



Luminaires

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Canadian Standards Association
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Underwriters Laboratories Inc.
UL 1598
Third Edition

Luminaires

September 17, 2008

Δ

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16.37 (MEX) Vibration

16.37.1 (MEX) General

In Mexico, the luminaire shall remain in the holding device and all luminaire parts shall remain intact using the test apparatus of Clause 19.34 (MEX).

16.37.2 (MEX)

In Mexico, the complete luminaire, without the lamp, shall be mounted 25 cm from the middle of the mounting point and the working plane. The mounting axis, if possible, shall be different from the vibration axis.

16.37.3 (MEX)

In Mexico, the luminaire shall undergo vibration testing at 10/40/10 Hz for 20 min, with a total on of 40 ± 10 sec for each sweeping sequence. The vibration table shall be adjusted to obtain an acceleration force of 0.125 ± 10% times the force of gravity (g) at 10 Hz and 2.0 ± 10% at 40 Hz.

16.38 Lampholder lead pull

16.38.1

A pull force of 89 N (20 lb) shall be applied for 1 min to each conductor terminating at the lampholder in any direction permitted by the luminaire construction.

16.38.1 (MEX)

In Mexico, Clause 16.38 does not apply.

16.38.2

No uninsulated live parts shall be made accessible as a result of the application of the test force.

16.39 Ground-screw assembly strength

Δ 16.39.1

A No. 12 AWG (3.3 mm²) solid-copper, insulated conductor shall be stripped to a length of 2.5 cm (1 in) minimum. The wire shall be wrapped around the screw under the screw head so that it makes a minimum 180° turn. The conductor shall be seated to follow any wire guides or dimples provided to align the conductor with the mating surface. The ground screw shall be tightened with a calibrated torque screwdriver to 1.6 N•m (14 lb•in).

16.39.2

When tested as described in Clause 16.39.1, there shall not be:

- (a) damage to the head of the ground screw which would prevent the 1.6 N•m (14 lb•in) of tightening torque to be achieved; or
- (b) stripping of the ground screw assembly.

16.40 Cable pull

16.40.1

A metal junction box having an integral strain-relief mechanism for cable shall be assembled as described in Clauses 16.40.2 to 16.40.4 and subjected to the test method specified in either Clause 16.40.5 or Clauses 16.40.6 and 16.40.7, at the manufacturer's option.

16.40.2

A strain-relief mechanism intended to secure only one cable shall be tested using 1 sample of each strain-relief mechanism and intended cable AWG. A strain-relief mechanism intended to secure 2 cables under a common clamp shall be tested using 1 sample having 1 cable and another 1 sample having 2 cables for each strain-relief mechanism and intended cable AWG.

16.40.3

Samples of the cable that comply with Clause 4.1 shall be assembled as intended to the junction box using the strain-relief mechanism. The cable or cables shall be of the size marked on the luminaire that the strain-relief mechanism is intended to secure.

16.40.4

After assembly, the cut end of the cable shall extend approximately 6.4 mm (0.250 in) beyond the strain-relief mechanism. The wires of the cable shall be allowed to project approximately 52 mm (6 in) inside the box. A screw that can be tightened with a screwdriver shall be tightened as follows:

- (a) A screw or bolt-head screw, other than a No. 8 or No. 6, that can be tightened with a screwdriver shall be tightened with a torque of 3.96 N•m (35 lb•in). A No. 8 screw shall be tightened with a torque of 2.26 N•m (20 lb•in), and a No. 6 screw shall be tightened with a torque of 1.36 N•m (12 lb•in).
- (b) An unslotted bolt-head screw, direct bearing or securing a clamp, shall be wrench-tightened with a torque of 18.1 N•m (160 lb•in).
- (c) A strain-relief mechanism that is provided with specific instructions shall be assembled and installed in accordance with the method specified by the manufacturer.

16.40.5

The free end of the cable shall be formed into a loop and securely fastened by tape or equivalent means. The pull shall be applied to the loop by a hook or other convenient method. A mechanism intended to secure more than one cable shall have the pull applied separately to each cable, one pull at a time.

16.40.6

Each sample shall be subjected to a direct pull of 267 N (60 lb) for 5 min. The results shall be acceptable if the sample withstands the pull without:

- (a) damage to the cable sheath or individual conductor insulation;
- (b) displacement of more than 3.2 mm (0.125 in) of the cable from the fitting;
- (c) loosening so that the cable can be readily removed; or
- (d) cracking, breaking, or other indication that the strain-relief mechanism has been damaged.

16.40.7

Each sample shall be subjected to a direct pull of 110 N (25 lb) for 5 min. The results shall be acceptable if the cable withstands the pull without:

- (a) damage to the cable sheath or individual conductor insulation;
- (b) displacement of more than 3.2 mm (0.125 in) of the cable from the fitting;
- (c) loosening so that the cable can be readily removed; or

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Alex Milne

Retired Chair of the Integrated Committee
on Lighting Products

whose leadership and contributions to the
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Underwriters Laboratories Inc.
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Preface

This is the harmonized ANCE, CSA, and UL Standard for luminaires. It is the first edition of NMX-J-307/1-ANCE, the third edition of CSA C22.2 No. 250.0, and the third edition of UL 1598. This edition of CSA C22.2 No. 250.0 supersedes the previous editions published in 2004 and 2000. This edition of UL 1598 supersedes the previous editions published in 2004 and 2000. The CSA Standard also replaces the Technical Information Letter TIL B-78, "Interim Certification Requirements for Ballast Disconnect Means in Fluorescent Luminaires Installed on Branch Circuits with Voltages Exceeding 150-Volts-to-Ground".

The Canadian Standards Association (CSA) and Underwriters Laboratories Inc. (UL) prepared the first edition of this common standard. The efforts and support of the Canadian Lamp and Fixture Manufacturers Association (CLFMA) and the American Lighting Association (ALA) are gratefully acknowledged. Later, the same organizations, with the added participation of the Association of Standardization and Certification (ANCE) and the National Electrical Manufacturers Association (NEMA), expanded the document to cover requirements for Canada, Mexico, and the United States.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was reviewed by the CSA Integrated Committee on Lighting Products, under the jurisdiction of the CSA Technical Committee on Consumer and Commercial Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee.

This Standard will be submitted to the Standards Council of Canada (SCC) for approval as a National Standard of Canada.

This Standard has been approved by the American National Standards Institute (ANSI) as an American National 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 equivalent standard for ANCE, CSA, and UL. An equivalent standard is a standard that is substantially the same in technical content, except as follows: Technical national differences are allowed for codes and governmental regulations as well as those recognized as being in accordance with NAFTA Article 905, for example, because of fundamental climatic, geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is 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 is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

ANCE effective date

The effective date for ANCE will be announced through the *Diario Oficial de la Federation (Official Gazette)*.

CSA effective date

The effective date for CSA International will be announced through *CSA Informs* or a CSA certification notice.

UL effective date

As of September 17, 2008, all products Listed or Recognized by UL must comply with the requirements in this standard except for clauses, figures, and tables in the following list, which are effective September 17, 2010.

Clauses 5.10.2, 6.13.2.5, 6.14.2.9, 8.8, 9.3.1, 9.4.1.1, 9.4.2.1, 12.2.4.6, 18.6, 16.38, and 16.39.

Between September 17, 2008 and September 17, 2010, new product submittals to UL 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 second edition of UL 1598.

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

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1 Scope

1.1

This Standard applies to luminaires for use in non-hazardous locations and that are intended for installation on branch circuits of 600 V nominal or less between conductors in accordance with the *Canadian Electrical Code, Part I (CEC)*, CSA C22.1, with the U.S. *National Electrical Code (NEC)*, ANSI/NFPA 70, and with the Mexican National Electrical Code, NOM-001-SEDE.

1.2

This Standard does not apply to luminaires covered by other standards. The luminaires not covered by this Standard include:

- Amateur Movie Lights;
- Aquarium Lights;
- Cabinet Lights;
- Decorative Lighting Strings;
- Combination Fan/IR Lamps Used for Heating;
- Electric Signs;
- Exit Signs in the United States;
- Junction Boxes for Swimming Pool Fixtures;
- Lamp Adapters;
- Low-Level Path Marking and Lighting Systems in the United States;
- Low-Voltage Landscape Lighting as follows:
 - For products intended for installation in Canada, landscape lighting systems that are 30 V nominal or less;
 - For products intended for installation in Mexico, low-voltage landscape lighting devices that are 24 V nominal or less; and
 - For products intended for installation in the United States, low-voltage landscape lighting devices that are of 15 V nominal or less;
- Low-Voltage Lighting Fixtures for Use in Recreational Vehicles;
- Low-Voltage Marine Lighting;
- Luminaires for Hazardous Locations;
- Luminaires for Recreational Vehicles;
- Marine Navigational Lights;
- Marine-Type Fixtures;
- Portable Electric Displays;
- Portable Hand Lamps;
- Portable Luminaires;
- Portable Sun/Heat Lamps;
- Self-Ballasted Lamps and Lamp Adapters;
- Stage and Studio Luminaires;
- Submersible Luminaires;
- Swimming Pools Luminaires;
- Temporary Lighting Strings;
- Therapeutic Lamps;
- Track Lighting Systems;
- Under-cabinet Lights in Canada and Cord-connected Under-cabinet Lights in the United States; and
- Unit Equipment for Emergency Lighting.