Information on standards

As at: December 2021

THE STRONGEST LINK.

16.12.2021

Otto Walch

Table of contents

1 Introduction

On the occasion of the last IEC standards meeting of the Technical Committee TC 31, this document is intended to provide an overview of the current development of international standards in explosion protection. In addition to the ATEX directives, which are binding throughout the EU, these IEC standards form the most important basis for manufacturers of electrical and non-electrical equipment for use in potentially explosive atmospheres and for operators of systems in these areas.

2 List of abbreviations

AG	Advisory Group
AHG	Ad Hoc Working Group
CD	Committee Draft
CDV	Committee Draft for Voting
DC	Document for Comments
FDIS	Final Draft International Standard
MT	Maintenance Team
JWG	Joint Working Group
PT	Project Team
SC	Subcommittee
SD	Stability Date
TC	Technical Committee
WG	Working Group

3 Current status of the series of standards relevant to explosion protection IEC 60079 and IEC 80079

The documents listed below are distributed by the IEC to the national committees for revision of the current edition of the respective standard. Depending on the revision status of the document, the respective comments or votes are expected.

Standard	Stability date	Current status
IEC 60079-0: 2017, Ed. 7; Explosive atmospheres - Part 0: Equipment - General requirements	2024	The CD of Edition 8 was send to the national committees.
IEC 60079-1: 2014, Ed. 7; Explosive atmospheres - Part 1: Equipment protection by Flameproof Enclosures “d”	2022	In several Online Meetings, the CD of Edition 8 will be issued.
IEC 60079-2: 2014, Ed. 6; Explosive atmospheres - Part 2: Equipment protection by Pressurized Enclosure “p”	2022	At the end of 2020 a second CD was send to the national committees and several comments were submitted. In several Online Meetings the CDV of edition 7 will be issued.
IEC 60079-5: 2015, Ed. 4; Explosive atmospheres - Part 5: Equipment protection by Powder Filling “q”	2021	There is an amendment in preparation to use the “qb” marking as an option.
IEC 60079-6: 2015, Ed. 4; Explosive atmospheres - Part 6: Equipment protection by Liquid Immersion “o”	2025	Working Group TC 31 WG 43 "High voltages" developed the requirements for voltages higher than 15 kV. These were included in the standard as Annex D.
IEC 60079-7: 2015, Ed. 5; Explosive atmospheres - Part 7: Equipment protection by Increased Safety “e”	2023	Many comments (creepage distances and clearances, use of luminaires, consideration of temperature, ...) were discussed. The CD of Edition 8 was send to the national committees.
IEC 60079-10-1: 2020, Ed. 3; Explosive atmospheres - Part 10-1: Classification of areas - Explosive gas atmospheres	2025	Edition 3 of this standard was published in 2020.
IEC 60079-10-2: 2015, Ed. 2; Explosive atmospheres - Part 10-2: Classification of areas - Explosive dust atmospheres	2023	Work on the third edition of this standard started in 2020.
IEC 60079-11: 2011, Ed. 6; Explosive atmospheres - Part 11: Equipment protection by Intrinsically Safety “i”	2020	Work on the new edition has been going on for several years. Currently the FDIS of the seventh edition is in preparation.
IEC 60079-13: 2017, Ed. 2; Explosive atmospheres - Part 13: Equipment protection by Pressurized Rooms	2021	In 2019 appr. 50 % of the comments were discussed. The remaining comments will be discussed in the next face to face meeting.

Standard	Stability date	Current status
IEC 60079-14: 2013, Ed. 5; Explosive atmospheres - Part 14: Electrical installations design, selection and erection	2021	The new version of this standard will be aligned to the IEC templates and will be separated in the following sections: • Design • Selection • Erection and • Initial Inspection. The next CD of edition 6 will be sent to the national committees early 2022.
IEC 60079-15: 2017, Ed. 5; Explosive atmospheres - Part 15: Equipment protection by Type of protection “n”	2021	An annex "Dynamic testing of sealed units" is currently being discussed.
IEC 60079-17: 2013, Ed. 5; Explosive atmospheres - Part 17: Electrical installations inspection and maintenance	2021	The CDV was sent to the national committees in February 2021.
IEC 60079-18: 2014, Ed. 4; Explosive atmospheres - Part 18: Equipment protection by Encapsulation “m”	2025	MT 60079-18 will start to work on Edition 5 in 2022.
IEC 60079-19: 2019, Ed. 4; Explosive atmospheres - Part 19: Equipment repair, overhaul and reclamation	2022	The 4th edition of the standard was published in October 2019.
IEC 60079-25: 2020, Ed. 3; Explosive atmospheres - Part 25: Intrinsically safe electrical systems	2025	Edition 3 of this standard was published in 2020.
IEC 60079-26: 2021, Ed. 4; Explosive atmospheres - Part 26: Equipment with Equipment Protection Level (EPL) Ga	2024	Edition 4 of this standard was published in February 2021.
IEC 60079-28: 2015, Ed. 2; Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation	2024	The MT discusses new measurement techniques for the measurement of: • thermal ignition of particles by optical radiation • optical power and • irradiance. The technical feasibility of the ignition tests will also be discussed. The Stability Date is extended to 2022.

Standard	Stability date	Current status
IEC 60079-29	-	MT 60079-29 decided in 2021 to issue a new standard 60079-29-0 “General Requirements” and to consider ISO/IEC standard 62990 part 1 – 3.
IEC 60079-29-1: 2016, Ed. 2; Explosive atmospheres - Part 29-1: Gas detectors - Performance requirements of detectors for flammable gases	2022	Currently the national committees are asked to provide comments for the 3rd edition. An annex in which the test requirements regarding the pressure, EMC and preconditioning of the test samples was distributed in 2020 An IEC Decision Sheet with the topics air velocity and the velocity of the test gas will be distributed.
IEC 60079-29-2: 2015, Ed. 2; Explosive atmospheres - Part 29-2: Gas detectors - Selection, installation, use and maintenance of detectors for flammable gases and oxygen	2024	Currently the national committees are asked to provide comments for the 3rd edition.
IEC 60079-29-3: 2014, Ed. 1; Explosive atmospheres - Part 29-3: Gas detectors - Guidance on functional safety of fixed gas detection systems	2021	This standard is up to date. Currently, there are no activities.
IEC 60079-29-4: 2009, Ed. 1; Explosive atmospheres - Part 29-4: Gas detectors - Performance requirements of open path detectors for flammable gases	2021	This standard is up to date. Currently, there are no activities.
IEC/IEEE 60079-30-1: 2015, Ed. 1; Explosive atmospheres - Part 30-1: Electrical resistance trace heating - General and testing requirements	2022	The CD of the 2nd edition is currently being prepared.
IEC/IEEE 60079-30-2: 2015, Ed. 1; Explosive atmospheres - Part 30-2: Electrical resistance trace heating - Application guide for design, installation and maintenance	2022	The CD of the 2nd edition is currently being prepared.
IEC 60079-31: 2013, Ed. 2; Explosive atmospheres - Part 31: Part 31: Equipment dust ignition protection by enclosure “t”	2021	The FDIS of Edition 3 was send to the national committees for voting in 2021.
IEC TS 60079-32-1: 2013, Ed. 1; Explosive atmospheres - Part 32-1: Electrostatic hazards, guidance	2024	Work on the new edition got started.
IEC 60079-32-2: 2015, Ed. 1; Explosive atmospheres - Part 32-2: Electrostatics hazards – Tests	2024	Work on the new edition got started.
IEC 60079-33: 2012, Ed. 1; Explosive atmospheres - Part 33: Equipment protection by special protection ‘s’	2023	This IEC standard has been published in Europe as a Technical Report. Currently, more and more IECEx certificates are being issued to which this IEC standard is applied. MT will use these certificates as a basis for the next edition.

Standard	Stability date	Current status
IEC 60079-35-1: 2011, Ed. 1; Explosive atmospheres - Part 35-1: Caplights for use in mines susceptible to firedamp - General requirements - Construction and testing in relation to the risk of explosion	2021	This standard is up to date. Currently, there are no activities.
IEC 60079-35-2: 2011, Ed. 1; Explosive atmospheres - Part 35-2: Caplights for use in mines susceptible to firedamp - Performance and other safety-related matters	2021	This standard is up to date. Currently, there are no activities.
IEC TS 60079-39: 2015, Ed. 1; Explosive atmospheres - Part 39: Intrinsically safe systems with electronically controlled spark duration limitation	2024	TC 31 will decide soon whether a standard will be created out of this TS or not. Currently, no chairman is appointed for this project team.
IEC TS 60079-40: 2015, Ed. 1; Explosive atmospheres - Part 40: Requirements for process sealing between flammable process fluids and electrical systems	2021	This TS was created by WG 30. The certificates issued in accordance with this standard will be used as the basis for the new edition. The appropriate steps will be taken soon. See also WG 30.
IEC TS 60079-42: 2019, Ed. 1; Explosive atmospheres - Part 42: Electrical safety devices for the control of potential ignition sources for Ex-Equipment	2024	Technical Specification IEC TS 60079-42 was published on 17.04.2019. WG 42 will work on the second edition of this TS in 2021. The second edition will be an IEC standard and should replace EN 50495. See WG 42.
IEC TS 60079-43: 2017, Ed. 1; Explosive atmospheres - Part 43: Equipment in adverse service conditions	2023	The next edition of IEC TS 60079-43 will be published as a standard entitled "Guidance on equipment intended for use in adverse environmental service conditions". Besides the requirements for extremely cold operating conditions (Arctic), extremely warm operating conditions (desert) and high humidity conditions will also be considered.
IEC PT 60079-44: Personal Competence	-	The national committees will be asked if the draft of IEC TS 60079-44 satisfies the intent of the new work item proposal, and whether it should proceed in this form.
IEC PT 60079-45: Electrical Ignition Systems for Internal Combustion Engines	-	This Technical Specification has been under development since 2018 and is to be published by 2021. The voltage range will be extended to up to 60 kV.
IEC TS 60079-46: 2017 Ed. 1 Explosive atmospheres - Part 46: Equipment assemblies	2022	The first edition was published in 2017. The next edition will be an IEC standard and the work on the first edition of IEC 60079-46 started in 2021.

Standard	Stability date	Current status
IEC TS 60079-47: 2017 Ed. 1 Explosive atmospheres - Part 47: Equipment protection by 2-wire intrinsically safe ethernet concept (2-WISE)	2023	Edition 1 of this Technical Specification was released in 2021.
ISO/IEC 80079-20-1: 2017, Ed. 1 Explosive atmospheres - Part 20-1: Material characteristics for gas and vapour classification - Test methods and data	2024	This standard originated from IEC 60079-20-1, which was distributed in 2017. During this change of name, only editorial changes were made.
ISO/IEC 80079-20-2: 2016, Ed. 1; Explosive atmospheres - Part 20-2: Material characteristics - Combustible dusts test methods	2024	It is currently being examined whether the scope of this standard should be extended to include ISO 6184-1 "Explosion protection systems - Part 1: Determination of explosion indices of combustible dusts in air" or EN 14034 "Determination of explosion characteristics of dust clouds - Part 1: Determination of maximum explosion pressure p_{max} of dust clouds".
ISO/IEC 80079-34: 2018, Ed. 2; Explosive atmospheres - Part 34: Application of quality management systems for Ex Product manufacture	2024	In this new edition, the requirements for the testing of the different types of protection have been detailed and adapted to the new edition of ISO 9001:2015. In 2022 the work on Edition 3 will start. Responsible for the maintenance of this standard is TC31 SC31M WG 1.
ISO 80079-36: 2016, Ed.1 Explosive atmospheres - Part 36: Non-electrical equipment for explosive atmospheres - Basic method and requirements	2014	The requirements currently contained in both, IEC 60079-0 and ISO 80079-36 will be deleted from the new edition of ISO 80079-36. The next steps according to this standard will be discussed in 2022. Responsible for the maintenance of this standard is TC31 SC31M WG 1.
ISO 80079-37: 2016, Ed. 1; 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”	2024	The next steps according to this standard will be discussed in 2022. Responsible for the maintenance of this standard is TC31 SC31M WG 1.
ISO/IEC 80079-38: 2016, Ed. 1; Explosive atmospheres - Part 38: Equipment and components in explosive atmospheres in underground mines	2028	The new edition is intended to illustrate the possibility of using this standard for certification purposes. New employees were requested for this purpose.
ISO PT 80079-41: Development of ISO/IEC 80079-41/Ed1: Explosive atmospheres - Part 41: Reciprocating internal combustion engines	-	This Technical Specification is currently being developed. The CDV will be issued and several Working Groups have been formed. The aim is to publish this Technical Specification in 2024.

Standard	Stability date	Current status
IEC TS 60079-48: Explosive atmospheres - Part 48 - Portable Electronic Equipment Suitable for use in Hazardous Areas		A new standard will be issued by TC31 SC31J WG 2.
ISO/IEC PT 80079-49: Flame arresters — Performance requirements, test methods and limits for use	-	A new standard will be issued by TC31 SC31M WG 2.
ISO/IEC PT 80079-50: Explosion venting devices	-	A new standard will be issued soon.

4 Overview of the active Working Groups of TC 31

The following table gives an overview of the active Working Groups of TC 31 with their current work contents.

Team	Current work status
TC 31 Equipment for explosive atomspheres	To prepare and maintain international standards relating to equipment for use where there is a hazard due to the possible presence of explosive atmospheres of gases, vapours, mists or combustible dusts. Chair: Dr. Martin Thedens, DE Vice Chair: Jason Wigg, AU Vice Chair: Brad Zimmermann, US Secretary: Mick Maghar, UK
SC 31G: Intrinsically-safe apparatus	Responsible for all "intrinsically safe" issues and standards IEC 60079-11, IEC 60079-25, IEC TS 60079-39, SC 31G WG 4 and the new PT 60079-47. Mr. Gabriel of Pepperl & Fuchs followed M. Kaiser of R. STAHL in 2020 as chair of this subcommittee.
SC 31G WG 4: Spark test apparatus	Inspection of the spark tester and development of an electronic solution.
SC 31J: Classification of hazardous areas and installation requirements	Responsible for the "operator issues" and standards IEC 60079-10-1, IEC 60079-10-2, IEC 60079-13, IEC 60079-14, IEC 60079-17, IEC 60079-19, SC 31J WG 1 and SC 31J WG 2.
SC 31J WG 1: Electrical installations design, selection, erection and inspection in underground mines susceptible to firedamp	Depending on the development of IEC 60079-14, further activities will follow.
SC 31J WG 2: Portable and personal equipment	Comparable with TC 31 AG 49, but focuses on operator demands. The new standard IEC TS 60079-48: Explosive atmospheres - Part 48 - Portable Electronic Equipment Suitable for use in Hazardous Areas will be issued
SC 31M: Non-electrical equipment and protective systems for explosive atmospheres	Responsible for the "non-electrical (mechanical)" part of the equipment and standards ISO/IEC 80079-20-1, ISO/IEC 80079-20-2, ISO/IEC 80079-34, ISO/IEC 80079-38, IEC 80079-41 and SC 31M WG 1 with standards ISO 80079-36 and ISO 80079-37. Dr. Michael Beyer will finish his chairmanship and Thierry Houiex will be the new chair.
SC 31M WG 1: Requirements for installation, maintenance, repair, overhaul and reclamation of non-electrical equipment as well for the standards ISO 80079-36 and ISO 80079-37	Work is in progress on "non-electrical" requirements for IEC 60079-14, IEC 60079-17 and IEC 60079-19. This WG is responsible for the maintenance of ISO 80079-34, 80079-36 und 80079-37.

Team	Current work status
SC 31M WG 2: Performance requirements, test methods and limits for use for flame arresters	This WG will issue a new standard ISO/IEC PT 80079-49: Flame arresters — Performance requirements, test methods and limits for use. See ISO/IEC PT 80079-49.
TC 31 AG 36: Chairman's Advisory Group	This group usually meets in the first TC 31 meeting of the year and makes recommendations, which are then decided in the plenary meeting (second meeting of the year) of TC 31.
TC 31 AG 49: Portable and personal Equipment. It is examined whether certain requirements have to be defined for portable or personal equipment for use in hazardous areas.	Here, requirements for portable and personal devices are to be developed, which are then to be used in the various types of protection. It is currently recommended to reduce the requirements for COT (Continuous Operating Temperature) of the plastics used in portable equipment. This elaborated proposal will be included in the next edition of 60079-0.
TC 31 AG 55	The scope of this working group will be extended to add: - Considering the impact of Specific Conditions of Use on the full lifecycle of equipment and installations - Review of Schedule of Limitations for Ex Components - Developing further guidance for the TC 31 GWP - Developing improved text for 60079-0, 60079-14, and the Type of Protection standards - Liaison with IECEx on operational documents and other guidance The Specific Conditions of Use and the requirements hereof have to be very well defined. WG 22 will consider this in the next edition of 60079-0.
TC 31 AHG 56: Different dielectric strength and insulation resistance tests in 60079-5, 60079-7, 60079-11, 60079-15, and 60079-18	This AhG has to review the different dielectric strength and insulation resistance tests in 60079-5, 60079-7, 60079-11, 60079-15, and 60079-18 and recommend text for the TC 31 GWP.
TC 31 AHG 57: Alignment of sealing concepts in IEC 60079-1, IEC 60079-2, IEC 60079-26, and IEC TS 60079-40	This AHG has to review alignment of sealing concepts in IEC 60079-1, IEC 60079-2, IEC 60079-26, and IEC TS 60079-40.
TC 31 JWG 29: Electrostatics, linked to TC 101	This JWG is also active in the development of the IEC 60079-32 series. It ensures that the concerns of TC 101 are taken into account when preparing the IEC 60079-32 standards and vice versa, the TC 31 requirements in TC 101.
TC 31 JWG 45: Toxic gas detection for workplace atmospheres linked to ISO/TC 146/SC 2	This JWG is also active in the development of the IEC 60079-29 series. It ensures that the concerns of TC 146 are taken into account in the preparation of the IEC 60079-29 standards and vice versa, the TC 31 requirements in TC 146.
TC 31 JWG 50: Liaison with IECEx	The cooperation between TC 31 and IECEx has been extended. It is ensured that those responsible for the relevant standard are always informed / consulted by IECEx. The chairman of this Working Group, Mark Coppler, must be involved in all activities of this kind of IECEx.

Team	Current work status
TC 31 WG 22: Responsible for MT 60079-0; MT 60079-5; MT 60079-6; maintenance of IEV 60050.426 and other specific tasks assigned by TC 31	MT 60079-0; MT 60079-5 and MT 60079-6, see above. The 3rd edition of the IEV 60050-426 dictionary is currently being prepared. Care must be taken here to ensure that all definitions of the different standards that are used are incorporated and harmonized.
TC 31 WG 27: Electric Machines (motors and generators)	In this group, the requirements for electric drive machines and generators are discussed and passed on to the respective standards committees.
TC 31 WG 28: Dusts + MT 60079-31	The general dust requirements are elaborated and passed on to the respective standards committees. As MT of 60079-31, updating the standard is also the responsibility of this WG.
TC 31 WG 30: Process Sealing	This WG has created the IEC TS 60079-40 and uses the certificates created according to this standard as the basis for the new edition. See also TS 60079-40.
TC 31 WG 31: Gas/dust hybrid mixtures	Currently, the requirements for the use of devices in hybrid mixtures cannot be standardized. Their development will be monitored.
TC 31 WG 32: Creepage and clearance distances	Once again the necessity is discussed whether the Pollution Degree and the Overvoltage Category are relevant for the development and selection as part of the TC 31 standards and should be included.
TC 31 WG 37: Electrochemical cells and batteries in equipment for explosive atmospheres	Batteries can be used in several types of protection. As the technical development of these batteries is very fast moving, this group monitors the use of batteries and provides input for the development of type of protection standards. Currently the use of Lithium Ion Batteries in Hazardous Locations is under consideration.
TC 31 WG 39: Adverse service conditions	Technical Specification IEC TS 60079-43 prepared by the Working Group is to be published in the next edition as a standard entitled "Guidance on equipment intended for use in adverse environmental service conditions".
TC 31 WG 40: Luminaires	There are several types of protection according to which luminaires can be developed and certified. In order to harmonize the product-specific requirements in all standards, this WG brings together the necessary requirements for the different types of protection.
TC 31 WG 42: Safety Devices Related to Explosion Risk	IEC TS 60079-42 was created by this group. See IEC TS 60079-42.
TC 31 WG 43: High Voltages	This Working Group issued the amendment to IEC 60079-6 for voltages higher than 15 kV in the Ex area. See also IEC 60079-6.
TC 31 WG 47: Gc Equipment	This Working Group is working on ensuring that the requirements for Gc devices (Zone 2 devices) are uniform in all type of protection standards.
TC 31 WG 54: Basic Safety Publication	This document is currently being prepared and will probably be published in 2022 (formerly TC31 AHG 51).