



UL 234

STANDARD FOR SAFETY

Low Voltage Lighting Fixtures for Use in
Recreational Vehicles

UL Standard for Safety for Low Voltage Lighting Fixtures for Use in Recreational Vehicles, UL 234

Fifth Edition, Dated January 21, 2005

Summary of Topics

This revision to ANSI/UL 234 dated June 10, 2020 is being issued to update the title page to reflect the most recent designation as a Reaffirmed American National Standard (ANS). No technical changes have been made.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The requirements are substantially in accordance with Proposal(s) on this subject dated March 13, 2020.

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1

UL 234

Standard for Low Voltage Lighting Fixtures for Use in Recreational Vehicles

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.

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Second Edition – April, 1983
Third Edition – January, 1993
Fourth Edition – January, 1994

Fifth Edition

January 21, 2005

This ANSI/UL Standard for Safety consists of the Fifth Edition including revisions through June 10, 2020.

The most recent designation of ANSI/UL 234 as a Reaffirmed American National Standard (ANS) occurred on June 10, 2020. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

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 <https://csds.ul.com>.

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CONTENTS

PART 1 – ALL LUMINAIRES

INTRODUCTION

1	Scope	5
2	Undated References	5
3	Components	5
4	Units of Measurement	5

CONSTRUCTION

5	Frame and Enclosure	6
6	Means for Mounting	6
7	Thermal Insulation	7
8	Corrosion Resistance	7
9	Shades, Diffusers, Lenses, and Decorative Parts	7
10	Current-Carrying Parts	7
11	Mounting of Components and Parts	8
12	Supply Connections	8
13	Cord Equipped Luminaire	9
14	Wiring	9
15	Prevention of Wire Damage	9
16	Wiring To A Lamp-Supported Lampholder	10
17	Electrical Connections	10
18	Insulating Material	10
19	Spacings	11
20	Barriers	11
21	Switches	12
22	Lampholders	12
23	Cigarette Lighter Receptacles	12
24	Tungsten-Halogen Luminaires	12
	24.1 General	12
	24.2 Lamp containment barrier	12
25	Wet Locations	13

PERFORMANCE

26	General	14
27	Current Input Test	14
28	Temperature Test	14
28A	Direct Contact Temperature Test	18
29	Abnormal Operation Test	18
30	Water Spray Test	18
31	Water Absorption Test	21
32	Gasket Tests	21
33	Gasket Adhesion Test	21
34	Strain Relief Test	22
35	Polymeric Lamp Containment Barrier	22
	35.1 General	22
	35.2 Test method	22
36	Thermal Conditioning Test	

37	Impact Test	23
----	-------------------	----

MARKINGS

38	General	23
----	---------------	----

PART 2 – FLUORESCENT LUMINAIRES

GENERAL

39	Scope.....	24
----	------------	----

CONSTRUCTION

40	Frame and Enclosure	24
41	Printed Wiring Boards	25
42	Spacings	25
43	Switches.....	26
44	Low Voltage, Power-Limited Circuits	26
45	Electronic Components.....	27

PERFORMANCE

46	Conformal-Coating Tests	27
47	Conformal Coating Test Program II	28
47.1	General.....	28
47.2	Samples	28
47.3	Room ambient conditioning	28
47.4	Thermal conditioning.....	28
47.5	Dielectric voltage-withstand test for conformal coating	29

MARKING

48	General	29
----	---------------	----

APPENDIX A

	Standards for Components	30
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PART 1 – ALL LUMINAIRES

INTRODUCTION

1 Scope

1.1 These requirements apply to low-voltage luminaires, rated 24 volts or less, of the surface mounted or recessed type intended for permanent installation in park trailers in accordance with Article 552 of the National Electrical Code, NFPA 70, or in recreational vehicles in accordance with the Standard for Low Voltage Systems in Conversion and Recreational Vehicles, ANSI/RVIA LV (as referenced by Article 551 of NFPA 70).

1.2 These requirements do not apply to running or clearance lights intended to be mounted on the exterior of a recreational vehicle.

1.3 Light emitting diode (LED) components and subassemblies integral to a low voltage luminaire covered by this standard shall comply with the applicable requirements of the Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products, UL 8750.

2 Undated References

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

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 for a list of standards covering components generally used in the 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.

4 Units of Measurement

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

CONSTRUCTION

5 Frame and Enclosure

5.1 A frame and enclosure shall be formed and assembled so 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 or injury to persons due to total or partial collapse, with resulting reduction of spacings, loosening or displacement of parts, or similar effects.

5.2 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 determined 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.

5.3 An enclosure or frame formed of a nonmetallic material may be used if, upon investigation, the material exhibits properties in accordance with the requirement in [5.1](#). Among the factors to be considered are:

- a) Mechanical strength – the impact evaluation in Section [37](#), Impact Test;
- b) Combustibility – minimum flammability rating of HB;
- c) Mold stress – the mold stress evaluation in the Standard for Polymeric Material – Use in Electrical Equipment Evaluations, UL 746C shall be performed by the air oven method and;
- d) Temperature – the material shall possess a mechanical impact Relative Temperature Index (RTI), in accordance with Standard for Polymeric Materials – Long Term Property Evaluations, UL 746B, of at least the temperature measured on the part during the normal temperature test.

Exception No. 1: If the temperature measured during the normal temperature test is less than 65°C (149°F), then the enclosure or frame need not comply with this requirement.

Exception No. 2: An enclosure or frame subjected to the Thermal Conditioning Test, Section [36](#) need not comply with this requirement.

5.4 An operating part, such as a relay or similar device, shall be located such that it will not be exposed to dust or other material that might adversely affect its intended operation.

6 Means for Mounting

6.1 Means for permanent mounting of the luminaire shall be provided.

Exception No. 1: Luminaires intended to be installed only by manufacturers of recreational vehicles may be secured using plastic punching and riveting tools, provided that complete instructions are furnished. Instructions and installation tools shall be subject to investigation.

Exception No. 2: A mounting means other than holes, screws, or bolts is acceptable if equivalent support is provided, as determined by an investigation.

6.2 A hole, boss, and the like shall be arranged so that:

- a) Support is provided; and

b) Firm seating of the mounting hardware, such as a screw or bolt, will not result in distortion of the bearing surfaces, cracking, breaking, or other adverse effects.

6.3 A luminaire shall be designed and 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 luminaire.

7 Thermal Insulation

7.1 Thermal insulation that is provided as part of a luminaire shall be secured in place as described in [7.2](#).

7.2 Thermal insulation is considered to be secured in place if it is attached to a luminaire by:

- a) Two staples or bolts that will locate the insulation in the intended position;
- b) An adhesive applied to at least one-third of the surface of the insulation;
- c) A member of a luminaire that need not be removed for installation; or
- d) An equivalent means.

Lead wires projecting through insulation are not acceptable for securing the insulation.

7.3 Thermal insulation that forms part of an enclosure shall comply with the applicable requirements in Frame and Enclosure, Section [5](#). All thermal insulation shall have a flammability rating of HB or better.

8 Corrosion Resistance

8.1 If corrosive action on an iron or steel part will result in a risk of fire, electric shock, or injury to persons, such part shall be made resistant to corrosion by enameling, varnishing, painting, galvanizing, plating, or a similar means.

9 Shades, Diffusers, Lenses, and Decorative Parts

9.1 A shade, diffuser, lens, or decorative part shall be of glass, metal, phenolic composition, or other material having a flammability rating of HB or better.

Exception: A bushing, wire tie, or other small part need not have a flame rating if it meets the following conditions:

- a) Volume is less than 2 cubic inches (32 cm³);*
- b) No dimension is greater than 3 inches (76.2 mm), and*
- c) Not in a position to propagate flame between 2 combustible materials.*

9.2 A shade, diffuser, lens, or decorative part shall be positioned away from contact with any lamp.

10 Current-Carrying Parts

10.1 A current-carrying part shall have mechanical strength and ampacity in accordance with the intended use.