

Standard for Safety

UL 1149

Low Voltage Marine Lighting Fixtures

UL 1149-011-0



Underwriters Laboratories Inc.®

Standard



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May 25, 1994

Standard for

Low Voltage Marine Lighting Fixtures

UL 1149, First Edition

Accompanying this transmittal notice is a copy of the First edition of UL 1149.

THIS EDITION OF THE STANDARD BECOMES EFFECTIVE MAY 25, 1995.

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 requirements in this standard are substantially in accordance with UL's bulletin on this subject dated May 19, 1993. This bulletin is now obsolete and may be discarded.

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



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First Edition

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

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.

ISBN 1-55989-611-6

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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 I – ALL FIXTURES

INTRODUCTION

1 Scope

Section 1 effective May 25, 1995

1.1 These requirements apply to incandescent and fluorescent marine lighting fixtures rated 36 volts (nominally) or less using an AC or DC source of power.

1.2 The lighting fixtures covered by these requirements are intended for installation and use in accordance with the applicable requirements of the U.S. Coast Guard, the standards of the American Boat and Yacht Council, Inc., and the Standard for Fire Protection of Pleasure and Commercial Motorcraft, NFPA 302.

1.3 These requirements do not cover marine lighting fixtures for use in hazardous locations as defined in the United States Coast Guard Electrical Engineering Regulations.

1.4 These requirements also do not cover navigation lights, floating water lights, or emergency lights.

1.5 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 may be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this Standard.

2 General

Section 2 effective May 25, 1995

2.1 Units of measurement

2.1.1 If a value for measurement as given in these requirements is followed by an equivalent value in other units in parentheses, the second value may be only approximate. The first stated value is the requirement.

2.2 Terminology

2.2.1 The term "fixture" refers to all incandescent, halogen, and fluorescent marine lighting fixtures or any part thereof covered by this standard unless specifically noted otherwise.

3 Components

Section 3 effective May 25, 1995

3.1 Except as indicated in 3.2, a component of a lighting fixture 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 products covered by this standard).

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

- a) Involves a feature or characteristic not needed in the application of the component in the lighting fixtures 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.

CONSTRUCTION

4 General

Section 4 effective May 25, 1995

4.1 An external edge, projection, or corner shall be smooth, rounded, and not sufficiently sharp to cause a laceration injury in intended use and maintenance.

4.2 Means shall be provided for securely fastening the fixture.

4.3 Lock washers or other acceptable means shall be provided to reduce the likelihood of fastenings being loosened due to vibration and shock.

4.4 A non-watertight fixture shall be provided with a means of draining the device to reduce the likelihood of water accumulation around electrical components.

4.5 A fixture with glass or plastic enclosures made for installation in machinery spaces or other similar areas shall be protected with guards against inadvertent breakage (see Vibration Test, Section 20).

4.6 Inverter ballasts, toroids, and other electronic components used in fluorescent fixtures shall be potted or protected against dampness and vibration. Heat sinks shall be provided as required.

4.7 A fluorescent fixture shall be enclosed or electrically filtered so as not to interfere with radio reception on the marine frequencies (see 33.2).

4.8 A fixture shall be constructed for mounting directly to the mounting surface and not for suspension by a chain or other means that would allow movement or swinging of the fixture.

4.9 Acceptability of an adhesive shall be based on the following:

- a) The degree of reliance placed on the adhesive for securement in the construction of the fixture; and
- b) The applicable requirements in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C.

5 Materials

Section 5 effective May 25, 1995

5.1 The materials used for the construction of marine lighting fixtures shall have the mechanical, electrical, and chemical resistance characteristics appropriate for a marine environment.

5.2 Housing brackets, trim, and other non-current-carrying parts shall be made of non-ferrous metal alloys, ferrous metal alloys coated for protection against corrosion in a salt atmosphere, or nonmetallic materials.

6 Enclosure

Section 6 effective May 25, 1995

6.1 A frame and enclosure shall be so formed and assembled that it will have the strength and rigidity necessary to resist the abuses to which it is likely to be subjected, without increasing the likelihood of fire, electric shock, or injury to persons due to total or partial collapse, with resulting reduction of spacings, loosening or displacement of parts, or similar effects.

6.2 Sheet metal of a frame or enclosure shall be formed from stock having a minimum thickness of 0.016 inch (0.41 mm) if of steel and 0.020 inch (0.51 mm) if of aluminum.

Exception: Metal may be thinner if the part is investigated and found to have equivalent mechanical strength. Among the factors to be considered are size, shape, function, and resistance to distortion both during intended use and service and anticipated abuse.

6.3 An enclosure or frame formed of a nonmetallic material may be employed if, upon investigation, the material exhibits properties equivalent to that addressed in 6.1. Among the factors to be considered are:

- a) Mechanical strength;
- b) Combustibility;
- c) Resistance to distortion at temperatures likely to be encountered in service;
- d) Resistance to arcing; and
- e) Moisture absorption.

For a polymeric enclosure, all these factors are to be considered with respect to thermal aging.

6.4 All energized metallic parts shall be enclosed or protected to reduce the risk of unintentional contact when the fixture is installed.

6.5 A terminal connection shall be protected by an enclosure or housing intended to shield against inadvertent contact that could cause short circuiting from tools or other objects, as well as to shield against drip and spray.

7 Corrosion Protection

Section 7 effective May 25, 1995

7.1 Iron and steel parts shall be protected against corrosion by enameling, galvanizing, zinc or cadmium plating, or other equivalent means. The composition of metallic alloys shall provide corrosion resistance at least equivalent to stainless steel 304.

7.2 Metal combinations shall be galvanically compatible.

7.3 A material not known to provide acceptable resistance to corrosion, dezincification resistance, and galvanic compatibility between parts shall comply with the Salt Spray Corrosion Test, Section 22.