



UL 1149

Underwriters Laboratories Inc. Standard for Safety

Low Voltage Marine Lighting Fixtures



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UL Standard for Safety for Low Voltage Marine Lighting Fixtures, UL 1149

Second Edition, Dated September 28, 2009

Summary of Topics

This new edition of UL 1149 is being issued to address universal upkeep of UL Standards for Safety. These revisions are considered to be non-substantive and not subject to UL's STP process.

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SEPTEMBER 28, 2009

1

UL 1149

Standard for Low Voltage Marine Lighting Fixtures

First Edition – May, 1994

Second Edition

September 28, 2009

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

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CONTENTS

PART I – ALL FIXTURES

INTRODUCTION

1 Scope	6
2 General	6
2.1 Units of measurement	6
2.2 Terminology	7
3 Components	7

CONSTRUCTION

4 General	7
5 Materials	8
6 Enclosure	8
7 Corrosion Protection	9
8 Shades, Diffusers, Lenses, and Decorative Parts	9
9 Current-Carrying Parts	9
10 Mounting of Components and Parts	10
11 Supply Connections	10
12 Wiring	11
13 Wireways	11
14 Electrical Connections	12
15 Insulating Material	12
16 Spacings	12
17 Barriers	13
18 Switches	13
19 Lampholders	13

PERFORMANCE – MECHANICAL

20 Vibration Test	14
21 Shock Test	14
22 Salt Spray Corrosion Test	15
23 Ignition Protection Test	15
24 Cold Temperature Test	15
25 Watertightness Test	16
26 Dripproof Test	16

PERFORMANCE – ELECTRICAL

27 Current Input Test	17
28 Temperature Test (Surface Mounted Fixtures)	17
29 Temperature Test (Recessed Fixtures)	20
30 Abnormal Operation Test	21
31 Dielectric Voltage Withstand Test	21

MARKING

32 General	21
------------------	----

INSTALLATION AND OPERATING INSTRUCTIONS

33 General	23
------------------	----

PART II – TUNGSTEN HALOGEN LAMP FIXTURES**CONSTRUCTION**

34 General	23
35 Lamp Containment Barrier	24
35.1 General	24

PERFORMANCE

36 General	25
37 Temperature Test	25

PART III – FLUORESCENT FIXTURES**GENERAL**

38 Scope	25
----------------	----

CONSTRUCTION

39 Frame and Enclosure	25
40 Printed Wiring Boards	26
41 Spacings	26
42 Switches	27
43 Low Voltage, Power Limited Circuits	27
44 Electronic Components	28

PERFORMANCE

45 Conformal Coating Test Program I	28
45.1 General	28
45.2 Coating on printed wiring board in lieu of spacings	28
45.3 Humidity test	29
46 Conformal Coating Test Program II	29
46.1 General	29
46.2 Samples	29
46.3 Room ambient conditioning	29
46.4 Thermal conditioning	29
46.5 Dielectric voltage withstand test for conformal coating	31

MARKING

47 General 31

APPENDIX A

Standards for Components..... A1

PART I – ALL FIXTURES

INTRODUCTION

1 Scope

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 involves a risk of fire or of electric shock or injury to persons shall be evaluated using appropriate additional component and end-product requirements to maintain the 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 does not comply with this standard. Revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this standard.

2 General

2.1 Units of measurement

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

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

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 is not required to comply with a specific requirement that:

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

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

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

CONSTRUCTION

4 General

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

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

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.