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FOREWORD

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IEC 60358-1 has been prepared by IEC Technical Committee 33: Power capacitors and their applications. It is an International Standard.

This second edition cancels and replaces the first edition published in 2012. This edition constitutes a technical revision.

This edition of IEC 60358-1 includes the following significant technical changes with respect to the previous edition:

a) new terms and definitions are presented in Clause 3;
b) new definitions in Clause 4 and Clause 5;
c) gas-insulated coupling capacitors and capacitor dividers are integrated in Clause 6;
d) new tests in routine, type, special and design test sections are introduced, see Clause 7;
e) new Clause 8, Clause 9 and Clause 10;

The text of this International Standard is based on the following documents:

Draft	Report on voting
33/732/FDIS	33/737/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 60358 series, published under the general title *Coupling capacitors and capacitor dividers*, can be found on the IEC website.

IEC 60358-1, *Coupling capacitors and capacitor dividers - Part 1: General rules*

IEC 60358-2, *Coupling capacitors and capacitor dividers - Part 2: AC or DC single-phase coupling capacitor connected between line and ground for power line carrier-frequency (PLC) application*

IEC 60358-3, *Coupling capacitors and capacitor dividers - Part 3: AC or DC single-phase coupling capacitor for harmonic-filters applications*

IEC 60358-4, *Coupling capacitors and capacitor dividers - Part 4: DC or AC single-phase capacitor dividers*

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,

– withdrawn, or

– revised.

This document is the first revision of IEC 60358-1, defining general rules for coupling capacitors and capacitor dividers.

The main modifications of this revision are listed below:

– terms and definitions:
  - new terms and definitions are presented in Clause 3;
– normal and special environmental conditions:
  - new definitions in Clause 4 are introduced;
– ratings:
  - addition of HV insulation levels above 800 kV;
  - new definition on rated voltage U_r for AC and DC applications;
  - Clause 5, new definitions for DC application are integrated;
  - new standard values of rated voltages are defined;
– design and construction:
  - clarification of the altitude correction for external insulation and dielectric tests;
  - external insulation requirements for DC application;
  - gas-insulated coupling capacitors and capacitor dividers are integrated in Clause 6;
  - new test with its requirements on capacitor element ageing is defined;
– type tests:
  - temperature rise test: more accurate definition of the test duration;
  - lightning impulse test: new test procedure (15 impulses) for U_m ≥ 300 kV;
  - mechanical test: moved from special test to type test;
  - new enclosure tightness test for gas-insulated coupling capacitors and dividers;
– routine tests:
  - tightness tests for gas-insulated equipment;
  - gas dew point measurements;
  - new flowchart of routine tests presented in Figure 3;
– special tests:
  - determination of temperature coefficient of the capacitor element;
  - new enclosure tightness test on low and hot temperature;
  - information about internal arc tests;
  - information about multiple chopped impulse tests;
  - new test on impedance measurements depending on frequency;
  - new test on thermal stability;
  - new test on corrosion;
  - new flowchart of type tests presented in Figure 4;
– design tests (new clause):
  - ageing tests of capacitor elements;

  - new installation inspection;
  - gas dew point test moved from special test to commissioning tests;
- rules for transport, storage, erection, operation and maintenance:
  - new mandatory rules for user and manufacturer;
  - new conditions for transportation and storage;
- new annexes:
  - Annex D (informative): provide information about superimposed impulse voltages;
  - Annex E (informative): provide information on test setups for superimposed impulse voltage tests;
  - Annex F (informative): is introduced on high-frequency characteristic measurements;
  - Annex G (informative): provide information about composite AC/DC voltages;
  - Annex H (informative): present a summary of all voltages used in DC application.

This part of IEC 60358 applies to:

– Coupling capacitors and capacitor dividers, with rated voltage > 1 000 V, connected line to ground with the low-voltage terminal either permanently earthed or connected to devices, for applications listed hereunder and other similar uses.

This document serves as a basic standard for the coupling capacitors and capacitor dividers. The different parts of this standard series will present the supplementary specifications and tests, for example IEC 60358-2, IEC 60358-3 or IEC 60358-4.

Diagrams of coupling capacitor and capacitor divider to which this standard series applies are given in Figure A.1 and Figure A.2 (see Annex A).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60038, *IEC standard voltages*

IEC 60060-1, *High-voltage test techniques - Part 1: General definitions and test requirements*

IEC 60068-2-11:2021, *Environmental testing - Part 2-11: Tests - Test Ka: Salt mist*

IEC 60068-2-17, *Environmental testing - Part 2-17: Tests - Test Q: Sealing*

IEC 60071-1, *Insulation co-ordination - Part 1: Definitions, principles and rules*

IEC 60071-2, *Insulation co-ordination - Part 2: Application guidelines*

IEC 60071-11, *Insulation co-ordination - Part 11 : Definitions, principles and rules for HVDC system*

IEC 60270, *High-voltage test techniques - Charge-based measurement of partial discharges*

IEC 60296, *Fluids for electrotechnical applications - Mineral insulating oils for electrical equipment*

IEC 60376, *Specification of technical grade sulphur hexafluoride (SF_6) and complementary gases to be used in its mixtures for use in electrical equipment*

IEC 60480, *Specifications for the re-use of sulphur hexafluoride (SF_6) and its mixtures in electrical equipment*

IEC 60721 (all parts), *Classification of environmental conditions*

IEC TS 60815-1:2008, *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions - Part 1: Definitions, information and general principles*

IEC TS 60815-2:2008, *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions - Part 2: Ceramic and glass insulators for a.c. systems*

in polluted conditions - Part 3: Polymer insulators for a.c. systems

IEC 60867, *Insulating liquids - Specifications for unused liquids based on synthetic aromatic hydrocarbons*

IEC 61099, *Insulating liquids - Specifications for unused synthetic organic esters for electrical purposes*

IEC 62271-4:2022, *High-voltage switchgear and controlgear - Part 4: Handling procedures for gases for insulation and/or switching*

IEC 62770, *Fluids for electrotechnical applications - Unused natural esters for transformers and similar electrical equipment*

IEC 63012, *Insulating liquids - Unused modified or blended esters for electrotechnical applications*

ISO 4628-3, *Paints and varnishes - Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 3: Assessment of degree of rusting*

ISO 22479, *Corrosion of metals and alloys - Sulfur dioxide test in a humid atmosphere (fixed gas method)*

CISPR/TR 18-2, *Radio interference characteristics of overhead power lines and high-voltage equipment - Part 2: Methods of measurement and procedure for determining limits*

IEC 60050-321:1986, *International Electrotechnical Vocabulary (IEV) - Part 321: Instrument transformers*

IEC 60050-436:1990, *International Electrotechnical Vocabulary (IEV) - Part 436: Power capacitors*

IEC 60050-601:1985, *International Electrotechnical Vocabulary (IEV) - Part 601: Generation, transmission and distribution of electricity - General*

IEC 60050-604:1987, *International Electrotechnical Vocabulary - Chapter 604: Generation, transmission and distribution of electricity - Operation*

IEC 60060-2, *High-voltage test techniques - Part 2: Measuring systems*

IEC 60085, *Electrical insulation - Thermal evaluation and designation*

IEC 60358-2, *Coupling capacitors and capacitor dividers - Part 2: AC or DC single-phase coupling capacitor connected between line and ground for power line carrier-frequency (PLC) application*

IEC 60358-3, *Coupling capacitors and capacitor dividers - Part 3: AC or DC coupling capacitor for harmonic-filters applications*

IEC 60358-4, *Coupling capacitors and capacitor dividers - Part 4: DC and AC single-phase capacitor dividers*

IEC 60422, *Mineral insulating oils in electrical equipment - Supervision and maintenance guidance*

IEC TS 60815-4:2016, *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions - Part 4: Insulators for d.c. systems*

IEC 61462, *Composite hollow insulators - Pressurized and unpressurized insulators for use in electrical equipment with AC rated voltage greater than 1 000 V AC and D.C. voltage greater than 1500V - Definitions, test methods, acceptance criteria and design recommendations*

IEC 61869-5, *Instrument transformers - Part 5: Additional requirements for capacitor voltage transformers*

IEC 62155, *Hollow pressurized and unpressurized ceramic and glass insulators for use in electrical equipment with rated voltages greater than 1 000 V*

IEC 62217:2012, *Polymeric HV insulators for indoor and outdoor use - General definitions, test methods and acceptance criteria*

IEC 62271-203, *High-voltage switchgear and controlgear - Part 203: AC gas-insulated metal-enclosed switchgear for rated voltages above 52 kV*

IEC TR 62271-300, *High-voltage switchgear and controlgear - Part 300: Seismic qualification of alternating current circuit-breakers*

IEC Guide 109:2003, *Environmental aspects - Inclusion in electrotechnical product standards*

methods - Part 1: Radio disturbance and immunity measuring apparatus - Measuring apparatus

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