

STANDARD FOR TEMPORARY LIGHTING STRINGS



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Approved by



Standards Council of Canada
Conseil canadien des normes



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This Standard is intended to be used for conformity assessment.

The First Edition of this ULC Standard was based on, and superseded, the First Edition of Subject 1088.

The initiation of the review of this Standard will commence within 5 years of the date of publication, unless the Standard is identified as fitting within a stabilized category, whereby the review will commence within the appropriate time frame set out by ULC Standards.

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Preface

This is the common UL and ULC Standard for Temporary Lighting Strings. It is the First edition of both CAN/ULC-S1088 and ANSI/UL 1088.

This Joint Standard was prepared by Underwriters Laboratories Inc., ULC Standards, and the Technical Committee on Temporary Lighting Strings. The standard was formally approved by the UL/ULC Technical Committee on Temporary Lighting String. The efforts and support of the Technical Committee are gratefully acknowledged.

Only metric SI units of measurement are used in this Standard. If a value for measurement is followed by a value in other units in parentheses, the second value may be approximate. The first stated value is the requirement.

In Canada, there are two official languages, English and French. All safety warnings must be in French and English. Attention is drawn to the possibility that some Canadian authorities may require additional markings and/or installation instructions to be in both official languages.

Annex A and Annex B, both identified as normative, form a mandatory part of this Standard.

Note: *Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.*

Level of Harmonization

This Standard is published as an identical standard between UL and ULC Standards. An identical standard is a standard that is the same in technical content except for conflicts in Codes and Governmental Regulations. Presentation shall be word for word except for editorial changes.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard shall be based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision shall be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

UL Effective Date

A UL effective date is established by Underwriters Laboratories Inc. and is not part of the ANSI approved standard.

A INTRODUCTION

1 SCOPE

1.1 These requirements cover temporary lighting strings rated not more than 20 A, 125 V, intended for indoor and outdoor use to provide temporary illumination during the period of construction, remodeling, maintenance, repair, or demolition of buildings or structures, or similar activities, in accordance with the Canadian Electrical Code (CE Code), Part I, CSA C22.1, Section 76, and the U.S. National Electrical Code (NEC), ANSI/NFPA 70, Article 590.

1.2 These requirements cover temporary lighting strings consisting of a factory assembly of flexible cord, or cable, incorporating at least two non-replaceable light sources or two lampholders provided with lamp guards. The complete assembly is intended for connection to a branch circuit.

2 COMPONENTS

2.1 Except as indicated in 2.2, a component of a product covered by this standard shall comply with the requirements for that component.

2.2 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.

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

2.4 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.

3 UNITS OF MEASUREMENT

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

4 REFERENCES

4.1 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.

4.2 Throughout this standard, the CSA standard references apply to products intended for use in Canada, while the UL standard references apply to products intended for use in the United States. Combined references are commonly separated by a slash (“ / ”).

5 GLOSSARY

5.1 For the purposes of this standard, the following definitions apply.

5.2 EQUIPMENT-GROUNDING CONDUCTOR – A conductor that is defined in the National Electrical Code (NEC) and the Standard for Electrical Installations as “Grounding Conductor, Equipment,” and defined in the Canadian Electrical Code (CE Code), Part I, as “Bonding conductor.”

Note: The term “grounding conductor” is used throughout this standard.

5.3 LAMP – A replaceable light source provided with a base for connection to an intended lampholder.

5.4 LAMPHOLDER – A wiring device intended for making connection to the electrical circuits of a lamp and in some cases, providing support.

5.5 LAMP, SELF-BALLASTED – A device provided with a lamp base and incorporating a non-replaceable light source and any additional elements necessary for starting and stabilizing operation of the light source, which cannot be dismantled without being permanently damaged.

5.6 LIGHT SOURCE NON-REPLACEABLE – A source of illumination that is integral to a temporary lighting string and is not replaceable in the field.

B MECHANICAL CONSTRUCTION

6 GENERAL

6.1 A temporary lighting string shall employ materials throughout that are acceptable for the particular use, and shall be made and finished with the degree of uniformity and grade of workmanship practicable in a well-equipped factory.

6.2 Splices, taps, and other points of electrical termination of a temporary lighting string shall not be subject to tension or other mechanical stress when the string is supported as intended.

6.3 A temporary lighting string shall not incorporate a switch.

6.4 A temporary lighting string shall employ a minimum of two non-replaceable light sources or two lampholders and shall have a minimum length of 7.6 m (25 ft).

6.5 Adjacent lampholders or non-replaceable light sources of a temporary lighting string shall be spaced a maximum of 7.6 m (25 ft) apart.

6.6 A temporary lighting string employing cable shall not be provided with an attachment plug or a cord connector unless specifically evaluated for the application and complying with applicable requirements of Fittings, Section 12, and Cord Connectors, Section 13.

6.7 An attachment plug provided with a temporary lighting string shall be in accordance with applicable requirements of Fittings, Section 12.

6.8 A cord connector provided with a temporary lighting string employing lampholders shall be in accordance with Cord Connectors, Section 13, and applicable requirements of Fittings, Section 12.

6.9 A cord connector provided with a temporary lighting string employing non-replaceable light sources shall be in accordance with 13.7.

6.10 A self-ballasted lamp provided with a temporary lighting string shall be suitable for damp or wet locations in accordance with the marking required by 44.7 and comply with applicable requirements in CSA C22.2 No. 1993 / UL 1993.

6.11 Light emitting diode (LED) components and subassemblies integral to a temporary lighting string covered by this standard shall comply with the applicable requirements in CAN/CSA-C22.2 No. 250.13 /UL 8750.

6.12 A through cord power supply provided with a temporary lighting string that employs non-replaceable light sources shall be provided with integral overcurrent protection that complies with the applicable requirements of CSA C22.2 No. 248.1 / UL 248-1, and CAN/CSA-C22.2 No. 248.14 / UL 248-14.

Exception: A temporary lighting string employing a through cord power supply that complies with the applicable requirements in CAN/CSA-C22.2 No. 223 / UL 1310, need not be provided with integral overcurrent protection.

7 IDENTIFICATION

7.1 A terminal which is identified for the connection of either a grounded or a grounding conductor shall be connected to a corresponding identified conductor.

7.2 A lampholder screw shell shall be connected to the identified grounded conductor of the assembly.

8 SPACINGS

8.1 There shall be a spacing through air and over surface of 1.2 mm (0.047 in) or more between an uninsulated live part and a dead metal part that is likely to be grounded or exposed to contact by persons when installed in the intended manner.

8.2 If a barrier or liner of insulating material is used to provide spacings, it shall be of a nonhygroscopic material and not be less than 0.71 mm (0.028 in) thick. The barrier shall be so located, or of such material, that it will not be affected adversely by arcing.

9 Mechanical Assembly

9.1 A temporary lighting string shall be provided with a closed-loop hanger or other equivalent means at each lampholder that provides for temporary but positive mounting. An open hook is not acceptable.

9.2 A lamp guard shall be provided for each lampholder. If a lamp guard is not assembled to the lampholder, when it is shipped, all shipping containers shall be marked in accordance with 44.17.

Note: Metals and nonconductive (e.g. thermoplastic) materials are commonly used for the construction of lamp guards.

9.3 A guard is not required to be provided when the temporary lighting string employs non-replaceable light sources that:

- a) Comply with the Crushing Test, Section 23;
- b) Comply with the Cold Impact Test, Section 24; and
- c) Are made of materials that do not exceed 90°C (194°F) when the temporary lighting string is subjected to the Normal Temperature Test, Section 19.

9.4 Conductors shall be secured before soldering or secured by wire connectors, welding, bolts, clamps or other equivalent means to provide a good electrical connection. Insulation-piercing-type contact connections shall only be employed in lampholders, see 26.3.

9.5 All electrical connections shall be made so that strands of any conductor cannot contact uninsulated live parts of opposite polarity or dead metal parts.

9.6 Bonding connections shall be secured by riveting, bolting, welding, soldering or equivalent means.

9.7 The component parts of a bonding path through a temporary lighting string shall be of a copper-base alloy.

Exception: A metal lamp guard is not required to comply with this requirement.

9.8 A copper-base-alloy rivet that is used to secure parts in the bonding path shall not contain less than 80% copper.

Exception: Plated steel shall be permitted for a rivet, bolt, or clamp that is used to secure parts in the bonding path, but that is not an essential conductor in the bonding path.

9.9 The enclosure of a non-replaceable light source shall be assembled by fasteners that are tamper resistant, such as by one-way fasteners, uniquely keyed screws, rivets, welding or adhesives.

10 Corrosion Protection

10.1 All exposed metal parts shall be protected against corrosion unless the metal is inherently resistant to corrosion.

10.2 The thickness of a non-ferrous metal coating on the surface of a ferrous metal part shall be not less than 0.0127 mm (0.0005 in). See Metallic Coating Thickness Test, Section 39.

Exception No. 1: The minimum coating thickness of a steel wire guard is not specified, except that the coating must be visible.

Exception No. 2: Hot dipped mill galvanized sheet steel coating that is designated G60 or A60 is exempt from the Metallic Coating Thickness Test.

11 Exposure of Live Parts

11.1 A temporary lighting string shall:

- a) When in use have no uninsulated live parts normally exposed to contact by persons, and
- b) Have no uninsulated live parts, other than the contacts of the lampholders, that are accessible during relamping.

12 Fittings

12.1 An attachment plug, cord connector, lampholder, splice or tap shall be of a material resistant to moisture, sunlight, and crushing. Hygroscopic materials shall not be used.

12.2 An attachment plug, cord connector, lampholder, splice, or tap shall adhere tightly to the cable or flexible cord insulation at the point where it enters the fitting so as to exclude moisture.

12.3 An attachment plug or cord connector shall be one rated 15 or 20 A, 125 V, having a configuration in accordance with ANSI/NEMA WD 6. See Figure 1.

12.4 A fitting shall be for use with the type and size of cord or wire used in the overall assembly.

12.5 A cord connector and attachment plug of a temporary lighting string shall have identical ratings. It is acceptable for an attachment plug and cord connector used in a temporary lighting string to be of a different configuration, such as locking and nonlocking.

12.6 All lampholders of a temporary lighting string shall be of the same base configuration.

12.7 The insulating body of an attachment plug, cord connector, tap, or splice of a molded-on fitting shall have a minimum thickness of 2.4 mm (0.0938 in) covering all live parts at other than contact openings, pins, or blade projections.

12.8 The thickness mentioned in 12.7 is to be measured from any live contacts, pins, blades, and uninsulated conductor to the nearest point on the outer surface of the insulating body. A mating attachment plug using the maximum length male blades is to be fully inserted into the outlet of a cord connector prior to the measurement.

13 Cord Connectors

13.1 Other than as specified in 13.7, the cord connector shall be of a single outlet grounding type as shown in Figure 1 and shall comply with 13.2 – 13.6.

13.2 A cord connector molded of resilient material shall employ a rigid barrier of insulating material molded beneath the face of the connector between the plane of the contact opening and the female contacts to prevent an improper insertion of the grounding contact or line blade from contacting a live part.

13.3 The rigid barrier shall have slots that conform to the standard dimensions of the appropriate configuration. The barrier shall have a minimum thickness of 1.50 mm (0.058 in) and shall be molded securely within the body of the cord connector, at a depth sufficient to accomplish its intended purpose.

13.4 There shall be an obstruction on a 15 A parallel-slot and a 20 A "T"-slot cord connector to prevent any matching 15-A attachment plug from being inserted in the cord connector with the grounding pin on the outside of the cord connector. The obstruction shall be sufficiently large and substantial to necessitate appreciable deliberate displacement of the grounding pin or other attachment-plug contact member during and as the result of improper mating of the plug with the cord connector. See Figure 2.

13.5 A cord connector shall be provided with a means for support or shall be spaced not more than 304.8 mm (1 ft) from the face of the fitting to the center line of its adjacent lampholder.

13.6 A cord connector shall be provided with a means for closing or covering the cord-connector face when not in use. Such a closure or cover shall not be readily removable from the string.

13.7 Except for temporary lighting strings constructed of continuous line to load conductors, a cord connector provided with a temporary lighting string that employs non-replaceable light sources shall be of a nonstandard multi-pin configuration and shall comply with the following:

- a) The applicable requirements of CSA C22.2 No. 42 / UL 498, or CSA C22.2 No. 21 /UL 817, and be suitable for making and breaking under load with respect to the Overload, Temperature, and Resistance to Arcing tests described in CSA C22.2 No. 42 / UL 498.

Exception: A cord connector on a temporary lighting string employing a through cord Power Supply that complies with CAN/CSA-C22.2 No. 223 / UL 1310, need not be evaluated for making and breaking under load.

- b) The pins shall be recessed such that the male and female connectors are mechanically secured prior to any electrical connection.
- c) The connectors shall be subjected to the Water Spray Test, Section 34, in any position where the pins initially make an electrical connection (i.e. the pins are partially inserted and any connector ring or latch may be opened).
- d) The connector shall be keyed so that the wires are connected to the correct circuit.

14 Taps and Splices

14.1 Tap or splice insulation shall be at least equivalent to the insulation of the flexible cord or cable to which it is assembled. The properties to be considered in determining the equivalency are its insulating properties, the secureness of insulation, the exclusion of moisture and resistance to sunlight, crushing, and low temperature.

15 Lampholders

15.1 A screw lampholder shall be of the medium or admedium Edison keyless-base weatherproof type.

15.2 A screw lampholder shall comply with the requirements in 15.3 – 15.17, Lampholder Cavities, Section 16, Accelerated Aging Tests, Section 27, and the Security of Screw Shell Test, Section 38.

Exception No. 1: A weatherproof lampholder complying with CSA C22.2 No. 43 / UL 496, is exempt from the requirements of 15.3 – 15.6 and 15.8 – 15.17 and Section 16.

Exception No. 2: A wet location lampholder complying with CSA C22.2 No. 43 / UL 496, is exempt from the requirements of 15.8 – 15.17 and Section 16.

15.3 The wall thickness of nonrigid, rubber, vinyl and similar materials shall be not less than 2.4 mm (0.094 in) thick covering all live parts. See 12.8.

15.4 The lampholder-body insulating material shall be:

- a) Phenolic rated 150°C (302°F) or 90°C (194°F) for GU24 lampholders;
- b) Urea rated 100°C (212°F) or 90°C (194°F) for GU24 lampholders;
- c) Rubber (see Accelerated Aging Tests, Section 27);
- d) PVC materials (see Accelerated Aging Tests, Section 27); or
- e) Other materials investigated for use at 90°C (194°F) or higher temperatures.

15.5 A polymeric material used in a GU24 lampholder shall have the following properties:

- a) Minimum flammability rating of V-2 as determined by the burning tests described in CSA C22.2 No. 0.17 / UL 94;
- b) Minimum electrical relative thermal index (RTI) of 90°C (194°F) as determined in accordance with the methods described in CSA C22.2 No. 0.17 / UL 746B; and
- c) Minimum comparative tracking index (CTI) of 175 as determined in accordance with the methods described in CSA C22.2 No. 0.17 / UL 746A, and UL 746B.