

STANDARD INFORMATION

This SUN establishes the Continuing Certification approach for Luminaires

Standard Number: UL 1598 / CSA C22.2 No. 250.0 / ANCE NMX J 307/1

Standard Name: Luminaires

Standard Edition and Issue Date: 4th Edition Dated August 28, 2018

Date of Revision: August 28, 2018

Date of Previous Revision of Standard: 3rd Edition Revised October 17, 2012

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **No action is required for currently certified products to maintain certification.**

This SUN is being presented to assist users of the standard to appreciate the significance of the changes made to the standard that will apply should the product described be modified after October 30, 2021.

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: Effective immediately, this revised standard will be exclusively used for evaluation of new products unless the Applicant requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revised requirements.

Overview of Changes:

- Added requirements for mechanical joints and fastenings
- Revised requirements for enclosures
- New section (CAN) for polymeric light diffusers and lenses
- New section for factory production-line tests and dielectric voltage-withstand testing (DVWT)
- New requirements for LED Type Non-IC inherently protected recessed luminaires
- Combination HID/incandescent lamp replacement marking for remote ballasted HID luminaires

Specific details of new/revised requirements are found in table below.

Current Listings Not Active? – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records. We will do this at no charge as long as Intertek is notified in writing prior to the review of your reports.



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CLAUSE	VERDICT	COMMENT
		<i>Additions to existing requirements are underlined and deletions are shown lined out below.</i>
1	Info	Scope <i>New clause added;</i>
1.3		Requirements applicable to light emitting diode (LED) components and subassemblies integral to a luminaire covered by this standard are provided in UL 8750 and CSA C22.2 No. 250.13.
5	Info	Mechanical construction
5.3	Info	Enclosures <i>New clause added;</i>
5.3.2		An enclosure shall be constructed of metal (see Clause 5.5), glass (see Clause 5.16), ceramic [3 mm (0.118 in) minimum thickness], or a polymeric material (see Clause 5.7).
5.7	Info	Polymeric materials
5.7.1	Info	General <i>New clause added;</i>
5.7.1.3		An LED lens or diffuser that serves as an enclosure where all live parts are insulated or spaced more than 0.8 mm (0.032 in) from the lens or diffuser shall have a minimum V-0 flammability rating or comply with the V-0 flame test of Clause 17.26 and shall comply with the minimum flammability requirement in Clause 5.7.1.2 (b) through (d).
5.10	Info	Mechanical joints and fastenings <i>New clause added;</i>
5.10.15		An assembly of glass and frame or glass and recessed trim, where the combination is secured to the luminaire using friction such as spring loaded clips, shall comply with the loading test in Clause 17.15.
6	Info	Electrical construction
6.15	Info	Supply connections
6.15.1	Info	Power supply connections
6.15.1.1		A luminaire shall be provided with a means of connection to a single branch circuit and shall have one or more of the following: a) conductors, when mounted on or over an outlet box; b) provision for connection of conduit as specified in Clause 6.15.2;



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		c) a length of a flexible cord as specified in Clause 11.6; d) tap conductors as specified in Clause 12.6.2; e) a pressure or screw terminal block; f) 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; g) provision for connection of cable; or h) (CAN) a length of flexible cord as specified in Clause 8.3.3 (CAN).
9	Info	HID luminaires – supplementary requirements
9.6	Info	Marking <i>New clause added;</i> A remote ballasted HID luminaire may bear a lamp replacement marking for both a HID and an incandescent lamp provided that: 9.6.4 a) the luminaire complies with the construction and performance requirements in this Standard for both HID and incandescent luminaires; b) the luminaire is additionally marked in accordance with Table 20.1.1, Item 3.15; and c) the installation instructions provide clear direction for the installer to place a check mark on the appropriate lamp replacement marking option based on the lamp type for the particular installation.
10		<i>New section added;</i> LED luminaires – supplementary requirements
10.1		General
10.1.1		The requirements in this clause are supplemental requirements for LED luminaires.
10.2		Lampholders
10.2.1		A lampholder shall have an electrical rating suitable for the LED lamp load to be used.
10.3		Printed wiring boards
10.3.1		A printed wiring board shall comply with the requirements in UL 8750 and CSA C22.2 No. 250.13.
10.4		Emergency battery packs A luminaire provided with a factory-installed emergency battery pack shall be: 10.4.1 a) installed in accordance with the installation instructions marked on or provided with the pack; and b) marked to indicate emergency backup in accordance with Table 20.1.1, Item 1.43.
10.5		Markings
10.5.1		A luminaire having an integral LED driver shall be marked with the input rating in volts, frequency in hertz, and total amperes or watts, in accordance with Table 20.1.1, Item 1.3.



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10.5.2		A luminaire intended for connection to a remote LED driver that requires a driver with a constant voltage output shall include the following marking information on the luminaire in the format S16-L3: constant voltage – voltage; nature of the supply (AC or DC); frequency (for ac rating only); and current or wattage.
10.5.3		A luminaire intended for connection to a remote LED driver that requires a driver with a constant current output shall include the following marking information on the luminaire in the format S16-L3: constant current – current; nature of the supply (AC or DC); frequency (for ac rating only); and voltage or wattage.
10.5.4		Luminaires having a replaceable lamp of the type specified in Annex G shall be marked with a lamp replacement marking as noted in Annex G.
10.5.5		A luminaire having a replaceable lamp of a type other than those specified in Annex G shall be marked, in a location visible during lamp replacement: “CAUTION – RISK OF FIRE. REPLACE ONLY WITH LAMP MODEL _____, MANUFACTURED BY _____”. The marking shall be in the format S24-L1.
11	Info	Surface-mounted luminaires – supplementary requirements
11.6	Info	Electrical construction
		<i>New clause added;</i>
11.6.2		A cord pendant luminaire shall be provided with a flexible cord type as specified in Clause 11.2.12 for connection to the branch circuit.
		A luminaire that can be adjusted, after installation, to change the angle of light, and where the supply connection point is on the adjustable portion, is permitted to be provided with one of the following:
11.6.7		a) a cord bushing and a length of flexible cord of hard-usage type or heavier for connection to branch circuit conductors; <u>b) a length of flexible cord of hard-usage type or heavier with a grounding type attachment plug or cord connector; or</u> c) a junction box cord grip bushing without a length of flexible cord.
12	Info	Recessed luminaires – supplementary requirements
12.1	Info	General
		<i>New clause added;</i>
12.1.5		A recessed luminaire with polymeric parts intended to be installed where these parts are exposed to air-handling spaces* within a building shall comply with the heat and smoke release requirements in UL 2043 and marked in accordance with Clause 12.8.5.3.
		* Products evaluated in accordance with these requirements are considered to comply with the fire retardant and low smoke producing requirements of Section 300 of the National Electrical Code, ANSI/NFPA 70; Chapter 4 of the Standard for the Installation of Air-Conditioning and Ventilating Systems, NFPA 90A; Section 602 of the ICC’s International Mechanical Code; and Section 602 of IAPMO’s Uniform Mechanical Code.



CLAUSE	VERDICT	COMMENT
		<i>New clause added;</i>
12.1.5		(CAN) In Canada, polymeric light diffusers and lenses shall comply with the flame spread rating and smoke developed classification requirements in the National Building Code of Canada.
12.5	Info	Thermal protectors
12.5.1	Info	General
		A recessed luminaire shall be provided with a thermal protector unless the luminaire is:
12.5.1.1		<u>g) LED when the combination of LED driver and light source(s) has thermal protection that fulfills the thermal protection requirements in Clause 4.1 and complies with the relevant requirements of Clauses 15 and 16.</u>
12.8	Info	Markings
12.8.1	Info	General
		<i>New clause added;</i>
12.8.1.14		An LED Type Non-IC inherently protected Luminaire shall be marked with a caution to keep it away from insulation and with a statement that it is inherently protected, in accordance with Table 20.1.1, Items 1.13 and 2.24.
12.8.5	Info	Luminaires with polymeric parts
		<i>New clause added;</i>
12.8.5.3		A luminaire that is provided with polymeric parts intended to be installed where these parts are exposed to air-handling spaces within a building and in compliance with Clause 12.1.5 is permitted to be marked: “Exposed non-metallic materials suitable for use in air-handling spaces”, in accordance with Table 20.1.1, Item 1.40.
13	Info	Miscellaneous luminaires – supplementary requirements
		<i>New section added;</i>
13.6		(USA) Luminaires suitable for use in clothes closet storage spaces
13.6.1		(USA) General
13.6.1.1		(USA) In the United States, the requirements in Clause 13.6 (USA) apply to both fluorescent and LED surface-mounted luminaires for use in clothes closet storage spaces.
13.6.2		(USA) Tests
13.6.2.1		(USA) Temperature
13.6.2.1.1		(USA) In the United States, fluorescent and LED surface-mounted luminaires intended for use in clothes closet storage spaces shall comply with the surface ceiling temperature test of Clause 15.2 with glass fibre insulation batting positioned over and in contact with the entire luminaire exposed surface. The insulation batting shall be Rsi 1.4 to Rsi 1.9 (R8 to R11), in any convenient thickness.



CLAUSE	VERDICT	COMMENT
13.6.2.1.2		(USA) In the United States, the glass fibre batting shall be secured in a manner that does not compress the insulation. The insulation may be cut or applied in sections to provide contact with the full exterior surface of the luminaire.
13.6.2.1.3		(USA) In the United States, during the temperature test, the maximum temperature limits of Table 15.1.2 shall not be exceeded and exterior surfaces of the luminaire shall not exceed 90 °C.
13.6.2.3		(USA) Marking
13.6.2.3.1		(USA) In the United States, fluorescent and LED surface-mounted luminaires intended for use in clothes closet storage spaces shall be marked in accordance with Table 20.1.1, Item 2.28.
13.7		<i>New section added;</i> (CAN) Clothes closet luminaires
13.7.1		(CAN) General
13.7.1.1		(CAN) In Canada, a clothes closet luminaire is a type of luminaire intended to be installed on a ceiling or wall surface in accordance with ANSI/NFPA 70 (in the United States) and the Canadian Electrical Code, Part I (in Canada).
13.7.1.2		(CAN) In Canada, the light source of a clothes closet luminaire shall be covered by a lens or diffuser meeting the requirements of the temperature test of Clause 13.7.2.1 (CAN); the impact test of Clause 13.7.2.2 (CAN); and the compression test of Clause 13.7.2.3 (CAN).
13.7.1.3		(CAN) In Canada, the lens or diffuser of a clothes closet luminaire shall be: a) attached to or removed from the luminaire base with the use of a tool; b) attached to or removed from the luminaire base by mechanical means requiring the combination of a minimum of two movements in different axes, such as a rotation combined with a translation (for example, a bayonet lock); or c) of the screw-on type requiring a minimum of two threads of engagement.
13.7.1.4		(CAN) In Canada, a clothes closet luminaire with an integral light source or incorporating a lens or diffuser shall be permitted if: a) this lens or diffuser cannot be removed from the light source without breakage; b) the requirements of Clauses 13.7.1.2 (CAN) and 13.7.1.3 (CAN) are met; and c) the light source cannot be substituted for another light source not meeting the requirements in Clauses 13.7.1.2 (CAN) and 13.7.1.3 (CAN).
13.7.2		(CAN) Tests
13.7.2.1		(CAN) Temperature test
13.7.2.1.1		(CAN) In Canada, a clothes closet luminaire shall be installed with a light source of the highest rated intensity and as intended on a simulated ceiling or wall surface of 12.3 mm (0.5 in) nominal thickness of gypsum board at the center of a test surface of 65 cm × 65 cm ±5 mm (25.6 in × 25.6 in ±0.2 in).

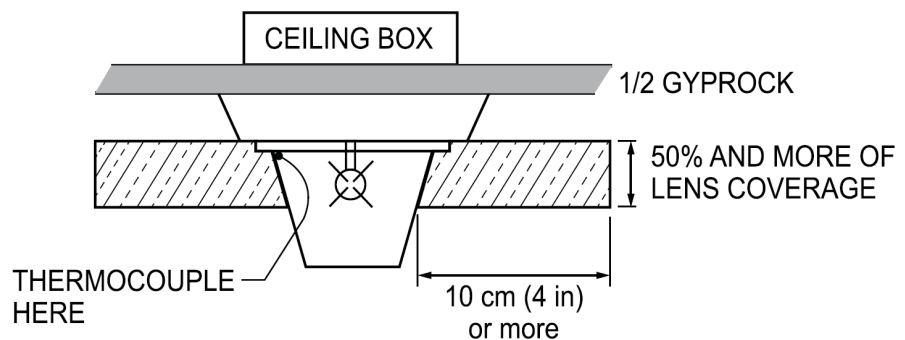


CLAUSE	VERDICT	COMMENT
13.7.2.1.2		(CAN) In Canada, thermocouples shall be placed on the directly accessible surface of the lens or diffuser at its base, at its top, and at its central point, where the thermocouple will be most covered by insulation during this test.
13.7.2.1.3		(CAN) In Canada, insulation shall be placed in such a manner as to cover 50% or more of the lens or diffuser volume in accordance with Figures 13.7.2.1 (CAN), 13.7.2.2 (CAN), and 13.7.2.3 (CAN), and to be in direct contact with 35% or more of the lens or diffuser surface. The insulation thickness perpendicular to the surface of the lens or diffuser shall be 8 cm (3.1 in) minimum, 12 cm (4.7 in) maximum.
13.7.2.1.4		(CAN) In Canada, insulation shall be of the rigid type with a minimum insulating capacity of R20.
13.7.2.1.5		(CAN) In Canada, the temperature test shall be performed with the luminaire facing vertically down in accordance with Figures 13.7.2.1 (CAN) and 13.7.2.2 (CAN), and once with the luminaire facing horizontally in accordance with Figure 13.7.2.3 (CAN).
13.7.2.1.6		(CAN) In Canada, the light source shall be turned on and the temperature shall be allowed to rise until stabilization in an ambient room temperature of 20 to 25 °C (68 to 77 °F). Temperature at each thermocouple shall be recorded after stabilization has been attained.
13.7.2.1.7		(CAN) In Canada, the pass criterion is if the temperature is stabilized at 60 °C (140 °F) or less.

New figure added;

Temperature test for TF1

Figure
13.8.2.1
(CAN)



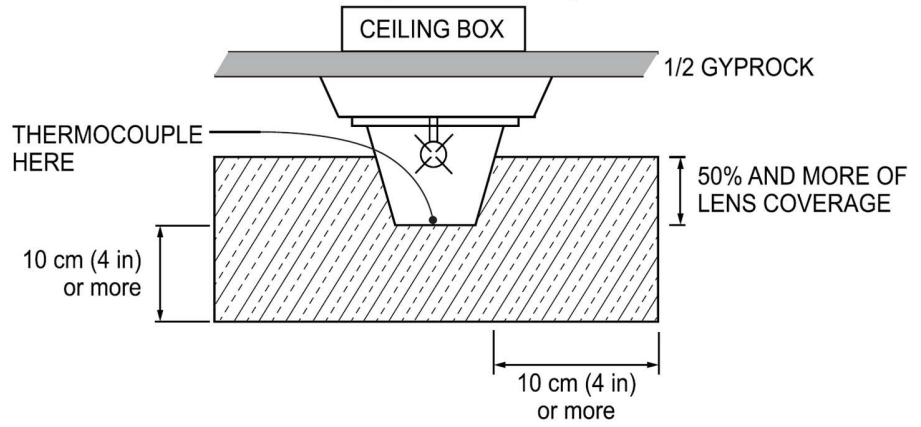


CLAUSE	VERDICT	COMMENT
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New figure added;

Temperature test for TF2

Figure 13.8.2.2 (CAN)



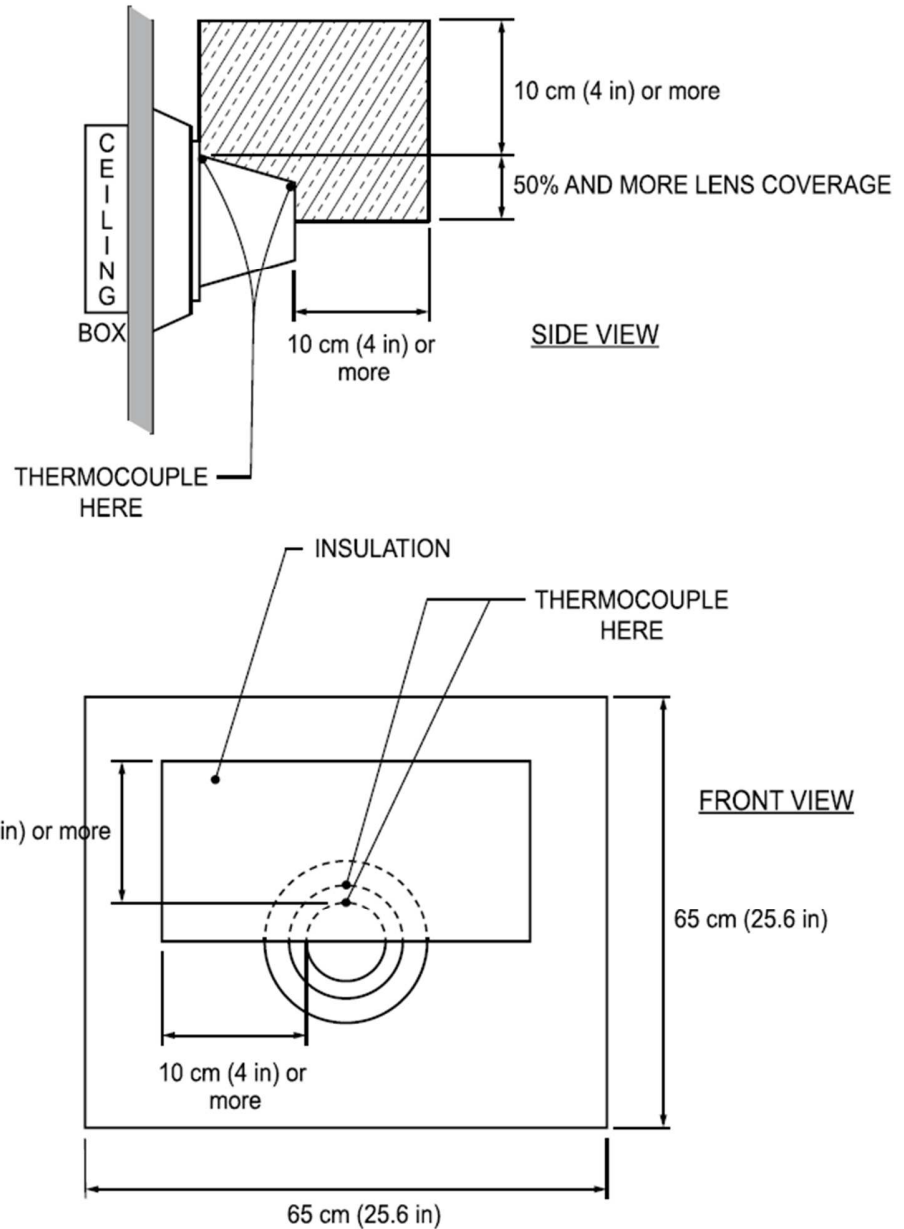
New figure added;

Figure 13.8.2.3 (CAN)

Temperature test with luminaire facing horizontally



CLAUSE	VERDICT	COMMENT
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13.7.2.2	(CAN) Impact test	
13.7.2.2.1		(CAN) In Canada, a clothes closet luminaire shall be installed on a rigid wooden surface and impacted on the lens or diffuser with a weight of 500 ± 10 g (1.1 ± 0.02 lb) from a distance of a minimum of 30 cm (11.8 in) to a maximum of 35 cm (13.8 in) in the worst possible direction to cause displacement of the lens or diffuser from the luminaire base. Edges of the weight shall be rounded and smooth.
13.7.2.2.2		(CAN) In Canada, the pass criterion is if the lens or diffuser remains in place securely. Cracking or chipping not affecting the assembly is acceptable.



CLAUSE	VERDICT	COMMENT
13.7.2.2.3		(CAN) In Canada, cracking of the lens or diffuser exposing the light source and rendering the light source accessible with the finger probe is unacceptable.
13.7.2.3		(CAN) Compression test
13.7.2.3.1		(CAN) In Canada, a clothes closet luminaire shall be installed on a rigid wooden surface and subjected to a compression on the lens or diffuser with a weight of 5000 ±25 g (176 ±0.9 oz) in the worst possible direction to cause displacement of the lens or diffuser from the luminaire base. Edges of weight shall be rounded and smooth.
13.7.2.3.2		(CAN) In Canada, the pass criterion is if the lens or diffuser remains in place securely. Cracking or chipping not affecting the assembly is acceptable.
13.7.2.3.3		(CAN) In Canada, cracking of the lens or diffuser exposing the light source and rendering the light source accessible with the finger probe is unacceptable.
17	Info	Mechanical tests
17.14	Info	Self-threading screw torque
17.14.1		Self-threading or sheet metal screws may be used if threads are not stripped when the screw is tightened to the torque of 3.39 N·m (30 lb·in) given in Table 17.14.1 and if the part or the assembly supported by the screw withstands for 1 min a force equal to four times the mass of the part or assembly, applied in a direction coincident with the axis of the screw.
17.42		<i>New section added;</i> Metal strength tests for reduced spacings
17.42.1		In accordance with Clause 6.11.13, the assembly shall be subjected to the tests described in Clauses 17.42.2 and 17.42.3 without: a) permanent displacement to the extent that spacings are reduced below the values specified in UL 8750, CSA C22.2 No. 250.13, or Annex F (CAN) of this standard, as applicable; b) displacement during the test that results in contact with live parts other than those connected in a Class 2 circuit; and c) development of openings that expose parts that involve a risk of electric shock. Any openings resulting from the test are to be judged under the requirements for accessibility of live parts specified in Clause 6.13.
17.42.2		The dead metal part shall be subjected to a 111 N (25 lbf) force for 1 min. The force is to be applied by means of a steel hemisphere 12.7 mm (1/2 in) in diameter. The force is to be applied at the location(s) most likely to produce unacceptable results.
17.42.3		The enclosure is to be subjected to a single impact of 6.8 N·m (5 ft·lbf) at the location(s) most likely to produce unacceptable test results. The impacts are to be applied by means of a smooth, solid steel sphere 50.8 mm (2 in) in diameter and having a 535 g (1.18 lb) mass. The sphere is to fall freely from rest through a vertical distance of 1.29 m (51 in), or swung as a pendulum through the same vertical distance.
Annex I	Info	Factory production tests (Informative)



CLAUSE	VERDICT	COMMENT
		<i>New section added;</i>
I.1		Dielectric voltage-withstand
		A dielectric voltage-withstand test should be performed on 100% of production of luminaires that contain conductors that are:
I.1.1		a) not visible after assembly; or b) enclosed for a distance of more than 38 mm (1.50 in) within <ol style="list-style-type: none">1) a stem, arm, or tubing; or2) conduit that is not listed or certified.
		If all conductors are protected for the entire enclosed distance with glass fibre sleeving at least 0.25-mm (0.010-in) thick or if a jacketed-type cord is used, then the dielectric voltage-withstand test is not required.
I.1.2		A luminaire with the construction described in Clause I.1.1 and provided with a removable cover for access to conductors should not be required to be subjected to the factory dielectric voltage-withstand test.
I.1.3		The dielectric voltage-withstand test apparatus should be in accordance with Clause 19.20.
I.1.4		Luminaires should be fully assembled, with control and protective components in conducting position, switches in the ON position, and fuses in place. Isolated non-current-carrying metal parts or decorative parts not likely to become energized should not be required to be in place.
I.1.5		Solid-state components that are not relied upon to reduce the risk of electric shock and that can be damaged by the applied dielectric potential may be disconnected for the test. The circuitry may be rearranged for the purpose of the test to reduce the likelihood of solid-state component damage while retaining the representative dielectric stress on the circuit.
		The luminaire should be subjected, without breakdown, to a voltage of 1200 V ac, for a duration of 1 s, between:
I.1.6		a) primary wiring and accessible non-current-carrying metal parts that can become energized; and b) primary wiring and accessible uninsulated live parts in the secondary circuit of an isolating transformer rated for a maximum open circuit voltage of 30 V rms or 42.4 V peak.
I.1.7		A 500 V dc insulation resistance test on 100% of production can be considered representative of the 100% dielectric voltage-withstand test and may be used as an alternative method.



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I.1.8		The insulation resistance measurement of Clause I.1.7 should be made using a dc insulation tester capable of delivering the appropriate open circuit voltage (i.e., 500 V dc), or other suitable equipment. The test voltage should be applied for a minimum duration of 1 s. The measured resistance should not be less than 2 M Ω . For safety reasons, the test should be performed with the luminaire disconnected from the power supply.

CUSTOMERS PLEASE NOTE: This Table and column “Verdict” can be used in determining how your current or future production is or will be in compliance with new/revised requirements.