BS EN 60836:2015



BSI Standards Publication

Specifications for unused silicone insulating liquids for electrotechnical purposes

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National foreword

This British Standard is the UK implementation of EN 60836:2015. It is identical to IEC 60836:2015. It supersedes BS EN 60836:2005 which is withdrawn.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.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60836

September 2015

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English Version

Specifications for unused silicone insulating liquids for electrotechnical purposes (IEC 60836:2015)

Spécifications pour liquides isolants silicones neufs pour usages électrotechniques (IEC 60836:2015)

Anforderungen an ungebrauchte Silikonisolierflüssigkeiten für elektrotechnische Anwendungen (IEC 60836:2015)

This European Standard was approved by CENELEC on 2015-08-20. 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

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European foreword

The text of document 10/961/FDIS, future edition 3 of IEC 60836, prepared by IEC/TC 10 "Fluids for electrotechnical applications" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60836:2015.

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) 2016-05-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-08-20

This document supersedes EN 60836:2005.

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Endorsement notice

The text of the International Standard IEC 60836:2015 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 60076-14	NOTE	Harmonized as EN 60076-14.
IEC 60695-1-40	NOTE	Harmonized as EN 60695-1-40.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When 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.

Publication	Year	Title	EN/HD	Year
IEC 60156	1995	Insulating liquids - Determination of the breakdown voltage at power frequency - Test method	EN 60156	1995
IEC 60247	-	Insulating liquids - Measurement of relative permittivity, dielectric dissipation factor (tan δ) and d.c. resistivity	EN 60247	-
IEC 60296	-	Fluids for electrotechnical applications - Unused mineral insulating oils for transformers and switchgear	EN 60296	-
IEC 60475	-	Method of sampling insulating liquids	EN 60475	-
IEC 60628	-	Gassing of insulating liquids under electrical stress and ionization	HD 488 S1	-
IEC 60814	-	Insulating liquids - Oil-impregnated paper and pressboard - Determination of water by automatic coulometric Karl Fischer titration	EN 60814	-
IEC 60944	-	Guide for maintenance of silicone transformer liquids	-	-
IEC 61039	2008	Classification of insulating liquids	EN 61039	2008
IEC 62021-3	-	Insulating liquids - Determination of acidity - Part 3: Test methods for non-mineral insulating oils	EN 62021-3	-
ISO 2211	-	Liquid chemical products - Measurement of colour in Hazen units (platinum-cobalt scale)	-	-
ISO 2592	-	Determination of flash and fire points - Cleveland open cup method	EN ISO 2592	-
ISO 2719	-	Determination of flash point - Pensky-Martens closed cup method	EN ISO 2719	-

Publication	Year	Title	EN/HD	Year
ISO 3016	-	Petroleum products - Determination of pour point	-	-
ISO 3104	-	Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity	EN ISO 3104	-
ISO 3675	-	Crude petroleum and liquid petroleum products - Laboratory determination of density - Hydrometer method	EN ISO 3675	-
ISO 5661	-	Petroleum products - Hydrocarbon liquids - Determination of refractive index	-	-
ISO 12185	-	Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method	EN ISO 12185	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SPECIFICATIONS FOR UNUSED SILICONE INSULATING LIQUIDS FOR ELECTROTECHNICAL PURPOSES

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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The International Standard IEC 60836 has been prepared by IEC technical committee 10: Fluids for electrotechnical applications.

This third edition cancels and replaces the second edition published in 2005. This edition constitutes a technical revision.

This edition includes the following major technical changes with regard to the second edition:

a) classification of liquids according to IEC 61039 have been adapted with respect to the latest edition of IEC 61039:2008;
b) classification of liquids according to IEC 61100:1992 have been removed as IEC 61100 has been withdrawn;
c) minimum requirements for other silicone liquids for electrotechnical purposes have been added.

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

FDIS	Report on voting
10/961FDIS	10/968/RVD

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

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

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

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

SPECIFICATIONS FOR UNUSED SILICONE INSULATING LIQUIDS FOR ELECTROTECHNICAL PURPOSES

1 Scope

This International Standard covers specifications and test methods for unused silicone liquids intended for use in transformers and other electrotechnical equipment.

The specified characteristics of silicone transformer liquid classified as L-NTUK-8360300 (in accordance with IEC 61039) are described in Table 1.

Besides the standard transformer applications there are other applications of silicone liquids, such like cable accessories, capacitors, electrical magnets etc. The specified characteristics and minimum requirements for these liquids are described in Table 2.

NOTE Maintenance of used silicone liquid in electrotechnical equipment is covered in a separate publication IEC 60944.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60156:1995, *Insulating liquids – Determination of the breakdown voltage at power frequency – Test method*

IEC 60247, *Insulating liquids – Measurement of relative permittivity, dielectric dissipation factor (tan δ) and d.c. resistivity*

IEC 60296, *Fluids for electrotechnical applications – Unused mineral insulating oils for transformers and switchgear*

IEC 60475, *Method of sampling insulating liquids*

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

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

IEC 60944, *Guide for the maintenance of silicone transformer liquids*

IEC 61039:2008, *Classification of insulating liquids*

IEC 62021-3, *Insulating liquids – Determination of acidity – Part 3: Test methods for non-mineral insulating oils*

ISO 2211, *Liquid chemical products – Measurement of colour in Hazen units (platinum-cobalt scale)*

ISO 2592, *Determination of flash and fire points – Cleveland open cup method*