

Fluids for electrotechnical applications — Unused mineral insulating oils for transformers and switchgear

The European Standard EN 60296:2004 has the status of a
British Standard

ICS 29.180; 29.040.10; 29.130

National foreword

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 18, an inside back cover and a back cover.

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Amendments issued since publication

Amd. No.	Date	Comments

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 24 September 2004

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ISBN 0 580 44484 8

EUROPEAN STANDARD

EN 60296

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2004

ICS 29.180; 29.040.10; 29.130

Incorporates Corrigendum September 2004

English version

**Fluids for electrotechnical applications –
Unused mineral insulating oils for transformers and switchgear
(IEC 60296:2003)**

Fluides pour applications
électrotechniques –
Huiles minérales isolantes neuves
pour transformateurs et appareillages
de connexion
(CEI 60296:2003)

Flüssigkeiten für elektrotechnische
Anwendungen –
Neue Isolieröle für Transformatoren
und Schaltgeräte
(IEC 60296:2003)

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CENELEC

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Foreword

The text of document 10/566/FDIS, future edition 3 of IEC 60296, prepared by IEC TC 10, Fluids for electrotechnical applications, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60296 on 2004-03-16.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2005-01-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2007-04-01

Annexes ZA and ZB have been added by CENELEC.

The contents of the corrigendum of September 2004 have been included in this copy.

Endorsement notice

The text of the International Standard IEC 60296:2003 was approved by CENELEC as a European Standard without any modification.

CONTENTS

INTRODUCTION.....	4
1 Scope.....	5
2 Normative references	5
3 Terms and definitions	6
4 Properties of oil	7
4.1 Functional properties.....	7
4.2 Refining and stability	8
4.3 Performance.....	8
4.4 Health, safety and environment (HSE) properties	8
5 Classification, identification, general delivery requirements and sampling.....	8
5.1 Classification	8
5.2 Requirements	9
5.3 Mixability	9
5.4 Identification and general delivery requirements	9
5.5 Sampling	9
6 Properties, their significance and test methods.....	9
6.1 Viscosity.....	9
6.2 Pour point	10
6.3 Water content.....	10
6.4 Breakdown voltage.....	10
6.5 Dielectric dissipation factor (DDF)	10
6.6 Appearance	11
6.7 Acidity.....	11
6.8 Interfacial tension (IFT)	11
6.9 Sulfur content.....	11
6.10 Corrosive sulfur	11
6.11 Antioxidant additive content.....	11
6.12 Oxidation stability.....	11
6.13 Gassing.....	12
6.14 Electrostatic charging tendency (ECT).....	12
6.15 Flash point	12
6.16 Density.....	12
6.17 Polycyclic aromatics (PCA).....	12
6.18 Polychlorinated biphenyls (PCB)	12
6.19 2-Furfural and related compounds (2-FAL)	12
7 Specific requirements for special applications	14
7.1 Higher oxidation stability and low sulfur content	14
7.2 Electrostatic charging tendency (ECT).....	14
7.3 Gassing.....	14
Annex ZA (normative) Normative references to international publications with their corresponding European publications.....	15
Annex ZB (normative) Special national conditions.....	17
Bibliography.....	18

INTRODUCTION

General caution – Health, safety and environmental protection

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

The mineral insulating oils which are the subject of this standard should be handled with due regard to personal hygiene. Direct contact with the eyes may 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 standard involve the use of processes that could lead to a hazardous situation. Attention is drawn to the relevant standard for guidance.

This standard gives rise to mineral insulating oils, chemicals and used sample containers. The disposal of these items shall be carried out according to the local regulations with regard to the impact on the environment. Every precaution should be taken to prevent release of mineral insulating oil into the environment.

FLUIDS FOR ELECTROTECHNICAL APPLICATIONS – UNUSED MINERAL INSULATING OILS FOR TRANSFORMERS AND SWITCHGEAR

1 Scope

This International Standard covers specifications and test methods for unused mineral insulating oils. It applies to oil delivered to the agreed point and time of delivery, intended for use in transformers, switchgear and similar electrical equipment in which oil is required as an insulant and for heat transfer. These oils are obtained by distillation and refining of crude petroleum.

Oils with and without additives are both within the scope of this standard.

This standard is applicable only to unused mineral insulating oils.

Reclaimed oils are beyond the scope of this standard.

This standard does not apply to mineral oils used as impregnants in cables or capacitors.

NOTE Mineral insulating oils complying with the requirements of this standard, of the same class and containing no additives (see 3.4), are considered to be compatible with one another and can be mixed in any proportion. This does not apply to oils containing additives. Where the user wishes to mix such oils, a check is recommended to be made to ensure that the mixture meets the requirements of this standard.

2 Normative references

The following referenced documents are indispensable for the application 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 60076-2, *Power transformers – Part 2: Temperature rise*

IEC 60156, *Insulating liquids – Determination of the breakdown voltage at power frequency – Test method*

IEC 60247, *Measurement of relative permittivity, dielectric dissipation factor and d.c. resistivity of insulating liquids*

IEC 60422, *Supervision and maintenance guide for mineral insulating oils in electrical equipment*

IEC 60475, *Method of sampling liquid dielectrics*

IEC 60628, *Gassing of insulating liquids under electrical stress and ionization*

IEC 60666, *Detection and determination of specified anti-oxidant additives in insulating oils*

IEC 60814, *Insulating liquids – Oil-impregnated paper and pressboard – Determination of water by automatic coulometric Karl Fischer titration*