



SLOVENSKI STANDARD

SIST EN 61198:1997

01-avgust-1997

Mineral insulating oils - Methods for the determination of 2-furfural and related compounds (IEC 1198:1993)

Mineral insulating oils - Methods for the determination of 2-furfural and related compounds

Isolieröle auf Mineralölbasis - Prüfverfahren zur Bestimmung von Fur-fural und verwandten Verbindungen

Huiles minérales isolantes - Méthode pour la détermination du 2-furfural et ses dérivés

[SIST EN 61198:1997](https://standards.iteh.ai/catalog/standards/sist/0ae1f624-4cc8-461f-ac85-d1180-6bad736/sist-en-61198-1997)

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ICS:

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EUROPEAN STANDARD

EN 61198

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ENGLISH VERSION

Mineral insulating oils - Methods for the determination of 2-furfural and related compounds (IEC 1198:1993)

Huiles minérales isolantes
Méthodes pour la détermination
du 2-furfural et ses dérivés

(CEI 1198:1993)

Isolieröle auf
Mineralölbasis
Prüfverfahren zur Bestimmung
von Fur-fural und verwandten
Verbindungen
(IEC 1198:1993)

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This European Standard was approved by CENELEC on 1993-12-08. 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 Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

FOREWORD

The text of document 10(CO)270, as prepared by IEC Technical Committee 10: Fluids for electrotechnical applications, was submitted to the IEC-CENELEC parallel vote in October 1992.

The reference document was approved by CENELEC as EN 61198 on 8 December 1993.

The following dates were fixed:

- latest date of publication of
an identical national standard (dop) 1994-12-01
- latest date of withdrawal of
conflicting national standards (dow) 1994-12-01

Annexes designated "normative" are part of the body of the standard. In this standard, annexes A and ZA are normative.

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ENDORSEMENT NOTICE
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The text of the International Standard IEC 1198:1993 was approved by CENELEC as a European Standard without any modification.

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ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD
WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

NOTE : When the international publication has been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.

IEC Publication -----	Date ----	Title -----	EN/HD -----	Date ----
475	1974	Method of sampling liquid dielectrics	-	-
567	1992	Guide for the sampling of gases and of oil from oil-filled electrical equipment and for the analysis of free and dissolved gases	EN 60567	1992

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NORME
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STANDARD

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Huiles minérales isolantes –
Méthodes pour la détermination du 2-furfural
et ses dérivés

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Mineral insulating oils –
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International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MINERAL INSULATING OILS – METHODS FOR THE DETERMINATION OF 2-FURFURAL AND RELATED COMPOUNDS

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

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International Standard IEC 1198 has been prepared by IEC by technical committee 10: Fluids for electrotechnical applications.

The text of this standard is based on the following documents:

DIS	Report on voting
10(CO)270	10(CO)278

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

Annex A forms an integral part of this standard.

INTRODUCTION

The degradation of cellulosic materials constituting the solid insulation of oil-filled electrical equipment leads to the formation of several compounds specific to cellulose decomposition, such as sugars and furan derivatives.

The furan derivatives, of which a large proportion remains adsorbed on the paper, are nevertheless slightly soluble in oil. Their presence can be used as a diagnostic tool to equipments in service and to supplement information from dissolved gas analysis.

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MINERAL INSULATING OILS – METHODS FOR THE DETERMINATION OF 2-FURFURAL AND RELATED COMPOUNDS

1 Scope

This International Standard specifies test methods for the analysis of 2-furfural and related furan compounds resulting from the degradation of cellulosic insulation and found in mineral insulating oil samples taken from electrical equipment.

2-furfural and related furan compounds dissolved in mineral oil are analysed by high performance liquid chromatography (HPLC). Prior to HPLC analysis, furan derivatives are extracted from the oil by use of a suitable extraction method such as liquid-liquid extraction (method A) or solid-phase separation on a silica cartridge (method B).

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication of this standard, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

[SIST EN 61198:1997](http://www.standardsite.com/standards/sist/0ae1f624-4cc8-461f-ac85-d1f8b4bad736/sist-en-61198-1997)

IEC 475: 1974, *Method of sampling liquid dielectrics*

IEC 567: 1992, *Guide for the sampling of gases and of oil from oil-filled electrical equipment and for the analysis of free and dissolved gases*

3 Sampling

Oil samples are collected in accordance with IEC 475 and IEC 567. Samples should be protected from direct light.

4 Labelling of samples

Samples shall be labelled in accordance with IEC 567.

5 Apparatus

5.1 General equipment:

- laboratory glassware;
- beakers or Erlenmeyer flasks;
- volumetric flasks;
- pipettes;
- analytical balance (0,1 mg).