

CERTIFICATION Informs

An Urgent Bulletin from CSA Group

Ref No: I18-123

Lighting Products No. 100

Date: September 21, 2018

New Service available as of today

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Announcing: New Certification Program for Horticultural Lighting Equipment applying requirements from CSA LTR No. B-006-2018 and UL Outline of Investigation UL 8800.

Class No: 3425 02, LUMINAIRES - For Horticultural Use
3425 82, LUMINAIRES - Horticultural Lighting Equipment – Certified to U.S. Standards

To purchase the Standard, visit us at store.csagroup.org

Who is affected?

Manufacturers of horticultural luminaires and related lighting equipment.

What do you do?

1. This publication provides for new certification services that do not affect your currently certified product designs.
2. Please contact CSA technical staff if you have questions or need information concerning this publication and how it applies to you.
3. If you would like to take advantage of the new certification services, initiate a certification project by contacting our Client Services Centre at 1-866-797-4272. Please supply appropriate supporting documentation* and we will inform you of the samples required.

*which includes technical information, company name, address, factory locations and CSA file number or master contract number (if assigned), and any other relevant documentation.

Introduction:

CSA Group announces a new certification program for Canada and the US for horticultural lighting equipment.

Background and Rationale:

These products use similar components and construction as LED, fluorescent and HID luminaires currently covered by existing standards, but are placed in environments with higher risk of moisture ingress, corrosion, and harmful exposure to operations personnel (eg. photobiological hazards).

The CSA LTR (List of Technical Requirements) provides certification guidance to evaluate these products for compliance in accordance with Canadian Electrical Code, Part 1 requirements. See Attachment 1.

For certification to US requirements, UL Outline of Investigation UL 8800 (May 4, 2017) is applicable for this program.

For questions specific to your file or products contact your CSA Group technical staff associate.

Go to <http://www.csagroup.org/services/testing-and-certification/product-listing/> and enter your Master Contract # and the class numbers associated with this Informs to view your certified products.

For technical questions on this Informs

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ATTACHMENT 1



List of Technical Requirements [LTR]

Product Group: Lighting

LTR Number

LTR No. B-006-2018

Subject – Keywords

Horticultural lighting equipment, horticultural luminaires, grow lights

Background & Rationale

These products use similar components and construction as LED, fluorescent and HID luminaires currently covered by existing standards, but are placed in environments with higher risk of moisture ingress, corrosion, and harmful exposure to operations personnel (eg. photobiological hazards).

Technical Issue

This LTR provides certification guidance to evaluate these products for compliance in accordance with Canadian Electrical Code, Part 1 requirements.

Technical Requirements

1 Scope

1.1

This LTR is applicable for horticultural lighting equipment intended to be used for the purposes of plant cultivation, daylight supplementing and similar applications for plant growth and development, and in accordance with CSA C22.1, Canadian Electrical Code, Part I. The equipment may be installed in a built environment with means to be connected to a system, or have integral controls for such operations as, but not limited to, dimming, spectral output, monitoring, power cycling, and interoperability with plumbing and plant feed systems. The equipment may also be provided as standalone structures integrating light sources, controllers, and other accessories such as plumbing and plant feeding systems, in an enclosed or open construction.

1.2

This LTR contains requirements for horticultural lighting equipment that can exhibit photobiological hazards from lamps and light sources.

1.3

This LTR contains requirements for horticultural lighting equipment for use where there may be exposure to humidity, moisture, dust, and corrosive chemicals.

1.4

This LTR is to be read in conjunction with CSA C22.2 No. 250.0, and other standards as referenced.

1.5

In this LTR, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the referenced standards.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material. Notes to tables and figures are considered part of the table or figure and may be written as requirements.

2 Reference publications

This Clause of CSA C22.2 No. 250.0 is applicable, with the additional references in this LTR:

CSA C22.2 No. 0-10	General requirements — Canadian Electrical Code, Part II
CSA C22.2 No. 14-18	Industrial control equipment
CSA C22.2 No. 21-14	Cord sets and power-supply cords
CSA C22.2 No. 77-14	Motors with inherent overheating protection
CSA C22.2 No. 94.1-15	Enclosures for Electrical Equipment, Non-Environmental Considerations
CSA C22.2 No. 94.2-15	Enclosures for electrical equipment, environmental considerations
CSA C22.2 No. 113-15	Fans and ventilators
CSA C22.2 No. 166-15	Stage and studio luminaires
CSA C22.2 No. 182.3-16	Special use attachment plugs, receptacles, and connectors
CSA C22.2 No. 250.0-18	Luminaires
CSA C22.2 No. 250.13-17	Light Emitting Diode (LED) Equipment for Lighting Applications
CAN/CSA-E60598-1:16	Luminaires — Part 1: General requirements and tests
CAN/CSA-C22.2 No. 62471:12	Photobiological safety of lamps and lamp systems
IEC/TR 62778:2014	Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires
IEC/TR 62471-2:2009	Photobiological safety of lamps and lamp systems – Part 2: Guidance on manufacturing requirements relating to non-laser optical radiation safety

3 Definitions

This Clause of CSA C22.2 No. 250.0 is applicable, with the following:

Horticultural luminaire – A luminaire designed for the purpose of emitting visible light and Photosynthetically Active Radiation (PAR) for plant growth and development.

Horticultural lighting equipment – Equipment which may include one or several horticultural luminaires or component light sources, with integral or remote power source equipment, interconnecting wiring, wiring

devices, mechanical adjusting devices, signal equipment, controls, fixtures and fittings to create a standalone or an interoperable system.

4 General requirements

This Clause of CSA C22.2 No. 250.0 is applicable except as follows:

4.1 Components

Replacement:

4.1.1

Except as indicated in Clause 4.1.2, a component of a product covered by this LTR shall comply with the requirements for that component. See Annex A for a list of standards covering components generally used in the products covered by this LTR.

4.1.2

A component is not required to comply with a specific requirement that:

- a) involves a feature or characteristics not needed in the application of the component in the product covered by this LTR; or
- b) is superseded by a requirement in this LTR.

4.1.3

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

4.2 Application of requirements

Replacement:

4.2.1

This LTR supplements or modifies the corresponding clauses in CSA C22.2 No. 250.0, as denoted by statements such as “replacement”, “addition”, or “not applicable”.

Note:

Where requirements of CSA C22.2 No. 250.0 include country differences, only Canadian requirements apply.

4.2.2

Subclauses that are additional to those in CSA C22.2 No. 250.0 are numbered using a suffix “101”.

4.2.3

The terms “horticultural luminaire” or “luminaire for horticultural use” are considered to be of the similar substance of meaning where the term “luminaire” is used, for the purpose of this LTR.

Additional subclauses:

4.101 General requirements for horticultural lighting equipment

[Sources: CAN/CSA-C22.2 No. 0, CEC Part 1 Section 2]

4.101.1

General requirements applicable to this LTR are provided in CAN/CSA-C22.2 No. 0.

4.101.2

Horticultural lighting equipment intended for wet locations shall be evaluated and identified for damp or wet locations as applicable to the requirements in Clause 14. Equipment marked for enclosure designations (Type 3, 3R, 3S, 4, 4X, 6 or 6P) shall be evaluated to the applicable requirements of CSA C22.2 No. 94.2. Equipment marked with an ingress protection (IP) designation shall be evaluated in accordance with Clause 14.101.

4.101.3

Horticultural lighting equipment shall be so designed and constructed that adequate provision is made for the safety of persons and property, that it is itself adequately protected from mechanical and other injury, and that, with proper handling, it can be expected to give safe service within the limits of the test conditions specified in this LTR.

4.101.4

Exposed moving parts that might constitute an accident hazard, other than those that are required to be exposed for proper operation of the equipment, shall

- a) in the case of portable equipment, be provided with adequate guards, which shall form an integral part of the equipment; or
- b) in the case of stationary equipment, be similarly guarded where practicable unless it is evident that such guarding, or equivalent protection, will be separately provided during installation.

4.102 *Photobiological hazards*

[Sources: CAN/CSA-E60598-1:16, CAN/CSA-C22.2 No. 62471, IEC/TR 62778, IEC/TR 62471-2]

4.102.1 *General*

4.102.1.1

Provisions shall be made to prevent light sources of horticultural luminaires from causing harmful exposure to radiation during normal operation and user maintenance.

4.102.1.2

Luminaires with metal halide lamps shall comply with the UV attenuation barrier requirements and markings in Clause 10.

4.102.2 *Tests*

4.102.2.1

Horticultural lighting equipment shall be assessed for photobiological safety in accordance with CAN/CSA-C22.2 No. 62471, and classified as Risk Group 0 (RG0), Risk Group 1 (RG1) or Risk Group 2 (RG2). Determination for threshold illuminance of horticultural luminaires shall be in accordance with other than general lighting service (GLS) applications, where the hazard values are to be determined at a distance of 200 mm from the source. Light sources in Risk Group 3 are not permitted for use in horticultural lighting equipment.

4.102.1.4

Lighting equipment determined to be RG0 or using light sources classified as RG0, are not required to be marked in accordance with the requirements in Clause 4.102.

4.102.2 Markings

4.102.2.1

Horticultural luminaires shall be marked with caution or warning statements in accordance with the hazard-related risk group in Table 4.102.1.

4.102.2.2

Luminaires incorporating light sources that have been classified as having a threshold illuminance E_{thr} condition in accordance with IEC/TR 62778 and which are directly visible during luminaire maintenance shall be marked with the warning symbol shown in Figure 4.102.1. This marking shall be visible during maintenance and after installation. The symbol shall be reproduced in the user manual with explanatory text “Do not stare at the operating light source”.

4.102.1.3

When a light source classified as RG1 or RG2 in a luminaire can be replaced by the user with a light source of another type that may not have been evaluated for photobiological hazards, the symbol of Figure 4.102.1 and the warning label having the substance of the text shown in Figure 4.102.2 shall be marked on the product.

4.102.2.4

Warning labels on the lighting equipment housing shall be permanently fixed, legible, and clearly visible during maintenance and service in format S24 per Table 20.1.2. Labels shall be positioned so that they can be read without the necessity for human exposure to optical radiation in excess of threshold illuminance value. Text and borders on the label shall be black on a yellow background.

4.102.2.5

Installation and operating instructions shall be provided with the product. User information for luminaires in excess of the Exempt Risk Group (RG0) shall have the following information included:

- a) Reproductions of required warning labelling with explanations of the meaning, in accordance with the wording or substance thereof shown in Table 4.102.2;
- b) adequate instructions for proper assembly, installation, maintenance and safe use, including clear warnings concerning precautions to avoid possible exposure to hazardous optical radiation;
- c) advice on safe operating procedures and warnings concerning reasonably foreseeable malpractices, malfunctions and hazardous failure modes. Where maintenance procedures are detailed, they should, wherever possible, include explicit instructions on safe procedures to be followed.

Table 4.102.1
Hazard-related risk group labelling

Hazard	Exempt Risk Group (RG0)	Risk Group 1 (RG1)	Risk Group 2 (RG2)
Ultraviolet hazard 200 nm to 400 nm	Not required	NOTICE UV emitted from this product	CAUTION UV emitted from this product.

Retinal blue light hazard 300 nm to 400 nm	Not required	Not required	CAUTION Possibly hazardous optical radiation emitted from this product
Retinal blue light or thermal hazard 400 nm to 780 nm	Not required	Not required	CAUTION Possibly hazardous optical radiation emitted from this product
Cornea/lens infrared hazard 780 nm to 3 000 nm	Not required	NOTICE IR emitted from this product	CAUTION IR emitted from this product
Retinal thermal hazard, weak visual stimulus 780 nm to 1 400 nm	Not required	WARNING IR emitted from this product	WARNING IR emitted from this product

Table 4.102.2
Explanation of user information and guidance

Hazard	Exempt Risk Group (RG0)	Risk Group 1 (RG1)	Risk Group 2 (RG2)
Ultraviolet hazard 200 nm to 400 nm	Not required	Minimize exposure to eyes or skin. Use appropriate shielding.	Eye or skin irritation may result from exposure. Use appropriate shielding.
Retinal blue light hazard 300 nm to 400 nm	Not required	Not required	Do not stare at operating lamp. May be harmful to the eyes.
Retinal blue light or thermal hazard 400 nm to 780 nm	Not required	Not required	Do not stare at operating lamp. May be harmful to the eyes.
Cornea/lens infrared hazard 780 nm to 3 000 nm	Not required	Use appropriate shielding or eye protection.	Avoid eye exposure. Use appropriate shielding or eye protection.
Retinal thermal hazard, weak visual stimulus 780 nm to 1 400 nm	Not required	Do not stare at operating lamp.	Do not stare at operating lamp.

Figure 4.102.1
Warning symbol for “Do not stare at the operating light source”



Note: Symbol shall comply with the proportional requirements given in IEC 80416-1 and IEC 60417-1.

Figure 4.102.2
Labelling text

WARNING – DO NOT STARE AT THE OPERATING LIGHT SOURCE
Possible hazardous optical radiation emitted from this product
Possible UV emitted from this product
Possible IR emitted from this product

5 Mechanical construction

The mechanical construction requirements in CSA C22.2 No. 250.0 are applicable and as noted in the following clauses.

5.6 Corrosion protection

Addition:

5.6.101

Horticultural lighting equipment designated for wet locations, where corrosion of metal parts critical to safety may occur shall additionally comply with the 200-hour salt spray test in accordance with CSA C22.2 No. 94.2. The equipment shall be considered to have met the requirements if upon completion it does not show pitting, cracking, or other deterioration more severe than that resulting from a similar test on passivated American Iron and Steel Institute Type 304 stainless steel.

Note: Refer to Annex L of CAN/CSA-E60598-1:16 for additional rust and corrosion resistance guidance for products intended for chemical exposure.

5.7 Polymeric materials

Addition:

5.7.101

An enclosure, barrier, baffle, support for live parts, or water shield of polymeric material exposed to the sun or to light sources capable of emitting UVA or UVB radiation, shall be capable of complying with the UV exposure conditioning test of Clause 17.5.5, or the weatherometer test in CSA C22.2 No. 0.17 without losing its protective function.

6 Electrical construction

The electrical construction requirements in CSA C22.2 No. 250.0 are applicable and as noted in the following:

6.2 Wiring devices

6.2.1

Replacement:

A wiring device shall be rated for the temperature, location, voltage, and current encountered during normal operation and as described in the installation instructions.

6.2.101

The grounding contact of an attachment plug, receptacle, or special-use connector shall be such that the path of electrical continuity to the grounding contact of the mating plug is completed before continuity is established between any other contact and its respective contact on the plug. [Source: C22.2 No. 182.3]

6.9 Conductors and cords

Addition:

6.9.101 Flexible cords

6.9.101.1

Flexible cords shall be permitted for use, and in accordance with CEC Part 1, when intended for connection to a single branch circuit, interconnection of horticultural luminaires, and for connections between a luminaire and a remote power source unit such as a LED driver or lamp ballast.

6.9.101.2

Notwithstanding the applicable requirements in Clause 6.9, flexible cords for horticultural lighting use shall:

- a) be at least of hard-usage type as specified in Table 6.9.1 (CAN);
- b) have a length of not more than 4.5 m;
- c) have conductors sized for additional ampere loading from interconnected lighting equipment, when intended; and
- d) be rated for weather resistance ("W" type) where there may be exposure to sunlight or to light sources capable of emitting UVA or UVB radiation, or for equipment intended to be marked suitable for wet locations.

6.12 Electrical insulation

Addition:

6.12.101

Polymeric insulating materials of conductors, components or devices that may be exposed to the sun or to light sources capable of emitting UVA or UVB radiation, shall be capable of complying with the UV exposure conditioning test of Clause 17.5.5, or the weatherometer test in CSA C22.2 No. 0.17 without losing their protective function.

6.15 Supply connections

Applicable

6.15.1 Power supply connections

6.15.1.1

Replacement:

A horticultural luminaire shall be provided with a means of connection to a single branch circuit and shall have one of the following:

- a) provision for connection of conduit as specified in Clause 6.15.2;
- b) a length of flexible cord;
- c) a length of flexible cord with an assembled-on attachment plug;
- d) a power supply cord with a molded-on attachment plug at one end; or
- e) provision for a proprietary wiring system, and be marked in accordance with Table 20.1.1, Item 1.12, or installation instructions in accordance with Table 20.1.1, Item 1.33.

6.15.1.101

In addition to the applicable requirements of this LTR, a proprietary wiring system or harness shall comply with the applicable requirements in CSA C22.2 No. 21.

6.15.1.102

For the connection between lighting equipment and a remote power supply unit, the plugs and connectors at the power supply output shall have a different configuration than one used for power supply connections in Clause 6.15.1.1.

6.101 *Fans, motors, and motor controllers*

6.101.1 *General*

Motors and motor drive circuits employed to move lighting assembly parts, cooling fans, and other mechanical features of the assembly shall comply with the applicable requirements of Clause 6.101.

6.101.2 *Fans and motors*

6.101.2.1

A motor in a lighting assembly shall comply with CSA C22.2 No. 77 and shall be rated for the maximum load that will be applied when the equipment is in normal operation.

6.101.2.2

An electric fan shall comply with the applicable requirements of CSA C22.2 No. 113.

6.101.2.3

Openings in a guard protecting a moving part such as a pulley, belt, gear, chain, fan blade from unintentional contact during use or servicing, shall be of such size and shape as to prevent the passage of a straight 12.7 mm (0.5 in) diameter probe, with a straight cut-off end, from touching a rotating part other than a smooth shaft.

6.101.2.4

Lighting equipment with motor-driven parts shall comply with the locked rotor test of Clause 16.101.

6.101.3 *Motor controllers*

6.101.3.1

In addition to the other applicable requirements of this LTR, Class 2 motor controller circuits shall be within the requirements applicable to the separation of circuits.

7 *Incandescent luminaires – supplementary requirements*

This clause of C22.2 No. 250.0, is applicable to horticultural luminaires employing incandescent lamps.

8 *Fluorescent luminaires – supplementary requirements*

This clause of C22.2 No. 250.0, is applicable to horticultural luminaires employing fluorescent lamps.

9 *HID luminaires – supplementary requirements*

This clause of C22.2 No. 250.0, is applicable to horticultural luminaires employing HID lamps, with the following:

9.3 *Lamp containment barriers for metal halide lamps*

Addition:

9.3.101

Lighting equipment employing metal halide lamps shall comply with the requirements of 9.3. Open luminaires using lamps which are declared by the lamp manufacturer to be for open luminaires, but without the ANSI “/O” designation and marking, shall be investigated for compliance with the containment testing per ANSI C78.389 Annex A for quartz arc tubes and per Annex B for ceramic arc tubes. Markings for lamp replacement of a Type-O equivalent lamp shall specify the model and manufacturer of the lamp evaluated, in accordance with Clause 20.101.6.

9.5 *Accessibility of double-ended lamp terminals*

9.5.2

Replacement:

With respect to compliance with Clause 9.5.1 Item (a), the interlock switch shall comply with the interlock switch endurance test of Clause 18.3.

9.5.3

Replacement:

Notwithstanding the requirements of Clause 9.5.1 Items (b) and (c), luminaires employing a double-ended HID lamp without an interlock switch shall be marked with a caution and to disconnect power before servicing, in accordance with Table 20.1.1, Item 3.6.

10 LED luminaires – supplementary requirements

This clause of C22.2 No. 250.0, is applicable to horticultural luminaires employing LED light sources.

10.101 *LED Horticultural Lighting Equipment*

10.101.1 *General*

10.101.1.1

Horticultural lighting equipment employing light emitting diodes (LED), and the associated LED controlgear, LED array (module) and LED package shall comply with the applicable requirements of CSA C22.2 No. 250.13 in addition to this LTR.

10.101.1.2

A self-ballasted LED lamp provided with a luminaire shall comply with CSA C22.2 No. 1993, and the applicable requirements of this LTR.

11 Surface mounted – supplementary requirements

This clause of C22.2 No. 250.0, is applicable to horticultural lighting equipment defined as surface or pendant mounted, with the following:

11.4.3

Replace item (c) with:

- (c) The open holes shall not be located in the mounting surface, in a canopy, or directly below electrical parts, as shown in Figure 10.4.1, that are required to be enclosed, unless the parts

- (1) are protected by a baffle in accordance with Clause 5.8; or
- (2) have demonstrated compliance with the applicable normal and abnormal test requirements, and are constructed so as not to present a risk of fire under any foreseeable conditions.

12 Recessed luminaires – supplementary requirements

This Clause of CSA C22.2 No. 250.0 is not applicable.

13 Miscellaneous luminaires – supplementary requirements

This clause of CSA C22.2 No. 250.0, is not applicable except as follows:

13.4 Elevated ambient temperature luminaires

Replacement:

13.4.1 General

13.4.1.1

The requirements in Clause 13.4 apply to horticultural lighting equipment intended for use in locations that experience a continuous elevated ambient temperature.

13.4.2 Tests

13.4.2.1

The equipment shall:

- (a) be temperature tested with a source of heated air providing the elevated temperature for which the equipment under test (EUT) will be marked. The maximum airflow past the EUT shall be less than 9.1 m/min (30 ft/min). Cooling mechanisms shall be permitted to operate as in normal conditions. Maximum variations of 5 °C from the intended ambient temperature shall be added to or subtracted from the observed temperature readings, and the EUT shall comply with the dielectric voltage-withstand test of Clause 18.1 at the conclusion of the test; or
- (b) fulfill the following requirements:
 - (1) the EUT shall be temperature tested at an ambient temperature of 25 ± 5 °C, and the full difference between the actual test ambient temperature and the intended elevated ambient temperature shall be added to the observed temperature readings; and
 - (2) it shall comply with the dielectric voltage-withstand test of Clause 18.1.

13.5 Luminaire fittings

Replacement:

13.5.1

A horticultural luminaire created by assembling luminaire fixtures and fittings shall comply with the applicable requirements in CSA C22.2 No. 250.0 and this LTR.

13.5.2

A fitting for horticultural lighting equipment, luminaires and assemblies shall comply with the applicable requirements in CSA C22.2 No. 250.0 and this LTR.

13.5.3

Load bearing members or fittings provided with horticultural lighting equipment that house or support electrical components shall comply with the loading test of Clause 17.15.

Note: Product markings for maximum supported weight may be considered when determining the test mass of four times the total mass to be supported.

14 Environmental location luminaires – supplementary requirements

This clause in CSA C22.2 No. 250.0 is applicable and as noted in the following:

14.1 General

Replace subclauses as follows:

14.1.2

Horticultural lighting equipment shall meet the requirements for damp and wet location luminaires. LED horticultural lighting equipment shall comply with the applicable environmental tests of CSA C22.2 No. 250.13.

14.1.3

Horticultural lighting equipment shall be marked for a damp or wet location as appropriate, and in accordance with Table 20.1.1, Item 2.2, or Item 2.3.

14.101 Resistance to dust, solid objects and moisture

14.101.1

In addition to the requirements for damp and wet locations in Clause 14, horticultural lighting equipment intended to be marked with an ingress protection number (IP rating) shall additionally be evaluated to comply with the applicable tests for ingress of dust, solid objects and moisture of Section 9 in CAN/CSA-E60598-1.

Note: The tests for the ingress of dust, solid objects and moisture specified in standard CAN/CSA-E60598-1 are not all identical to the tests in IEC 60529 due to the technical characteristics of luminaires.

14.101.2

With respect to the requirements of Clause 14.3.1.2, equipment intended for only damp locations shall not be marked with an IP Code having a second numeral other than “0”, unless additionally evaluated to the respective IP Code.

15 Normal temperature tests

This clause in CSA C22.2 No. 250.0 is applicable and as noted in the following:

15.1 General

Addition:

15.1.101

Horticultural luminaires and associated remote power source equipment shall comply with the normal temperature test in accordance with Clause 15. The operating position of the luminaire under test shall be the thermally most onerous operating position which may reasonably be adopted in service. For fixed non-adjustable luminaires, a position shall not be selected if it is stated to be not permissible in instructions supplied with, or marked on, the luminaire. For settable and adjustable luminaires, the required distance from lighted objects shall be respected if marked on the luminaire.

15.1.102

Multiple tests may be required for luminaires intended to be row mounted or ganged in fixtures, such as in channels or plenums, to determine the most onerous use as specified in the manufacturer's installation instructions.

16 Abnormal temperature tests

This clause in CSA C22.2 No. 250.0 is not applicable except as noted in the following:

16.101 Locked rotor test

[Source: CSA C22.2 No. 166]

16.101.1

A luminaire or remote power source unit with motor-operated parts shall comply with all of the following conditions when tested as described in Clauses 16.101.2 to 16.101.4:

- a) A fuse equal to the branch circuit overcurrent protector specified for the equipment shall not open.
- b) There shall be no emission of flame from the enclosure.
- c) There shall be no glowing, charring, or ignition of the cheesecloth or tissue paper.
- d) The 3 A fuse connected in series with the luminaire bonding circuit shall not open.
- e) At the conclusion of the test, the unit shall comply with
 - i. the requirements for accessibility of live parts of Clause 6.13, and rotating parts in accordance with Clause 6.101.2.3;
 - ii. the leakage current test of Clause 18.101, if it is cord-connected; and
 - iii. the dielectric strength test of Clause 18.1.

16.101.2

The unit shall be mounted or suspended as per its installation instructions, above a knot-free pine board covered by a layer of white tissue paper, at the minimum distance marked on the product. If there is no such marking, the unit shall be placed on the tissue lined pine board in the same orientation as the intended operation. The entire enclosure shall be covered by a single layer of cheesecloth. The motor shall have its rotor locked in a fixed position by a secure means. If the unit has more than one motor, each motor shall be tested in turn, with its rotor in a locked position.

16.101.3

The luminaire shall be connected to the output of its intended power source equipment or to a power supply with equivalent output, at rated voltage and frequency. Luminaires and power source equipment intended for branch circuit mains voltage shall be connected in series with a fuse equal to the minimum allowable overcurrent protection required by the Rules of the CE Code, Part I. A 3 A fuse shall be connected between ground and an equipment bonding circuit lead, bonding terminal, or accessible non-current-carrying metal enclosure of the unit being tested.

16.101.4

The unit shall be operated with the motor in a locked rotor state for 7 h or until there is interruption due to component failure, operation of a protective device, or any evidence of combustion, whichever comes first.

If the test is interrupted by the opening of an internal protective component, the test shall be repeated two more times with a replacement protective component.

16.101.5

If a protective device in the unit (for example, a thermal or current cut-out of the one-shot or cycling type, or safety-related electronic circuit) operates during the test, the highest temperatures reached should be taken as the final temperatures and the test can be terminated. Test results shall be acceptable if the conditions described in Clause 16.101.1 a) to e) are satisfied and the thermal protection:

- a) operates within 3 h and the temperature of any part of the luminaire that may contact a mounting surface does not exceed 160 °C; or
- b) does not operate within 3 h, the test is continued for 7 h, and the temperature of any part of the unit that may contact a mounting surface does not exceed 90 °C.

17 Mechanical tests

This Clause of CSA C22.2 No. 250.0 is applicable.

18 Electrical tests

This Clause of CSA C22.2 No. 250.0 is applicable except for the following:

18.1 Dielectric voltage-withstand

Addition:

18.1.101 Dielectric voltage-withstand test voltages for LED lighting equipment

The applied test potential as specified in the dielectric voltage withstand test CSA C22.2 No. 250.13 shall be used for LED lighting equipment. If there is excess capacitive leakage current, the capacitors may be removed or the test may be conducted using a dc potential at 1.414 times the ac potential.

18.101 Leakage current

18.101.1

Equipment intended for branch circuit mains connection by cordset, or flexible cord and attachment plug, shall comply with the leakage current measurement test in CSA C22.2 No. 250.13.

19 Test procedures and apparatus

This Clause of CSA C22.2 No. 250.0 is applicable.

20 Marking

This Clause of CSA C22.2 No. 250.0 is applicable, with the following:

20.101 Horticultural lighting equipment

20.101.1

Luminaires that incorporate an interlock switch to prevent harmful exposure shall be marked, "WARNING - THIS COVER IS PROVIDED WITH AN INTERLOCK TO REDUCE THE RISK OF EXCESSIVE RADIATION. DO NOT DEFEAT ITS PURPOSE OR ATTEMPT TO SERVICE WITHOUT REMOVING COVER COMPLETELY.", or equivalent text in the format S24-L1.

20.101.2

Products meeting the requirements in accordance with Clause 14.101 shall be permitted to be marked with the corresponding ingress protection numerals (IP Code) in the format S24-L3.

Note: An explanation of the IP numbering system is given in Annex J of CAN/CSA-E60598-1.

20.101.3

Enclosures rated Type 3, 3R, 3S, 4, 4X, 6 and 6P shall comply with the applicable marking requirements of CSA C22.2 No. 94.2 for the type designation marking.

20.101.4

If applicable, the symbol for minimum distance from lighted objects of Figure 20.101.1 (or equivalent), for luminaires which might otherwise overheat the lighted objects due to, for example, the applied lamp type, the shape of the reflector, the adjustability of the mounting means or the location of mounting as indicated in the installations instructions. The minimum distance marked shall be determined by the temperature test described in Clause 15.1. The distance is measured on the optical axis of the luminaire from that part of the luminaire or lamp which is nearest to the lighted object. The symbol for minimum distance and explanation of its meaning shall also be given either on the luminaire or in the instructions with the luminaire.

20.101.5

Equipment shall be provided with installation instructions regarding the maximum ambient temperature it is intended for. If the lighting equipment facilitates the use of cooling or ventilation systems, additional specifications should be provided to advise an installer of the maximum operating temperature conditions for the equipment.

20.101.6

Open type luminaires employing a Type-O equivalent metal halide lamp which meets the requirements of Clause 9.3.101, shall be marked for lamp replacement: "RELAMP WITH ____ WATTS MH ____/O TYPE OR MODEL ____, MANUFACTURED BY ____", in the format S24-L1.

20.101.7

LED lighting equipment shall be marked in accordance with CSA C22.2 No. 250.13. LED Horticultural Luminaires intended to be connected to a remote LED driver shall be marked in format S24-L3 as follows:

- a) for equipment requiring a constant voltage power source: volts, AC or DC supply type, Hertz (if AC), and either amps or watts;
- b) for equipment requiring a constant current power source: amperes, AC or DC supply type, Hertz (if AC), and either volts or watts.

20.101.8

[Source CEC Part 1 12-402]

Installation instructions for lighting equipment intended for supply connection with flexible cords or manufactured wiring systems shall include guidance to ensure the following:

- a) Flexible cord and cord sets are not
 - i) permanently secured to any building structural member,
 - ii) run through holes in walls, ceilings, or floors, doorways, windows, or similar openings;
 - iii) exposed to temperatures above the temperature rating of the cord or at temperatures sufficiently low as to be liable to result in damage to the insulation or overall covering; and
- b) Flexible cord and cord sets are
 - i) visible over the entire length, and
 - ii) supported so that no damaging strain will occur, and the insulation will be protected from mechanical damage.

Figure 20.101.1
Symbol for minimum distance from lighted objects (metres)



Attachments

None

This LTR is applicable to the following programs (✓)			
CSA (✓)	NRTL ()	CB ()	Others: ()

Impact on Existing Certification

N/A

Experts Consulted	Lighting Technical Network
Distribution of this LTR	Operations – Lighting Product Groups

This LTR was issued by Avery Yearwood on			This LTR replaces previous LTR dated		
yyyy	mm	dd	yyyy	mm	dd
2018	09	21			

If you require additional technical information, please contact:

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