

भारतीय मानक ब्यूरो
(केंद्रीय मुहर विभाग III)

हमारा संदर्भ : सी एम डी- III/16 : आई एस / आई इ सी 60079-11

23 01 2025

विषय : पुनरीक्षित आई एस / आई इ सी 60079-11 के अनुपालन हेतु दिशानिर्देश ।

यह उपरोक्त विषय के सन्दर्भ में है ।

सक्षम अधिकारी द्वारा अनुमोदित दिशानिर्देश अनुपालन हेतु संलग्न है ।

सभी क्षेत्रीय / शाखा कार्यालयों से अनुरोध है के दिशानिर्देशों का तत्काल प्रभाव से अनुपालन सुनिश्चित करें।

(मोहम्मद इसराफिल)
वैज्ञानिक – डी (सी एम डी – III)

प्रमुख (के मु वि III)

सभी लाइसेंस धारकों/ आवेदकों को परिचालित

प्रतिलिपि: सभी क्षेत्रीय/शाखा कार्यालय

BUREAU OF INDIAN STANDARDS
(Central Marks Department-III)

Our Ref: CMD-III/16: IS/IEC 60079-11

23 01 2025

Subject: Guidelines for implementation of Revised IS/IEC 60079 (Part 11): 2023, Explosive Atmospheres- Part 11 Explosive Atmospheres – Equipment Protection by Intrinsic Safety "i".

This has reference to the subject mentioned above.

BOs may kindly ensure implementation of the guidelines with immediate effect.

Md. Israfil
Sc-D (CMD-III)

Head (CMD-III)

Circulated to: All ROs/BOs

Copy to: ITS – for hosting on Intranet please

CENTRAL MARKS DEPARTMENT III

Our Ref: CMD III/16: IS/IEC 60079 (Part 11)

23 01 2025

Subject: Guidelines for implementation of Revised IS/IEC 60079 (Part 11): 2023, Explosive Atmospheres- Part 11 Equipment Protection by Intrinsic Safety "i"

1. IS/IEC 60079 (Part 11): 2011 has been revised and published as IS/IEC 60079 (Part 11): 2023. The last date for implementation of the revised Standard is **01st April 2025**, after which the old Standard shall stand withdrawn.
2. All BOs shall inform the Applicants and Licensees under their jurisdiction about implementation of the revised Standard within a week of issuance of these guidelines.
3. The significant changes in the revised Standard as listed in the Table 1 annexed is given for the purpose of general guidance. It shall be ensured that the product conforms to all the requirements, as applicable, as per the revised Standard.
4. Consequent upon the issuance of the revised Standard, existing product manual has been revised and uploaded as Doc: PM/ IS/IEC 60079-11/ 2/Jan 2025.
5. The guidelines for implementation of the revised Standard is given below:

A. LICENSEES:

- i. All Licensees shall implement the revised Standard by **01st April 2025**. BOs shall ensure that no licences are under operation as per the old Standard after **01st April 2025**. The status of implementation of the revised Standard shall be confirmed by Head (BO) to CMD-III within two weeks of the last date of concurrent running.
- ii. For the product type designations already type tested as per old standard, a revalidation report shall be obtained from any of the Third Party Testing Lab as defined in BIS Conformity Assessment Regulations, 2018 (irrespective of the Lab which has issued the original/ previous Test Report) by submitting the technical specifications along with the following:
 - a) Copy of the earlier test report/certificate for the product type designation and approved drawing.
 - b) Declaration about the changes (modifications/additions/deletions), if any, made in the equipment in order to comply with requirements stipulated in the revised IS/IEC Standard.
 - c) Revised drawing of the equipment, in accordance with the above. Revised drawing shall indicate the revision status and be correlated with the previous type test report(s).
- iii. The laboratory shall make an assessment of the equipment based on documentation mentioned above and may call for additional information or for samples if required. If testing is necessary based on the initial assessment, the laboratory shall carry out testing on the equipment as per the revised Standard.
- iv. A revalidation test report shall be issued by the Laboratory which shall include the following:
 - a) Confirmation that the equipment meets all the requirements as per the revised standard.
 - b) Any design changes or revisions in drawing vis-à-vis the equipment type-tested earlier in order to comply with requirements of revised IS/IEC Standard.
 - c) Results of assessment and tests, if any, carried out to ensure compliance with the requirements of the revised standard. Wherever further testing is not necessary, it shall be stated so and reference to the old test report/certificate number shall be given.

- d) Reference of the drawing of the equipment as per the revised Standards in the test report. A copy of the certified drawing shall be attached to the TR.
- e) Labs may consolidate certificates of similar apparatus under different certificates.
- v. For the purpose of endorsement of implementation of revised standard, the licensee shall submit revalidation report/ new test report for **any one type designation from each product group defined at Annex A of the Product Manual (PM/ IS/IEC 60079-11/2/ Jan 2025)** and the same product group shall be endorsed as per the revised standard in the licence.
- vi. At the end of the concurrent running period, a consolidated endorsement mentioning Product Groups as per the grouping in the Product Manual shall be issued based on the test reports submitted by the firm.
- vii. If the firm fails to submit any test report as per the revised standard at the end of the concurrent running period, the suitable action shall be taken as per the prevailing guidelines.
- viii. **It is the responsibility of the licensee to get each of the product type designation manufactured by them tested as per the revised standard (type test report or revalidation report). During the period of concurrent running, products with test reports as per old as well as revised standard may be marked. After the last date of concurrent running, products with test reports issued as per the revised standard and whose product groups have been endorsed by BIS only shall be marked.**
- ix. Verification of implementation of the revised Standard, wherever required, may be done during the next visit which may normally be completed within six months of the last date of concurrent running.

B. APPLICATIONS FOR GRANT OF LICENCE:

- i. Existing Applications where Sample has been submitted in the Laboratory/Test Report has been issued by the Laboratory may be processed as per the old Standard. However, if the Applicant is desirous of considering the Application as per the revised Standard, a declaration may be obtained from the Applicant to that effect and the Application may be processed accordingly. An undertaking shall also be obtained from such Applicants that if the sample fails in new test requirements, Licence will not be granted by BIS as per the old version.
- ii. Applications which are recorded henceforth may be processed as per the old Standard or the revised Standard. Processing of Applications as per the old Standard shall be permitted only upto **01st April 2025** and for such cases Applicant shall give a declaration that they will implement the revised Standard by **01st April 2025**.
- iii. Beyond **01st April 2025** no Licence shall be granted as per the old Standard.

C. CHANGE IN SCOPE OF LICENCE:

- i. For change in scope of Licence, the relevant provisions as given above for Applicants shall apply.
 - ii. However, processing of such applications for change in scope of Licence as per the old Standard shall be permitted only upto **01st April 2025**.
6. The above guidelines come into force with immediate effect.

Md. Israfil
Sc-D (CMD-III)

Head (CMD-III)
DDG (Certification)

Table 1

Changes between IS/IEC 60079-11: 2023 and IS/IEC 60079-11: 2011 are as listed below:

Sr. No.	Clause	Changes
1.	All	A significant number of editorial changes including re- structuring of sections. These are too numerous to list in this table.
2.	1 7.14.2	Protection of catalytic elements for Group IIC or Group IIB + H2 excluded from the scope of the standard.
3.	1 6.5.6.1	Extension, with requirements, of ambient pressure down to 60 kPa.
4.	1	Modification to Table 1 showing Clause 14 of IEC 60079-0 as 'Applies'. This does not affect the technical requirements.
5.	3	Definitions removed as they are now in IEC 60079-0. (References are from IS/IEC 60079-11: 2011) 3.2 coating 3.3 conformal coating 3.7.1 countable fault 3.7.3 non-countable fault 3.18 recurring peak voltage 3.20 encapsulation 3.21 casting 3.23 galvanic isolation
6.	3	Definitions removed as they are no longer considered necessary. (References are from IS/IEC 60079-11: 2011) 3.7.2 fault 3.10.3 Infallible separation
7.	3.1.7 7.7.5	Diode safety barriers no longer refers to devices that provide galvanic isolation.
8.	3.1.12 7.7.3	Intrinsic safety parameters and Um can have brief transients above the stated values, and these do not need to be taken into account.
9.	3.1.14	New definition – spark test apparatus.
10.	3.1.15	New definition – electrochemical capacitor.
11.	3.1.16.1	New definition – transient rating.
12.	3.1.16.2	New definition – transient energy (previously let-through energy).
13.	3.1.17	New definition – non-hazardous area accessory.
14.	5.1	Clarification that it is not a requirement of this standard that conformance to industrial standards be verified.
15.	5.2.1	Clarification of conditions for the assessment added.
16.	5.2.1 g)	Clarification relating to the application of service temperatures.
17.	5.2.2	Statements that Level of Protection "ia" and "ib" requirements are always sufficient for Level of Protection "ic".

18.	5.2.4 6.5.4.3 6.5.4.4 6.5.4.5	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.
19.	5.2.4	For Level of Protection "ic", the types of components on which intrinsic safety depends are limited.
20.	5.2.5 12.1 c)	Clarification of the requirements for non-shock hazard equipment or systems (for example SELV / PELV) for declaration of Um.
21.	5.3.1	Clarification of where spark ignition assessment should and should not be applied.
22.	5.3.1 9.1.1	Clarification that spark ignition assessment may be performed on a representative circuit.
23.	5.3.1	Spark ignition assessment at normal ambient is suitable for service temperatures between -60 °C and 100 °C.
24.	5.3.4.2 d)	Spark ignition testing of mains apparatus is at Um rather than 110 % of the mains nominal voltage.
25.	5.3.4.1 5.3.4.2 9.2.6 c) Annex G	Annex G added as option for spark ignition assessment.
26.	5.3.6 Annex D	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.
27.	5.4.1	The exclusion of the IEC 60079-0 10 % safety margin on voltage for thermal ignition assessment extended to Groups I and II.
28.	5.4.1	The 1.3 W limit for T4 for tracks on a printed circuit board now only applies to 40 °C ambient.
29.	5.4.2	The 5K and 10K margin required for temperature tests from IEC 60079-0 now apply for Level of Protection "ic".
30.	5.4.3	Corrected the formula for thermal assessment of wires.
31.	5.4.4	Clarified that only circuit board tracks exposed to the explosive atmosphere require temperature classification.
32.	5.4.4	Added a note identifying examples of available data for determining temperature rise in PCB tracks (From IPC- 2221 and IPC-2152).
33.	5.4.4	Clarified which dimensions can be reduced by manufacturer's tolerance (track width, board thickness, and conductor thickness).
34.	5.4.4	Clarified the use of Table 4 by introducing reduction factors for board thickness, number of layers, copper thickness, track under component, and ambient temperature.
35.	5.4.4	Added allowance for linear interpolation of allowed current, track width, track thickness, ambient temperature, and board thickness.

36.	5.4.4	Extrapolation of Table 4 is prohibited.
37.	5.4.4	Reduced the default board thickness for application of Table 4 from 1.6 mm to 1.55 mm to reflect industry standard.
38.	5.4.4	Clarified that the track under component reduction factor only applies if the portion of the track underneath the component is greater than 10 mm.
39.	5.4.5	Use of the 1.3 W limit for thermal ignition compliance for Group III extended to include Group I.
40.	5.4.4	Board thickness, copper thickness and ambient temperature factors extended in use of Table 4.
41.	6.2.1	Enclosure requirement for Groups IIIA and IIIB aligned with Group I and Group II.
42.	6.2.4 a)1)	Clarification that the IEC 60079-0 enclosure requirements apply for Group IIIC equipment with separations according to Table 7 (IS/IEC 60079-11: 2011 Table 5) that are reliant on an enclosure providing IP5X.
43.	6.2.5.1	Requirement for a Specific Condition of Use added when use of reduced separations is reliant on an enclosure providing IP54.
44.	6.3.3	Plugs and sockets can comply with reduced separation requirements.
45.	6.3.5.2	Use of an enclosure to protect battery charging connections from spark ignition (IS/IEC 60079-11: 2011 clause 7.4.9) extended to include all non-hazardous area connection facilities.
46.	6.3.5.3 11.1.5 12.1 j)	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.
47.	6.3.5.3	It is no longer necessary to assess a non-hazardous area accessory in accordance with this standard.
48.	6.3.5.3	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.
49.	6.4.1	Conductors, connectors and PCB tracks have to be suitably rated for their failure to be a countable fault.
50.	6.4.1	It is now a stated requirement that circuits remain intrinsically safe after disconnection of a connector.
51.	6.4.2.2 6.4.2.3	It is now a requirement that infallible connections remain capable of carrying the current following considered fault disconnections.
52.	6.4.2.4	Infallible PCB connection achieved with two 1 mm wide tracks now have copper thickness requirements.
53.	6.4.2.4	The options for infallible PCB connections have been extended.
54.	6.4.2.5	Clarification that connections complying with IEC 60079-7 Level of Protection "eb" can be considered infallible.

55.	6.5.1	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.
56.		Alternate spacing requirements from the previous edition Annex F have been transferred to the main body of this document.
57.	6.5.3.2	Specific Condition of Use only required for Overvoltage Category (OVC) I/II when using Table 8 – Reduced separations.
58.	6.5.3.2	Dielectric strength requirements have been clarified in Table 8 – Reduced separations.
59.	6.5.3.3	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".
60.	6.5.3.2	Table 8 – Reduced separations is derived from IS/IEC 60079-11: 2011 Table F.1 but with additional requirements.
61.	6.5.3.2	Routine tests when using Table 8 – Reduced separations no longer have to be performed at the most onerous ambient condition.
62.	6.5.3.3	Table 9 – Reduced separations for Level of Protection "ic" is derived from IS/IEC 60079-11: 2011 Table F.2 but with additional requirements.
63.	6.5.4.2	Additional options for infallible separations when exposing connection facilities.
64.	Table 7 Table 8 Table 9	Separations tables clarify that the voltages do not need to include non-repetitive transients.
65.	Table 8 6.5.6.2 6.5.6.3 6.5.6.5 9.7	Determination of type and routine testing required when using reduced separations tables.
66.	Table 8 Table 9	Additional separation distance options.
67.	6.5.6.2 6.5.6.3	Dielectric strength test is no longer required for all separations through casting compound and solid insulation.
68.	6.5.6.4	When Comparative Tracking Index (CTI) Is unknown, a CTI of 100 may be assumed, and some materials are identified as non-tracking.
69.	6.5.6.4	Extended and clarified requirements for assessing creepage distances.
70.	6.5.6.5	Two coats of conformal coating no longer required when spraying.
71.	6.5.7	Consideration of composite separations extended to reduced distances tables.
72.	6.5.9	Metal parts used for separation no longer have to be earthed.

73.	6.5.9.1	Where metal parts connected to the frame or earth are used to separate two circuits, a Specific Condition of Use is now required.
74.	6.5.9.1	Clarification that separation by metal parts requires infallible connection.
75.	6.5.10	Relaxation of requirements for non-metallic insulating partitions for Level of Protection "ic".
76.	6.5.11.3	Added requirements for insulation between internal wiring of separate intrinsically safe circuits.
77.	6.6	Encapsulation requirements have been separated and extended according to the purpose of the encapsulation.
78.	6.6.1 10.4	Routine verification of encapsulation added.
79.	6.6.1 a)	The specified COT for encapsulation shall not be exceeded in normal operation. Tighter requirements for damage to compound for temperature greater than COT.
80.	6.6.1 6.6.7	Free space within encapsulation other than within components is now permitted.
81.	6.7	Requirements for specification of coating, encapsulation and moulding materials.
82.	6.8	Components used to protect against polarity reversal have to be rated to 7.1.
83.	7.1	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".
84.	7.1	Power rating for Level of Protection "ic" does not require a 1.5 safety factor following the application of faults.
85.	7.2	Components for Level of Protection "ic" are considered to fail if they are not within their manufacturer's rating following the application of faults.
86.	7.3	Clarification of the application of manufacturing variations added.
87.	7.4.2	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.
88.	7.4.2	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.
89.	7.4.2	Clarification of the power rating of resistors in series with super capacitors.
90.	7.4.2	Cold resistance of a fuse, filament of a bulb or infra-red source is assessed at the service temperature rather than the ambient temperature.
91.	7.4.2	The filament of an infra-red sensor can be used as a resistor for limitation.

92.	7.5.1	Clarification that self-heating of capacitors need not be considered.
93.	7.5.3	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).
94.	7.6.1 7.8.1	Clarification of the failure modes for inductors and transformers.
95.	7.6.3	References to IEC 60317 updated.
96.	7.6.5 9.15	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.
97.	7.7.1	Clarification that assessment of semiconductors cannot be based on failure rates.
98.	7.7.1 c)	An enhanced voltage generated by an integrated circuit does not need to be considered as being present on other connected pins.
99.	7.7.1.d)2)	Added an allowance for low complexity semiconductors to avoid being considered to fail so as to dissipate maximum power.
100.	7.7.3	Transient rating of semiconductors only applied to transients caused by current limitation.
101.	7.7.3	Clarification that a safety factor of 1.0 is required when assessing the transient power rating of a semiconductor on which intrinsic safety depends.
102.	7.7.3	For Level of Protection "ic", transient rating of semiconductors is only necessary for diode safety barriers.
103.	7.7.6	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.
104.	7.7.7	Controlled semiconductor current limitation is permitted for Level of Protection "ia".
105.	7.7.8	Clarification of the requirements for programmable components.
106.	7.8.1	Statement that transformers need not be considered to increase the voltage or current beyond that defined by their turns ratio.
107.	7.8.3	Table 17 extended with a 10 A column.
108.	7.8.3	Foil / screen thickness for 10 A added.
109.	7.8.4.1	Clarification that the requirement for mains transformers includes any transformer that is not galvanically isolated from the mains.
110.	7.8.4.2	Reduced requirements for transformers that are galvanically isolated from the mains.

111.	7.8.5 9.17.4	Clarification of requirements for transformers for Level of Protection "ic".
112.	7.8.5	Requirements for transformers for Level of Protection "ic" added.
113.	7.9.2	Clarification of the rating requirements for relays.
114.	7.9.2 a)	Countable fault separation between the coil and contacts of a relay is no longer permitted.
115.	7.9.2	Addition of option for relays depending on reduced separation distances internally to comply with IEC 61810-1.
116.	7.9.2	Relays in Level of Protection "ic" need only comply with the relevant industrial standards.
117.	7.10.1	Clarified that IEC 60079-28 does not apply to self-contained optical isolators.
118.	7.10.2	Addition of options for non-optical signal isolators.
119.	7.11	Clarified that a single fuse is sufficient.
120.	7.11	Clarification that the cold resistance of a fuse cannot be used to limit the breaking current.
121.	7.11	A fuse in Level of Protection "ic" shall be considered an ignition risk if its opening is an expected occurrence.
122.	7.11 12.1 j)	Clarification that the breaking capacity of fuses connected to U_m may be less than 1 500 A provided that the maximum prospective current is stated in the instructions.
123.	7.12.1	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.
124.	7.12.1	Clarification that temperature rise and electrolyte leakage should be considered for cells.
125.	7.12.2	Clarification that short circuit of a single cell is considered a non-countable fault.
126.	7.12.4	Demonstration of the concentration of hydrogen can come from the manufacturer, rather than the manufacturer of the battery.
127.	7.12.4	Containers for sealed cells and batteries no longer need the pressure test of 9.14.4.
128.	7.12.5	Clarification of conditions for determining cell voltages
129.	7.12.8	Clarified that the requirements only apply to replaceable batteries.
130.	7.13	Crystal oscillators are excluded from the requirements for piezoelectric devices, and there are extended requirements for Level of Protection "ic".

131.	7.14.2	Clarified that thermal assessment of catalytic sensors shall take into account heating due to the catalytic reaction.
132.	7.15 9.14	Clarification that super capacitors shall be treated as batteries with a limited capacity but without the ability to limit their own voltage.
133.	7.16 9.12	Requirements and tests for thermal devices added, including PTCs.
134.	7.17	Clarification that mechanical switches do not require thermal ignition assessment.
135.	8.1.1	Clarification that the protective diodes in diode safety barriers shall be protected by a fuse or resistor(s) and not controlled semiconductor limitation.
136.	8.1.2.2	Additional options for earth facilities for diode safety barriers.
137.	9.1.1	Requirement for 110 percent of the mains supply voltage when applying the spark test apparatus removed as the conditions for test are specified in 5.2.
138.	9.1.2	Clarified that all circuits (not just capacitive) need to have time to recover where applicable during spark testing.
139.	9.1.2	Added allowance for slowing the spark test apparatus down when removing wires is not sufficient to allow rest of the circuit under test.
140.	9.1.2	Clarified that the effect of temperature on an inductor's resistance shall be taken into account during spark testing.
141.	9.1.2	Clarified that the sensitivity of the spark test apparatus may be checked if there is an unexpected failure.
142.	9.1.3	Minimum ignition current for calibration of the spark test apparatus added.
143.	9.2.3.3	Added formula option for reducing effective capacitance with a resistor.
144.	9.2.6	Clarification that consideration of the combination of inductance and capacitance is required internal to equipment and not just at connection facilities.
145.	9.2.6 b)	An assessment that demonstrates that the safety factor is maintained with a combination of both inductance and capacitance is allowed.
146.	9.2.6	Where parameters are specified for combined lumped inductance and capacitance, that shall be stated in the certificate or documentation.
147.	9.4.1 9.4.3	30 N test for casting compound and partitions are not applicable for Level of Protection "ic".
148.	9.4.2	Test temperature for immersion in water for encapsulated fuses has been lowered by 2 °C for compatibility with other testing.
149.	9.13	Parameters for loosely specified components shall be determined taking into account the service temperature, not just the ambient temperature.

150.	9.10	Clarification and modification of the tests for optical isolators.
151.	9.11	Clarified that tests on piezoelectric devices need be performed on only a single sample, unless that sample is damaged during the testing.
152.	9.14.1	Clarified that primary cells shall be unused and limiting devices shall be removed for the electrolyte leakage test.
153.	9.14.1	Clarified that the current shall be continuous when discharging during the tests.
154.	9.14.1	Cells that have essential features that limit their current may be used for Level of Protection "ia".
155.	9.14.1	Cells that explode or catch fire during short circuit test shall not be used for Levels of Protection "ia" and "ib".
156.	9.14.1	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.
157.	9.14.2 a)	Added option to conduct short circuit until discharge testing for Level of Protection "ic" to establish compliance with the electrolyte leakage requirement.
158.	9.14.2	Added alternative assessment of damage to encapsulation from leaked electrolyte.
159.	9.14.3.2	Spark ignition of batteries may be carried out following current limitation where separation is maintained.
160.	9.14.3.2	Requirement added to consider the spark ignition risk of single lithium cells of less than 4,5 V with high short circuit current.
161.	9.14.3.3	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.
162.	9.14.3.3 b) 9.14.2	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.
163.	9.14.3.3	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.
164.	9.14.3.3 c)	Only a single sample need be tested for thermal ignition compliance testing of cells or batteries for Level of Protection "ic".
165.	9.16	Transient test for diode safety barriers and safety shunts has been extended to include controlled semiconductor current limitation.
166.	9.17.1	Clarify that transformer dielectric strength test is a test at room temperature.
167.	9.17.3	Reduced testing requirements for transformers that are galvanically isolated from the mains.

168.	10.3.1	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.
169.	10.3.2	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.
170.	11	Marking of IP rating no longer required as this is now a Specific Condition of Use.
171.	Annex I	Flowchart for testing of enclosures added.
172.	former 8.7.3	List of voltage limiting techniques has been deleted.
173.	former 9.3	Requirements for handlights and caplights removed as these are covered elsewhere (including in other standards).

NOTE– The technical changes referred to the revised Standard, but they do not form an exhaustive list of all modifications from the previous version.