STANDARDS UPDATE NOTICE (SUN)
ISSUED: May 6, 2026

STANDARD INFORMATION

Standard: UL 60079-11 / CSA C22.2 No. 60079-11

Standard ID:

Explosive Atmospheres - Part 11: Equipment Protection by Intrinsic Safety "i" [UL 60079-11:2026 Ed.7]

Explosive Atmospheres - Part 11: Equipment Protection by Intrinsic Safety "i" [CSA C22.2#60079-11:2026 Ed.3]

Previous Standard ID:

Explosive Atmospheres - Part 11: Equipment Protection by Intrinsic Safety "i" [UL 60079-11:2013 Ed.6+R:25Jan2023]

Explosive Atmospheres - Part 11: Equipment Protection by Intrinsic Safety "i" (R2023) [CSA C22.2#60079-11:2014 Ed.2]

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **January 30, 2029**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: Per our accreditation, Intertek is required to review reports against the standard revisions to confirm compliance. Once compliance is confirmed, the standard reference in the report is updated to show continued compliance to the technical requirements of the standard. Reports not updated to this version by the effective date above will be withdrawn.

Note: The 7th edition of UL 60079-11 is harmonized with the 3rd edition of CSA C.22.2 No. 60079-11. The previous editions of these standards are not harmonized.

Overview of Changes:

- High Temperature derating of components
- Batteries no longer used as voltage limiting shunt devices
- Infallible connections remain capable of carrying the current following considered fault disconnections.
- Infallible PCB connection achieved with two 1 mm wide tracks now have copper thickness requirements.
- Routine inspection requirement for encapsulated parts
- Requirements for supercapacitors added.
- Requirements for the use of thermal devices (PTCs etc.) have been added.

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 – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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.

STANDARD INFORMATION

CLAUSE	VERDICT	COMMENT
All	Minor and Editorial	A significant number of editorial changes including re-structuring of sections. These are too numerous to list in this table.
1 7.14.2	Major	Protection of catalytic elements for Group IIC or Group IIB + H2 excluded from the scope of the standard.
1 6.5.6.1	Extension	Extension, with requirements, of ambient pressure down to 60 kPa.
1	Minor	Modification to Table 1 showing Clause 14 of IEC 60079-0 as 'Applies'. This does not affect the technical requirements.
3	Minor	Definitions
3.1.7 7.7.5	Extension	Diode safety barriers no longer refer to devices that provide galvanic isolation.
3.1.12 7.7.3	Minor	Intrinsic safety parameters and Um can have brief transients above the stated values, and these do not need to be taken into account.
5.1	Minor	Clarification that it is not a requirement of this standard that conformance to industrial standards be verified.
5.2.1	Minor	Clarification of conditions for the assessment added.
5.2.1 g)	Major	Clarification relating to the application of service temperatures **(> 100°C)**.
5.2.2	Extension	Statements that Level of Protection "ia" and "ib" requirements are always sufficient for Level of Protection "ic".
5.2.4 6.5.4.3 6.5.4.4 6.5.4.5	Major	For Level of Protection "ic", faults are only considered for spark ignition assessment and the determination of Uo, Io, Li, Ci and Li/Ri. A short circuit fault, and subsequent component faults arising, are now termed non-countable faults.
5.2.4	Extension	For Level of Protection "ic", the types of components on which intrinsic safety depends are limited.
5.2.5 12.1 c)	Minor	Clarification of the requirements for non-shock hazard equipment or systems (for example SELV / PELV) for declaration of Um.
5.3.1	Major	Clarification of where spark ignition assessment should and should not be applied **and related to service temperature (> 100°C)**.
5.3.1 9.1.1	Minor	Clarification that spark ignition assessment may be performed on a representative circuit.
5.3.4.1 5.3.4.2 9.2.6 c) Annex G	Extension	Annex G added as option for spark ignition assessment.

CLAUSE	VERDICT	COMMENT
5.3.6 Annex D	Major	Clarification of the requirements for circuits with controlled semiconductor limitation, including need to consider both steady state and transient spark ignition compliance for circuits with controlled semiconductor limitation.
5.4.1	Extension	The exclusion of the IEC 60079-0 10 % safety margin on voltage for thermal ignition assessment extended to Groups I and II.
5.4.1	Major	The 1,3 W limit for T4 for tracks on a printed circuit board now only applies to 40 °C ambient.
5.4.2	Major	The 5K and 10K margin required for temperature tests from IEC 60079-0 now apply for Level of Protection "ic".
5.4.3	Major	Corrected the formula for thermal assessment of wires.
5.4.4	Minor	Clarified that only circuit board tracks exposed to the explosive atmosphere require temperature classification.
5.4.4	Minor	Added a note identifying examples of available data for determining temperature rise in PCB tracks (From IPC-2221 and IPC-2152).
5.4.4	Minor	Clarified which dimensions can be reduced by manufacturer's tolerance (track width, board thickness, and conductor thickness).
5.4.4	Extension	Clarified the use of Table 4 by introducing reduction factors for board thickness, number of layers, copper thickness, track under component, and ambient temperature.
5.4.4	Extension	Added allowance for linear interpolation of allowed current, track width, track thickness, ambient temperature, and board thickness.
5.4.4	Major	Extrapolation of Table 4 is prohibited.
5.4.4	Extension	Reduced the default board thickness for application of Table 4 from 1,6 mm to 1,55 mm to reflect industry standard.
5.4.4	Extension	Clarified that the track under component reduction factor only applies if the portion of the track underneath the component is greater than 10 mm.
5.4.5	Extension	Use of the 1,3 W limit for thermal ignition compliance for Group III extended to include Group I.
5.4.4	Extension	Board thickness, copper thickness and ambient temperature factors extended in use of Table 4.
6.2.1	Extension	Enclosure requirement for Groups IIIA and IIIB aligned with Group I and Group II.
6.2.4 a)1)	Major	Clarification that the IEC 60079-0 enclosure requirements apply for Group IIIC equipment with separations according to Table 7 (Ed 6 Table 5) that are reliant on an enclosure providing IP5X.
6.2.5.1	Major	Requirement for a Specific Condition of Use added when use of reduced separations is reliant on an enclosure providing IP54.
6.3.3	Extension	Plugs and sockets can comply with reduced separation requirements.

CLAUSE	VERDICT	COMMENT
6.3.5.2	Extension	Use of an enclosure to protect battery charging connections from spark ignition (Ed.6 clause 7.4.9) extended to include all non-hazardous area connection facilities.
6.3.5.3 11.1.5 12.1 j)	Extension	It is no longer necessary to define Um for the connection from non-hazardous area connection facilities to accessories listed in the certificate provided the accessory is suitably marked and listed in the instructions.
6.3.5.3	Extension	It is no longer necessary to assess a non-hazardous area accessory in accordance with this standard.
6.3.5.3	Minor	Clarification that charging of cells and batteries in the non-hazardous area has to be within the limits specified by their manufacturer, and IEC 60079-0.
6.4.1	Major	Conductors, connectors and PCB tracks have to be suitably rated for their failure to be a countable fault.
6.4.1	Major	It is now a stated requirement that circuits remain intrinsically safe after disconnection of a connector.
6.4.2.2 6.4.2.3	Major	It is now a requirement that infallible connections remain capable of carrying the current following considered fault disconnections.
6.4.2.4	Major	Infallible PCB connection achieved with two 1 mm wide tracks now have copper thickness requirements.
6.4.2.4	Extension	The options for infallible PCB connections have been extended.
6.4.2.5	Minor	Clarification that connections complying with IEC 60079-7 Level of Protection "eb" can be considered infallible.
6.5.1	Minor	Clarification that insulation of component packaging cannot be relied upon for separation of conductive parts unless it is specified by the component manufacturer, except for shorts to its solder pads where they are similar to the recommendations of the component manufacturer.
A2	Minor	Alternate spacing requirements from the previous edition Annex F have been transferred to the main body of this document.
6.5.3.2	Extension	Specific Condition of Use only required for Overvoltage Category (OVC) I/II when using Table 8 – Reduced separations.
6.5.3.2	Major	Dielectric strength requirements have been clarified in Table 8 – Reduced separations.
6.5.3.3	Major	Specific Condition of Use required when OVC II/I is required for mains apparatus when using Table 9 – Reduced separations for Level of Protection "ic".
6.5.3.2	Extension	Table 8 – Reduced separations is derived from Ed.6 Table F.1 but with additional requirements.
6.5.3.2	Extensions	Routine tests when using Table 8 – Reduced separations for Level of Protection "ic" no longer have to be performed at the most onerous ambient condition.
6.5.3.3	Extension	Table 9 – Reduced separations for Level of Protection "ic" is derived from Ed.6 Table F.2 but with additional requirements.
6.5.4.2	Extension	Additional options for infallible separations when exposing connection facilities.

CLAUSE	VERDICT	COMMENT
Table 7 Table 8 Table 9	Minor	Separations tables clarify that the voltages do not need to include non-repetitive transients.
Table 8 6.5.6.2 6.5.6.3 6.5.6.5 9.7	Major	Determination of type and routine testing required when using reduced separations tables.
Table 8 Table 9	Extension	Additional separation distance options.
6.5.6.2 6.5.6.3	Extension	Dielectric strength test is no longer required for all separations through casting compound and solid insulation.
6.5.6.4	Extension	When Comparative Tracking Index (CTI) Is unknown, a CTI of 100 may be assumed, and some materials are identified as nontracking.
6.5.6.4	Extension	Extended and clarified requirements for assessing creepage distances.
6.5.6.5	Extension	Two coats of conformal coating no longer required when spraying.
6.5.7	Extension	Consideration of composite separations extended to reduced distances tables.
6.5.9	Extension	Metal parts used for separation no longer have to be earthed.
6.5.9.1	Major	Where metal parts connected to the frame or earth are used to separate two circuits, a Specific Condition of Use is now required.
6.5.9.1	Major	Clarification that separation by metal parts requires infallible connection.
6.5.10	Extension	Relaxation of requirements for non-metallic insulating partitions for Level of Protection "ic".
6.5.11.3	Extension	Added requirements for insulation between internal wiring of separate intrinsically safe circuits.
6.6	Extension	Encapsulation requirements have been separated and extended according to the purpose of the encapsulation.
6.6.1 10.4	Major	Routine verification of encapsulation added.
6.6.1 a)	Major	The specified COT for encapsulation shall not be exceeded in normal operation. Tighter requirements for damage to compound for temperature greater than COT.
6.6.1 6.6.7	Extension	Free space within encapsulation other than within components is now permitted.
6.7	Major	Requirements for specification of coating, encapsulation and moulding materials.
6.8	Major	Components used to protect against polarity reversal have to be rated to 7.1.
7.1	Minor	It is now stated that there are circumstances where 2/3rd rating for all three of voltage, current and power are not applicable for Levels of Protection "ia" and "ib".

CLAUSE	VERDICT	COMMENT
7.1	Extension	Power rating for Level of Protection "ic" does not require a 1,5 safety factor following the application of faults.
7.2	Major	Components for Level of Protection "ic" are considered to fail if they are not within their manufacturer's rating following the application of faults.
7.3	Minor	Clarification of the application of manufacturing variations added.
7.4.2	Major	Resistors of types not listed (film, wire wound and printed) cannot now be considered to fail as a countable fault, nor to limit their own temperature.
7.4.2	Minor	Clarified that the voltage rating to which the safety factor is applied is that of the resistor series, and not that based on the resistance.
7.4.2	Minor	Clarification of the power rating of resistors in series with supercapacitors.
7.4.2	Major	Cold resistance of a fuse, filament of a bulb or infra-red source is assessed at the service temperature rather than the ambient temperature.
7.4.2	Extension	The filament of an infra-red sensor can be used as a resistor for limitation.
7.5.1	Extension	Clarification that self-heating of capacitors need not be considered.
7.5.3	Extension	An arrangement of two series blocking capacitors need have only half of the infallible separation across each when using Table 7 and Table 9 (this was already permitted for Table 8).
7.6.1 7.8.1	Minor	Clarification of the failure modes for inductors and transformers.
7.6.3	Minor	References to IEC 60317 updated.
7.6.5 9.15	Extension	Added requirements and tests for common mode chokes which provides allowances to consider only the leakage inductance of common mode chokes, or the inductance of only one coil.
7.7.1	Major	Clarification that assessment of semiconductors cannot be based on failure rates.
7.7.1 c)	Extension	An enhanced voltage generated by an integrated circuit does not need to be considered as being present on other connected pins.
7.7.1 d)2)	Extension	Added an allowance for low complexity semiconductors to avoid being considered to fail so as to dissipate maximum power.
7.7.3	Extension	Transient rating of semiconductors only applied to transients caused by current limitation.
7.7.3	Minor	Clarification that a safety factor of 1,0 is required when assessing the transient power rating of a semiconductor on which intrinsic safety depends.
7.7.3	Extension	For Level of Protection "ic", transient rating of semiconductors is only necessary for diode safety barriers.
7.7.6	Extension	Where two diodes are used in a safety shunt for Level of Protection "ia", the failure of only a single diode has been extended to the failure of a single shunt path. This means that the tracking from the diode to reference voltages (for example, ground) no longer have to be infallible.

CLAUSE	VERDICT	COMMENT
7.7.7	Extension	Controlled semiconductor current limitation is permitted for Level of Protection "ia".
7.7.8	Major	Clarification of the requirements for programmable components.
7.8.1	Minor	Statement that transformers need not be considered to increase the voltage or current beyond that defined by their turns ratio.
7.8.3	Extension	Table 17 extended with a 10 A column.
7.8.3	Extension	Foil / screen thickness for 10 A added.
7.8.4.1	Major	Clarification that the requirement for mains transformers includes any transformer that is not galvanically isolated from the mains.
7.8.4.2	Extension	Reduced requirements for transformers that are galvanically isolated from the mains.
7.8.5 9.17.4	Minor	Clarification of requirements for transformers for Level of Protection "ic".
7.8.5	Major	Requirements for transformers for Level of Protection "ic" added.
7.9.2	Minor	Clarification of the rating requirements for relays.
7.9.2 a)	Major	Countable fault separation between the coil and contacts of a relay is no longer permitted.
7.9.2	Extension	Addition of option for relays depending on reduced separation distances internally to comply with IEC 61810-1.
7.9.2	Extension	Relays in Level of Protection "ic" need only comply with the relevant industrial standards.
7.10.1	Minor	Clarified that IEC 60079-28 does not apply to self-contained optical isolators.
7.10.2	Extension	Addition of options for non-optical signal isolators.
7.11	Minor	Clarified that a single fuse is sufficient.
7.11	Major	Clarification that the cold resistance of a fuse cannot be used to limit the breaking current.
7.11	Major	A fuse in Level of Protection "ic" shall be considered an ignition risk if its opening is an expected occurrence.
7.11 12.1 j)	Major	Clarification that the breaking capacity of fuses connected to Um may be less than 1 500 A provided that the maximum prospective current is stated in the instructions.
7.12.1	Extension	Cells which may explode no longer require a statement from the manufacturer of the cell that they are safe for use in any particular apparatus.
7.12.1	Major	Clarification that temperature rise and electrolyte leakage should be considered for cells.
7.12.2	Major	Clarification that short circuit of a single cell is considered a noncountable fault.
7.12.4	Extension	Demonstration of the concentration of hydrogen can come from the manufacturer, rather than the manufacturer of the battery.

CLAUSE	VERDICT	COMMENT
7.12.4	Extension	Containers for sealed cells and batteries no longer need the pressure test of 9.14.4.
7.12.5	Minor	Clarification of conditions for determining cell voltages
7.12.8	Minor	Clarified that the requirements only apply to replaceable batteries.
7.13	Extension	Crystal oscillators are excluded from the requirements for piezoelectric devices, and there are extended requirements for Level of Protection "ic".
7.14.2	Major	Clarified that thermal assessment of catalytic sensors shall take into account heating due to the catalytic reaction.
7.15 9.14	Major	Clarification that supercapacitors shall be treated as batteries with a limited capacity but without the ability to limit their own voltage.
7.16 9.12	Major	Requirements and tests for thermal devices added, including PTCs.
7.17	Minor	Clarification that mechanical switches do not require thermal ignition assessment.
8.1.1	Minor	Clarification that the protective diodes in diode safety barriers shall be protected by a fuse or resistor(s) and not controlled semiconductor limitation.
8.1.2.2	Extension	Additional options for earth facilities for diode safety barriers.
9.1.1	Extension	Requirement for 110 % of the mains supply voltage when applying the spark test apparatus removed as the conditions for test are specified in 5.2.
9.1.2	Minor	Clarified that all circuits (not just capacitive) need to have time to recover where applicable during spark testing
9.1.2	Extension	Added allowance for slowing the spark test apparatus down when removing wires is not sufficient to allow rest of the circuit under test.
9.1.2	Major	Clarified that the effect of temperature on an inductor's resistance shall be taken into account during spark testing.
9.1.3	Minor	Minimum ignition current for calibration of the spark test apparatus added.
9.2.3.3	Extension	Added formula option for reducing effective capacitance with a resistor.
9.2.6	Minor	Clarification that consideration of the combination of inductance and capacitance is required internal to equipment and not just at connection facilities.
9.2.6 b)	Extension	An assessment that demonstrates that the safety factor is maintained with a combination of both inductance and capacitance is allowed.
9.2.6	Minor	Where parameters are specified for combined lumped inductance and capacitance, that shall be stated in the certificate or documentation.
9.4.1 9.4.3	Extension	30 N test for casting compound and partitions are not applicable for Level of Protection "ic".
9.4.2	Minor	Test temperature for immersion in water for encapsulated fuses has been lowered by 2 °C for compatibility with other testing.
9.13	Minor	Parameters for loosely specified components shall be determined taking into account the service temperature, not just the ambient temperature.

CLAUSE	VERDICT	COMMENT
9.10	Extension	Clarification and modification of the tests for optical isolators.
9.11	Minor	Clarified that tests on piezoelectric devices need be performed on only a single sample, unless that sample is damaged during the testing.
9.14.1	Minor	Clarified that primary cells shall be unused and limiting devices shall be removed for the electrolyte leakage test.
9.14.1	Major	Clarified that the current shall be continuous when discharging during the tests.
9.14.1	Extension	Cells that have essential features that limit their current may be used for Level of Protection "ia".
9.14.1	Minor	Cells that explode or catch fire during short circuit test shall not be used for Levels of Protection "ia" and "ib".
9.14.1	Major	Electrolyte leakage and surface temperature test requirements for cells and batteries modified to cover the number of samples tested, the test temperature, and testing with dust layers.
9.14.2 a)	Extension	Added option to conduct short circuit until discharge testing for Level of Protection "ic" to establish compliance with the electrolyte leakage requirement.
9.14.2	Extension	Added alternative assessment of damage to encapsulation from leaked electrolyte.
9.14.3.2	Extension	Spark ignition of batteries may be carried out following current limitation where separation is maintained.
9.14.3.2	Major	Requirement added to consider the spark ignition risk of single lithium cells of less than 4,5 V with high short circuit current.
9.14.3.3	Extension	For single cells, it is sufficient to measure the temperature in the middle of the cell rather than having to locate the highest temperature point.
9.14.3.3 b) 9.14.2	Extension	For thermal ignition assessment of cells and batteries with Level of Protection "ib", added an alternative test for lithium-ion rechargeable cells where it is not possible to obtain samples with current limiting devices disabled. There is an assumption that these cells will leak electrolyte so 7.12.3 applies.
9.14.3.3	Extension	Where limiting devices are removed from a cell for testing, it is no longer necessary to also test with 10 samples with the limiting devices still in place.
9.14.3.3 c)	Extension	Only a single sample need be tested for thermal ignition compliance testing of cells or batteries for Level of Protection "ic".
9.16	Extension	Transient test for diode safety barriers and safety shunts has been extended to include controlled semiconductor current limitation.
9.17.1	Minor	Clarify that transformer dielectric strength test is a test at room temperature.
9.17.3	Extension	Reduced testing requirements for transformers that are galvanically isolated from the mains.
10.3.1	Major	Transformer windings requiring galvanic separation between different intrinsically safe circuits are to be tested for a dielectric strength of 2U if that is greater than 500 V.

CLAUSE	VERDICT	COMMENT
10.3.2	Major	Transformers for Level of Protection "ic" shall be routine tested where there is no applicable industrial standard, or the applicable industrial standard does not specify a routine test.
11	Extension	Marking of IP rating no longer required as this is now a Specific Condition of Use.
Annex I	Minor	Flowchart for testing of enclosures added.
Formerly 8.7.3	Minor	List of voltage limiting techniques has been deleted.
Formerly 9.3	Minor	Requirements for handlights and caplights removed as these are covered elsewhere (including in other standards).