



BSI Standards Publication

Specifications for the re-use of sulphur hexafluoride (SF₆) and its mixtures in electrical equipment (IEC 60480:2019)

National foreword

This British Standard is the UK implementation of EN IEC 60480:2019. It is identical to IEC 60480:2019. It supersedes BS EN 60480:2004, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/10, Fluids for electrotechnical applications.

A list of organizations represented on this committee can be obtained on request to its secretary.

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EUROPEAN STANDARD

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Supersedes EN 60480:2004

English Version

Specifications for the re-use of sulphur hexafluoride (SF₆) and its mixtures in electrical equipment (IEC 60480:2019)

Spécifications pour la réutilisation de l'hexafluorure de soufre (SF₆) et des mélanges contenant du SF₆ dans le matériel électrique
(IEC 60480:2019)

Spezifikationen für die Wiederverwendung von Schwefelhexafluorid (SF₆) und seinen Mischungen in elektrischen Betriebsmitteln
(IEC 60480:2019)

This European Standard was approved by CENELEC on 2019-05-09. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 10/1075/FDIS, future edition 3 of IEC 60480, prepared by IEC/TC 10 "Fluids for electrotechnical applications" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60480:2019.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-02-09
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-05-09

This document supersedes EN 60480:2004.

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Endorsement notice

The text of the International Standard IEC 60480:2019 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60079-29-2	NOTE	Harmonized as EN 60079-29-2
IEC 62271-203	NOTE	Harmonized as EN 62271-203
IEC 60376	NOTE	Harmonized as EN IEC 60376
IEC 60068-2-17	NOTE	Harmonized as EN 60068-2-17

Annex ZA
(normative)

**Normative references to international publications
with their corresponding European publications**

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-192	-	International electrotechnical vocabulary - Part 192: Dependability	-	-
IEC 60050-212	-	International Electrotechnical Vocabulary - Part 212: Electrical insulating solids, liquids and gases	-	-
IEC 60050-441	-	International Electrotechnical Vocabulary. Switchgear, controlgear and fuses	-	-
IEC 60050-826	-	International Electrotechnical Vocabulary - Part 826: Electrical installations	-	-
IEC 62271-4	2013	High-voltage switchgear and controlgear - Part 4: Handling procedures for sulphur hexafluoride (SF ₆) and its mixtures	EN 62271-4	2013

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SPECIFICATIONS FOR THE RE-USE OF SULPHUR HEXAFLUORIDE (SF₆)
AND ITS MIXTURES IN ELECTRICAL EQUIPMENT**

FOREWORD

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International Standard IEC 60480 has been prepared by IEC technical committee 10: Fluids for electrotechnical applications.

This third edition cancels and replaces the second edition, published in 2004. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- specifications for the re-use of SF₆ have been confirmed;
- specifications for the re-use of SF₆ mixtures, namely SF₆/N₂ and SF₆/CF₄ mixtures are included;
- as a result of a new repartition of annexes in IEC 60376, IEC 60480 and IEC 62271-4, this new edition now contains the following five annexes:
 - Annex A: Description of methods of analysis (on-site and laboratory);
 - Annex B: By-products of SF₆ and its mixtures;

- Annex C: Procedure for evaluating the potential effects on health from by-products of SF₆ and its mixtures;
- Annex D: Reclaiming recommendations.
- Annex E: Cryogenic reclaiming of SF₆;

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

FDIS	Report on voting
10/1075/FDIS	10/1080/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

SPECIFICATIONS FOR THE RE-USE OF SULPHUR HEXAFLUORIDE (SF₆) AND ITS MIXTURES IN ELECTRICAL EQUIPMENT

1 Scope

This document provides criteria for the re-use of sulphur hexafluoride (SF₆) and its mixtures after recovery and reclaiming from electrical equipment (e.g. for maintenance, at the end-of-life).

Sulphur hexafluoride (SF₆), nitrogen (N₂) and carbon tetrafluoride (CF₄), are gases commonly used for electrical equipment. Taking into account environmental concerns, particular attention is paid to re-use criteria for SF₆ and its mixtures with N₂ and CF₄ for its use in electrical equipment. Procedures for recovering and reclaiming used SF₆ and its mixtures are outside the scope of this document and are described in IEC 62271-4.

This document provides several annexes on the description of the different methods of analysis, on by-products, on the procedure for evaluating the potential health effects from by-products, on cryogenic reclaiming of SF₆, and on reclaiming recommendations.

Storage, transportation and disposal of SF₆ and its mixtures are outside the scope of this document and are covered by IEC 62271-4. Procedures to determine SF₆ leakages are described in IEC 60068-2-17 [4]¹.

For the purposes of this document, the complementary gases used in SF₆ mixtures will be limited to N₂ or CF₄.

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 60050-192, *International Electrotechnical Vocabulary – Part 192: Dependability* (available at <http://www.electropedia.org>)

IEC 60050-212, *International Electrotechnical Vocabulary – Part 212: Electrical insulating solids, liquids and gases* (available at <http://www.electropedia.org>)

IEC 60050-441, *International Electrotechnical Vocabulary – Part 441: Switchgear, controlgear and fuses* (available at <http://www.electropedia.org>)

IEC 60050-826, *International Electrotechnical Vocabulary – Part 826: Electrical installations* (available at <http://www.electropedia.org>)

IEC 62271-4:2013, *High-voltage switchgear and controlgear – Part 4: Handling procedures for sulphur hexafluoride (SF₆) and its mixtures*

¹ Numbers in square brackets refer to the bibliography.