



IECEX OPERATIONAL DOCUMENT

**IEC System for Certification to Standards relating to Equipment for use
in Explosive Atmospheres (IECEX System)**

IECEX Certified Equipment Scheme –

Guide to Certification of Non-electrical Equipment and Protective Systems





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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland
Email: inmail@iec.ch
Web: www.iec.ch

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1 Scope

This document provides guidance on certification of non-electrical equipment and protective systems in the IECEx Equipment Certification Scheme. It supplements existing Scheme documents such as IECEx02 and OD009. It covers information relevant to:

- certification and testing laboratories (ExCBs and ExTLs);
- manufacturers seeking certification; and
- assessment processes

2 References

- a) IECEx 02 IECEx Scheme rules of procedure
- b) IECEx OD 003-1 Assessment Procedures for IECEx acceptance of Candidate Accepted Certification Bodies (ExCBs) and Ex Testing Laboratories (ExTLs) – Part 1: Appointment and Surveillance of IECEx appointed Assessors
- c) IECEx OD 003-2 Assessment Procedures for IECEx acceptance of Candidate Accepted Certification Bodies (ExCBs) and Ex Testing Laboratories (ExTLs) – Part 2: Assessment, surveillance assessment and re-assessment of ExCBs and ExTLs operating in the IECEx 02, IECEx Certified Equipment Scheme
- d) ISO/IEC 80079-34 Explosive atmospheres – Part 34: Application of quality systems for equipment manufacture
- e) IECEx OD 005-3 IECEx Quality System Requirements for Manufacturers – Part 3: Supplementary requirements for non-electrical equipment to ISO/IEC 80079-34 Edition 1 (currently as draft 1)
- f) IECEx OD 009 Issuing of CoCs, ExTRs and QARs
- g) IECEx Document OD 025 IECEx Certified Equipment Scheme – Guidelines on the Management of Assessment and Surveillance programs for the assessment of Manufacturer's Quality Systems, in accordance with the IECEx Scheme.
- h) IECEx Document OD 17 Drawing and documentation guidance
- i) OD024 IECEx Rules of Procedure covering testing, or witnessing testing at a manufacturer's or user's facility
- j) ISO/IEC 17065: Conformity assessment — Requirements for bodies certifying products, processes and services
- k) ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories
- l) IECEx Technical Capability Document (TCD)
- m) ExTAG decision sheets (DSs)

3 Standards to be covered

The following standards are currently covered:

- ISO 80079-36 Explosive atmospheres – Part 36: Non-electrical equipment for explosive atmospheres — Basic method and requirement. (when published)
- ISO 80079-37 Explosive atmospheres - Part 37: Non-electrical equipment for explosive atmospheres – Non electrical type of protection constructional safety “c”, control of ignition source “b”, liquid immersion “k”
- IEC 60079-1 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures “d” (as applied to non-electrical equipment)

- IEC 60079-2 Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure "p" (as applied to non-electrical equipment)
- IEC 60079-31 Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t" (as applied to non-electrical equipment)
- ISO 16852 Flame arresters - Performance requirements, test methods and limits for use

Other standards may be identified or developed and this guide will be updated as necessary to address them.

4 Summary of the IECEx Certification Process

Information regarding the IECEx can be found on the IECEx website (www.iecex.com) in the information tab and IECEx Guide 02A.

5 Requirements to be met by ExCBs and ExTLs

5.1 Applications

Applications can be for the following standards:

- ISO 80079-36
- ISO 80079-37
- ISO 16852

For ISO 80079-36 and -37, these shall be applied for as a package (ie not just one of the standards).

New applications should be made using the forms in OD003-2. Scope extensions should be made using form ExMC_251A_Q.

5.2 Assessment scenarios

New ExCBs/ExTLs would be subject to a full initial assessment.

Existing ExCBs/ExTLs would be treated under existing scope extension approaches. A scope extension would involve a visit by at least one assessor.

Initially, assessors who are also members of ExMC WG15 will be used.

5.3 Ignition hazard assessment and project plan

ExCBs/ExTLs are expected to have their own procedures on how they deal with an ignition hazard assessment based on the requirements of ISO 80079-36 and -37 and the project plan that is developed from this assessment. In general the following would be expected to be addressed in their procedures:

- Recognition that the manufacturer must prepare and submit an initial ignition hazard assessment along the lines of ISO 80079-36. This should identify the failure modes and ignition risks.
- The ExCB/ExTL forms a team of people who are familiar with the product and associated control systems. If necessary one or more representatives from the manufacturer may be included. This team will consider the initial ignition hazard assessment provided by the manufacturer and make a determination on the appropriate standards and mitigation measures that are acceptable.

- The ExCB and ExTL then develops and agrees on a project plan which takes account of any other standards that need to be invoked. If appropriate the manufacturer may be consulted while the project plan is being developed.
- The project plan may incorporate both the test and assessment requirements at the ExTL and the plan for witness testing in accordance with OD 024 if appropriate.
- The ExTL applies the requirements detailed in the above plan.
- On successful completion of the project an ExTR will be issued including detail of the ignition hazard assessment together with other information showing compliance with the standards.

5.4 Compliance with the technical requirements of the standards

5.4.1 Protection technique standards

Standards ISO 80079-36 and -37 include some tests that differ in detail from those in the IEC 60079 series, but the measurement approaches and test equipment required are similar. Therefore some test methods used in accordance with the IEC 60079 series may be adapted to suit specific situations when applying ISO 80079-36 and -37.

5.4.2 Product standards

For product related standards (eg flame arresters) the existing approach of assessment of testing capability, competence and procedures would be used.

5.5 Acceptance of third party data

The ExCB/ExTL will need to make a decision on what third party data can be accepted. It would assist if the next revision of the non-electrical standards makes this clearer. But in practice it is likely to be along the lines already being applied for things like RTI/TI information, metallic materials composition, plastic materials composition, UV resistance data, plastic / elastomeric material and temperature range data.

5.6 Acceptance of manufacturer's data

Where tests are required to demonstrate compliance with the standards, manufacturer's data can be accepted if tests are witnessed in accordance with IECEx operational document OD024.

In general, data, from the manufacturer can be accepted to support their ignition hazard assessment. It can also be used to assist in establishing the temperature class, in particular where this needs to be done by calculation.

6 Expectations of manufacturers

Manufacturers will be expected to:

- Prepare and submit an initial ignition hazard assessment as defined in ISO 80079-36 to ExCB.
- If required, make personnel with knowledge of the product available to assist the ExCB/ExTL personnel review the ignition hazard assessment.
- Provide documentation in the form addressed by OD017 and as required by the relevant standards (for example Clause 9.1 of ISO 80079-36 mandates the provision of certain information and there are also requirements in ISO 80079-37).
- Provide equipment as required for testing and assessment.

7 Assemblies

For assemblies it is expected that only the equipment on the assembly and the interconnections within the assembly will be covered by certification but not the installation aspects (eg. services to the assembly).

In some cases tests may only be possible after assembly on site, eg. for temperature rise. Final certificates should only be issued after these tests are completed successfully.

IECEX OD 024 will need to be applied where testing on site is required.

8 Combination of electrical and non-electrical equipment

The manufacturer applying for certification has the following options:

- Certification of just the electrical equipment
- Certification of just the non-electrical equipment
- Certification of both electrical and non-electrical equipment

Where equipment to be certificated includes both electrical and non-electrical equipment the following applies:

- Only the relevant standards covered by the certification can be shown.
- The description of the equipment must make it clear what parts of the equipment are covered by the certification.

As an example for the above, a certificate description stating 'motor pump set' would be expected to cover the electrical and non-electrical requirements of the complete pump set. If only the electrical requirements are intended to be covered, the description might read 'motor for driving a motor pump set'.
