



SLOVENSKI STANDARD SIST EN IEC 60567:2024

01-april-2024

Z oljem polnjena električna oprema - Vzorčenje prostih plinov in analiziranje prostih in raztopljenih plinov - Napotek

Oil-filled electrical equipment - Sampling of free gases and analysis of free and dissolved gases - Guidance

Ölgefüllte elektrische Betriebsmittel - Probennahme von Gasen und Analyse freier und gelöster Gase - Anleitung

Matériels électriques immergés - Echantillonnage de gaz et analyse des gaz libres et dissous - Lignes directrices

Ta slovenski standard je istoveten z: EN IEC 60567:2024

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Oil-filled electrical equipment - Sampling of free gases and
analysis of free and dissolved gases in mineral oils and other
insulating liquids - Guidance
(IEC 60567:2023)

Matériels électriques immergés - Échantillonnage de gaz
libres et analyse des gaz libres et dissous dans les huiles
minérales et d'autres liquides isolants - Recommandations
(IEC 60567:2023)

Ölgefüllte elektrische Betriebsmittel - Probenahme von
freien Gasen und Analyse von freien und gelösten Gasen in
Mineralölen und anderen Isolierflüssigkeiten - Anleitung
(IEC 60567:2023)

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

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EN IEC 60567:2024 (E)**European foreword**

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- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2027-01-12

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

IEC 60599 NOTE Approved as EN IEC 60599 [SIST EN IEC 60567:2024](https://standards.iteh.ai/catalog/standards/sist/en-iec-60567-2024)

ISO/IEC 17025 NOTE Approved as EN ISO/IEC 17025

ISO 3675 NOTE Approved as EN ISO 3675

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.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60296	-	Fluids for electrotechnical applications - Mineral insulating oils for electrical equipment	EN IEC 60296	-
IEC 60475	2022	Method of sampling insulating liquids	EN IEC 60475	2022
ISO 5725-1	-	Accuracy (trueness and precision) of measurement methods and results - Part 1: General principles and definitions	-	-

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IEC 60567

Edition 5.0 2023-12

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Oil-filled electrical equipment – Sampling of free gases and analysis of free and dissolved gases in mineral oils and other insulating liquids – Guidance

Matériels électriques immergés – Échantillonnage de gaz libres et analyse des gaz libres et dissous dans les huiles minérales et d'autres liquides isolants – Recommandations

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**OIL-FILLED ELECTRICAL EQUIPMENT –
SAMPLING OF FREE GASES AND ANALYSIS
OF FREE AND DISSOLVED GASES IN MINERAL OILS
AND OTHER INSULATING LIQUIDS – GUIDANCE****FOREWORD**

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IEC 60567 has been prepared by IEC technical committee 10: Fluids for electrotechnical applications. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 2011. This edition constitutes a technical revision.

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

- a) a new normative Annex F relating to DGA analysis of insulating liquids other than mineral oils (esters and silicones) has been added;
- b) Clause 4 to Clause 11 and informative Annex A to Annex E remain devoted to mineral oils;

- c) two new mercury-free gas extraction methods are described in Annex B (low pressure vacuum extraction and mechanical oscillation).

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

Draft	Report on voting
10/1207/FDIS	10/1211/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.

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,
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INTRODUCTION

Gases can be formed in oil-filled electrical equipment due to natural ageing but also, to a much greater extent, as a result of faults.

Operation with a fault can seriously damage the equipment, and it is valuable to be able to detect the fault at an early stage of development.

Where a fault is not severe, the gases formed will normally dissolve in the oil, with a small proportion eventually diffusing from the liquid into any gas phase above it. Extracting dissolved gas from a sample of the oil and determining the amount and composition of this gas is a means of detecting such faults, and the type and severity of any fault can often be inferred from the composition of the gas and the rate at which it is formed.

In the case of a sufficiently severe fault, free gas will pass through the oil and collect in the gas-collecting (Buchholz) relay if fitted; if necessary, this gas may be analysed to assist in determining the type of fault that has generated it. The composition of gases within the bubbles changes as they move through the oil towards the gas-collecting relay.

This can be put to good use, as information on the rate of gas production can often be inferred by comparing the composition of the free gases collected with the concentrations remaining dissolved in the liquid.

The interpretation of the gas analyses is the subject of IEC 60599.

These techniques are valuable at all stages in the life of oil-filled equipment. During acceptance tests on transformers in the factory, comparison of gas-in-oil analyses before, during and after a heat run test can show if any hot-spots are present, and similarly analysis after dielectric testing can add to information regarding the presence of partial discharges or sparking. During operation in the field, the periodic removal of an oil sample and analysis of the gas content serve to monitor the condition of transformers and other oil-filled equipment.

The importance of these techniques has led to the preparation of this document, to the procedures used for the sampling, from oil-filled electrical equipment, of gases and oils containing gases, and for subsequent analysis.

NOTE Methods described in this document apply to insulating oils, since experience to date has been almost entirely with such oils. The methods can also be applied to other insulating liquids, in some cases with modifications.

General caution, health, safety and environmental protection

WARNING – This document does not purport to address all the safety problems associated with its use. It is the responsibility of the user of this document to establish appropriate health and safety practices and determine the applicability of regulatory limitations prior to use.

The insulating oils which are the subject of this document should be handled with due regard to personal hygiene. Direct contact with the eyes can cause irritation. In the case of eye contact, irrigation with copious quantities of clean running water should be carried out and medical advice sought. Some of the tests specified in this document involve the use of processes that can lead to a hazardous situation. Attention is drawn to the relevant standard for guidance.

Mercury presents an environmental and health hazard. Any spillage should immediately be removed and be properly disposed of. Regulatory requirements for mercury use and handling can apply. Mercury-free methods may be requested in some countries.

Environment

WARNING – This document is applicable to insulating oils, chemicals and used sample containers.

Attention is drawn to the fact that, at the time of writing of this document, many insulating oils in service are known to be contaminated to some degree by polychlorinated biphenyls (PCBs). If this is the case, safety countermeasures should be taken to avoid risks to workers, the public and the environment during the life of the equipment, by strictly controlling spills and emissions. Disposal or decontamination of these oils can be subject to regulatory requirements. Every precaution should be taken to prevent the release of any type of insulating oil into the environment, including those partially biodegradable with time.

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