order for a product to bear the appropriate UL Marking. UL provides a certification program for products that meet the Canadian requirements. The C-UL Mark is the manufacturers assurance that products as evaluated by UL, continue to comply with the appropriate Canadian requirements.

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<u>Requirements Topics</u>	<u>CSA Clause</u>	<u>Comparison</u>
General Requirements	3.1	See CSA C22.2 No. 0
Components	3.2	Look for CSA Certified or c-UL Components. Otherwise, refer to the appropriate Standard. A fixture which weighs in excess of 4.6 kg (10 lbs) is required to have a separate support so that the weight of the fixture is not transmitted to the splice connections when examining field splices. See Clause 6.14 for loading test. A fixture which weighs in excess of 11.34 Kg (25 lbs) shall be provided with a means of support independent of the outlet box.
Swivel Joints	4.6.4	A swivel joint shall withstand a torsion test and pull test; see Clause 6.9
Nonmetallic Swivel Joints	4.6.5	Nonmetallic swivel joints shall be minimum 1.3 mm thick.
Tap Conductors	4.12.13	The tap conductors for recessed fixtures are capable of being 18 AWG minimum when provided with a factory installed raceway, 14 AWG when the raceway is provided but not installed. In either case the raceway shall be provided. Tap conductors shall extend 150 mm beyond the raceway, and be provided with a raceway that extends at least 450 mm but not more than 2000 mm.
Lampholder Screwshell	4.17.5	A fixture provided with an auto transformer shall not be used on an ungrounded supply circuit.
Receptacles	4.18.4.1	A receptacle shall be of the grounding type unless connected to an isolating type transformer.
Integral Fuse and Fuseholder	4.18.6.5	Bare live parts of the fuse or fuseholder shall not be contacted by the probe while completely inserted, or during insertion or removal of the fuse. Panel mounted, in-line fuseholder shall be wired such that the live end is connected to the terminal that is least accessible from outside the enclosure.
"Planter" Type Fixtures	4.6.6	A planter type fixture requires engineering investigation.
Air Handling Fixtures	4.22	An air handling fixture requires engineering investigation.

<u>Requirements Topics</u>	<u>CSA Clause</u>	<u>Comparison</u>
Junction Box Covers	6.13	A junction box cover that is not secured with a screw shall be evaluated to determine when after 10 cycles of opening and closing the box, it will support for 5 minutes a pull from an object having a mass of (50 lb.) 22.7 kg.
Spacings	4.19.1	Spacings shall be verified as follows: 0 – 50 V - 1/8 inch oversurface or through air 251 – 300 V - 3/8 inch through air.
Mounting Holes	4.2.2.7	Mounting holes shall be less than or equal to 1.3 cm ² with total area less than or equal to .35% of the area of the enclosure mounting surface. Two holes shall be provided for mounting when the fixture mounting surface area is less than or equal to 260 cm ² . One additional hole is required for each additional 1300 cm ² , unless the fixture is outlet box mounted.
End-To-End Mounted Fixtures	4.5.3	End-to-end mounted fixtures shall be provided with means to retain wire when raceway is opened.
Wiring Temperature Rating	4.12.11	Fiberglass tubing is not to be substituted for properly temperature rated wiring.
Bonding Terminal	4.21.5	A bonding terminal shall not be located on a cover plate.
Ink Stamped Markings	5.1.4	Ink stamping shall be durable. See Clause 6.15.
Accessibility Probe	Figure 1	Where accessibility is being evaluated by the articulated probe, the UL probe is to be used. The CSA probe has no web stop; therefore, the web stop on the UL probe shall not be allowed to prevent its access.
Markings	5.1, 5.3	When a fixture is intended to be marked with a c-UL Label, the fixture shall be provided with the following, in addition to the UL markings. These general markings are to be provided with all fixtures. a) Listee's name, trademark, or other recognized symbol of identification. b) The fixture catalog number or model number or type (ceiling-surface, wall-surface, display, electronic, hospital, machine-shop, recessed, totally enclosed gasketed, transformer operated, and the like.) <i>Exception: The fixture series designation (such as MP Series) is an alternative marking to the specific catalog number or model number (such as MP-22222) when the full designation appears on the fixture carton.</i>

<u>Requirements Topics</u>	<u>CSA Clause</u>	<u>Comparison</u>
Markings (Cont'd)	c)	The month and year of manufacture, at least, shall be marked on each product or its carton.
	d)	The primary electrical rating in volts, hertz, and total amps or watts, except on fixtures incorporating incandescent lamps and on those intended for remotely installed ballasts or transformers.
	e)	The secondary electrical rating in volts and amperes or volt-amperes, where different from the primary rating.
	f)	Mounting information as required.
	g)	Surface mounted fixtures intended to be mounted over an outlet box, which by the UL Standard requires greater than 75°C supply wiring, are not permitted to bear the UL Mark for Canada.
	h)	Fixtures provided with integral outlet boxes (fixtures to which conduit is directly connected) and having supply connections rated greater than 75°C shall be marked as follows: "Min . . . C SUPPLY LEADS" The temperature rating shall be 90°C, 105°C or 125°C, as specified.
	i)	Recessed fixtures marked for installation only on non-combustible surfaces are also marked: INSTALL IN BUILDING OF FIRE RESISTIVE CONSTRUCTION. MOUNT ON NON-COMBUSTIBLE MATERIAL.
	j)	Recessed fixtures which are required to be marked for access above ceiling as indicated in the individual Reports shall be additionally marked: "FOR ACCESSIBLE CEILINGS ONLY"

<u>Requirements Topics</u>	<u>CSA Clause</u>	<u>Comparison</u>
Markings (Cont'd)	k)	Recessed fixtures marked Type IC shall also be marked as follows: "UTILIZABLE WITH THERMAL INSULATION" where accessible from below the ceiling; and "VAPOUR BARRIER MUST BE SUITABLE FOR 90°C"
	l)	Fixtures intended for indoor/outdoor or outdoor (wet) locations shall be marked as follows: "INDOOR/OUTDOOR USE"
	m)	Fixtures intended for outdoor use only shall be marked: "OUTDOOR USE ONLY"
	n)	Fixtures marked for through branch circuits may also be marked: "MAXIMUM OF _____ NO. _____ AWG THROUGH BRANCH CIRCUIT CONDUCTORS SUITABLE FOR AT LEAST _____ °C (°F) PERMITTED IN BOX" where the expressions in parentheses are alternative wording.
	o)	Fixtures intended for continuous row mounting are also marked: "CONTINUOUS-ROW MOUNTING"
	p)	Fixtures that are unassembled, where parts are shipped in more than one package shall include the warning or equivalent graphics: "ASSEMBLE PART(S) ... ONLY WITH PART(S) ..."
	q)	Incandescent fixtures where exempt from a lamp replacement marking in the standard shall be permanently and legibly marked, where readily visible during relamping, with the following caution or equivalent: MAX....WATTS, TYPE... There shall be a contrast between the lettering and the background.

<u>Requirements Topics</u>	<u>CSA Clause</u>	<u>Comparison</u>
Markings (Cont'd)	r)	Instructions regarding the proper use of mounting hooks shall be provided with fixtures having long runs of chain, cord or similar types shall contain wording such as: "USE HOOK TO SUPPORT CHAIN, NOT ELECTRICAL CORD"
	s)	Mounting instructions for fixtures marked: "WALL MOUNT ONLY"
	t)	Fixtures employing tungsten halogen lamps without an integral outer glass envelope shall be marked: "KEEP PROTECTIVE GLASS (or equivalent) IN PLACE"
	u)	Fixtures employing tungsten halogen lamps with an integral outer glass envelope (example: MR-16 lamp with integral cover glass shall be marked: "SHIELDED"
	v)	If a replaceable fuse is provided, the fuse ampere rating and identification shall be located where plainly visible during fuse replacement.



Underwriters Laboratories Inc.®

A not-for-profit organization dedicated to public safety
and committed to quality service

July 26, 1995

Standard for

Incandescent Lighting Fixtures

UL 1571, Fourth Edition

Accompanying this transmittal notice is a copy of the Fourth edition of UL 1571.

THIS EDITION OF THE STANDARD IS NOW IN EFFECT EXCEPT FOR PARAGRAPH 47.3.2 WHICH BECOMES EFFECTIVE NOVEMBER 1, 1996 AS INDICATED IN THE SMALL PRINT NOTE FOLLOWING THE AFFECTED ITEMS.

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

Attention is directed to the note on the title page of this standard identifying that the Department of Defense has adopted the text of UL 1571.

Revised and/or additional pages may be issued from time to time.

JULY 26, 1995

1

UL 1571

Standard for

Incandescent Lighting Fixtures

Prior to the first edition, the requirements for the products covered by this standard were included in the Standard for Electric Lighting Fixtures, UL 57.

First Edition – December, 1979

Second Edition – February, 1984

Third Edition – October, 1991

Fourth Edition

July 26, 1995

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

The Department of Defense (DoD) has adopted UL 1571 on January 18, 1985. The publication of revised pages or a new edition of this Standard will not invalidate the DoD adoption.

Revisions of this standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest published set of revision pages.

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FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. A product employing materials or having forms of construction differing from those detailed in the requirements of this Standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be judged to comply with the Standard.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

PART 1 — ALL FIXTURES

INTRODUCTION

1 Scope

1.1 These requirements cover general use incandescent electric lighting fixtures for commercial, industrial, or residential use in ordinary locations in accordance with the National Electrical Code, ANSI/NFPA 70.

1.2 These requirements do not cover:

- a) Fixtures for installation aboard a ship or boat;
- b) Fixtures for underwater installation;
- c) Fixtures for use in hazardous locations;
- d) Portable lamps;
- e) Portable electric hand lamps, stage and studio lights, medical and dental lights, and the like;
- f) Electric discharge lamp type fixtures, including fluorescent and high intensity discharge lamp types;
- g) Emergency lighting fixtures, or fixtures with integral batteries, or exit fixtures;
- h) Fixtures provided with adapters or other forms of construction to enable them to be mounted on, or supported by any other fixture, lampholder, or receptacle;
- i) Fixtures intended for field mounting to furniture as part of a cord-connected task lighting assembly;
- j) Lighting units having flashing characteristics, words or symbols designed to convey information or attract attention (exclusive of exit lighting);
- k) Low voltage fixtures, for use in recreational vehicles, that are supplied solely by nominal automotive battery voltage; or
- l) Garden lighting.

1.3 A fixture provided with lampholders for both incandescent and fluorescent lamps (a combination incandescent/fluorescent lamp fixture) shall comply with the Standard for Fluorescent Lighting Fixtures, UL 1570, and with the requirements in this standard insofar as they apply to construction, test methods, and marking requirements unique to incandescent lamps.

1.4 A fixture provided with lampholders for both incandescent and high intensity discharge lamps (a combination incandescent/high intensity discharge lamp fixture) shall comply with the Standard for High Intensity Discharge Lighting Fixtures, UL 1572, and with the requirements of this standard insofar as they apply to construction, test methods, and marking requirements unique to incandescent lamps.

1.5 A bathroom cabinet fixture is judged under the general requirements and under the applicable requirements for Metal Thickness in Section 8 and ventilation openings in 43.5.1 and 43.5.3.

1.6 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this Standard, and that involve a risk of fire, electric shock, or injury to persons shall be evaluated using the appropriate additional component and end-product requirements as determined necessary to maintain the acceptable level of safety as originally anticipated by the intent of this Standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this Standard cannot be judged to comply with this Standard. Where considered appropriate, revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this Standard.

2 Glossary

2.1 For the purpose of this standard the following definitions apply.

2.2 **ACCESSIBILITY BARRIER** – A material provided to limit access to:

- a) Uninsulated live parts; and
- b) Live parts insulated with materials not intended to be subject to user contact.

All or part of the barrier may also serve as an enclosure as defined in 2.8.

2.3 **CANOPY** – A cover-type device provided separately or with a fixture that is used to cover the outlet box by securing to the outlet box or ceiling.

2.4 **CANOPY, DROP** – A canopy that can be lowered for access to the supply connections without lowering the fixture. The canopy does not support the fixture.

2.5 **CELLULOSIC** – A paper or wood type product that is treated or processed. For example, insulation, paper, fiber, and the like.

2.6 **CENTER** – An imaginary point that is the dimensional center of the fixture in a plane on the fixture that is adjacent and parallel to the intended mounting surface (wall or ceiling).

2.7 **DIAGRAM, CIRCUIT** – A line drawing, graphic design, and/or written instructions that explain the process of identifying conductors and making supply connections between the fixture and the branch circuit.

2.8 **ENCLOSURE** – A material provided to enclose electrical parts and components that may involve a risk of fire. All or part of the enclosure may also serve as an accessibility barrier as defined in 2.2 or as a recessed housing as defined in 2.25.

2.9 **FIXTURE-TRIM COMBINATION FIXTURE** – A fixture consisting of a plaster frame, recessed housing, lampholder, wiring compartment (J-box), and all other parts required to enclose the wiring and a trim section that may include a diffuser, a baffle, a lampholder adaptor, moldings, and the like that finish a ceiling structure appearance. The fixture is shipped and installed as a complete unit except for the trim section. The trim section may be shipped separately.

2.10 **FLAT GLASS** – A glass panel usually formed from sheet stock whose overall shape (not necessarily the surface) is essentially flat or may have a slight curvature or bend(s).

2.11 **GASKET** – A preformed resilient material used between two rigid surfaces.

2.12 **GUARD** — The part of a fixture provided primarily for the purpose of limiting user access to components (for example, high-temperature parts) with a potential risk of injury to persons.

2.13 **KNOCKOUT** — A partially cut out opening that is closed until the precut material is removed.

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

2.15 **LAMP CONTAINMENT BARRIER** — A barrier that consists of the top, sides, and bottom that enclose the lamp compartment. The barrier may consist of a metal housing (recessed or otherwise), a glass diffuser or lens, a metal canopy, a metal screen, or the like.

2.16 **LAMP SUPPORTED LAMPHOLDER** — A lampholder used with side- or end-prong lamps, such that the lampholder is supported by the lamp that is in turn supported by the fixture.

2.17 **OPEN HOLE** — An aperture in a recessed housing or enclosure that is not covered or filled by another part. Typically, open holes relate:

- a) To ventilation;
- b) To apertures provided for several different constructions that are left unused; and
- c) To an uncovered aperture provided for making supply connections.

2.18 **OPENING** — An aperture in an enclosure that is covered or filled by a plug or knockout and that has the potential of becoming an open hole. Typically, openings relate to supply connections and accessibility for inspection of splices.

2.19 **PENDANT FIXTURE** — A fixture that is supported by and suspended from an outlet box by chain, cord, stem, or cable.

2.20 **POLE** — An outdoor support of metal, wood, or the like, over 12 feet (3.66 m) tall, on which at least one lighting fixture is intended to be mounted by means of arms or fittings. The height of the support is as measured from ground level.

2.21 **POST** — An outdoor support of metal, wood, or the like, no more than 12 feet (3.66 m) tall, on which a lighting fixture is intended to be mounted (usually on top). The height of the support is as measured from ground level.

2.22 **POWER SUPPLY CORD** — A length of flexible cord provided with an attachment plug at one end.

2.23 **PRESSURE WIRE TERMINAL** — A device that accepts one or more wires for securement and for electrical connection to other conductors. This is accomplished by means of a tightening device that presses and captures a straight segment of the conductor(s) between conductive surfaces.

2.24 **RECESSED FIXTURE** — A fixture intended to be installed in a hole in a wall, ceiling, or in-ground surface such that all or part of the fixture is behind the mounting surface. The types of recessed fixtures are as follows:

Thermally Protected Type IC — A fixture that is investigated and identified for installation in a cavity where thermal insulation will be in direct contact with the fixture.