SVENSK STANDARD SS-EN 60505

Fastställd	Utgåva	Sida	Ansvarig kommitté
2011-12-07	3	1 (1+75)	SEK TK 15/112

Elektriska isolersystem – Utarbetande av metoder för bedömning av isolersystem

Evaluation and qualification of electrical insulation systems

Som svensk standard gäller europastandarden EN 60505:2011. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60505:2011.

Nationellt förord

Europastandarden EN 60505:2011

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 60505, Fourth edition, 2011 - Evaluation and qualification of electrical insulation systems**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60505, utgåva 2, 2005, gäller ej fr o m 2014-08-15.

ICS 29.080.30

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

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Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60505

August 2011

ICS 29.080.30

Supersedes EN 60505:2004

English version

Evaluation and qualification of electrical insulation systems
(IEC 60505:2011)

Evaluation et qualification des systèmes d'isolation électrique
(CEI 60505:2011)

Bewertung und Kennzeichnung von elektrischen Isoliersystemen
(IEC 60505:2011)

CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 60505:2011 E

SEK Svensk Elstandard

Foreword

The text of document 112/174/FDIS, future edition 4 of IEC 60505, prepared by IEC TC 112, Evaluation and qualification of electrical insulating materials and systems, was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60505:2011.

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)	2012-05-15
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2014-08-15

This document supersedes EN 60505:2004.

The main change with respect to EN 60505:2004 is that Annex A: Glossary is now available in an Internet version (http://std.iec.ch/iec60505) as well as a hardcopy version. The internet version contains an abridged text version and a multimedia supplement.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60505:2011 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 60068-1	NOTE	Harmonized as EN 60068-1.
IEC 60068-2 series	NOTE	Harmonized in EN 60068-2 series.
IEC 60068-2-1	NOTE	Harmonized as EN 60068-2-1.
IEC 60068-2-2	NOTE	Harmonized as EN 60068-2-2.
IEC 60068-2-10	NOTE	Harmonized as EN 60068-2-10.
IEC 60068-2-14	NOTE	Harmonized as EN 60068-2-14.
IEC 60068-2-27	NOTE	Harmonized as EN 60068-2-27.
IEC 60112	NOTE	Harmonized as EN 60112.
IEC 60212	NOTE	Harmonized as EN 60212.
IEC 60216 series	NOTE	Harmonized in EN 60216 series.
IEC 60216-1	NOTE	Harmonized as EN 60216-1.
IEC 60243-1	NOTE	Harmonized as EN 60243-1.
IEC 60243-2	NOTE	Harmonized as EN 60243-2.
IEC 60243-3	NOTE	Harmonized as EN 60243-3.
IEC 60664-4	NOTE	Harmonized as EN 60664-4.
IEC 60270:2000	NOTE	Harmonized as EN 60270:2001 (not modified).

IEC 60371-2	NOTE	Harmonized as EN 60371-2.
IEC 60587	NOTE	Harmonized as EN 60587.
IEC 60721 series	NOTE	Harmonized in EN 60721 series.
IEC 60811-3-1	NOTE	Harmonized as EN 60811-3-1.
IEC 61033	NOTE	Harmonized as EN 61033.
IEC 61710	NOTE	Harmonized as EN 61710.
IEC 62231	NOTE	Harmonized as EN 62231.
IEC 62271-304	NOTE	Harmonized as CLC/TS 62271-304.
ISO 62	NOTE	Harmonized as EN ISO 62.
ISO 175	NOTE	Harmonized as EN ISO 175.
ISO 877-1	NOTE	Harmonized as EN ISO 877-1.
ISO 877-2	NOTE	Harmonized as EN ISO 877-2.
ISO 4611	NOTE	Harmonized as EN ISO 4611.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

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

Publication	Year	Title	EN/HD	Year
IEC 60216-2	-	Electrical insulating materials - Thermal endurance properties - Part 2: Determination of thermal endurance properties of electrical insulating materials - Choice of test criteria	EN 60216-2	-
IEC 60216-3	-	Electrical insulating materials - Thermal endurance properties - Part 3: Instructions for calculating thermal endurance characteristics	EN 60216-3	-
IEC 60216-5	-	Electrical insulating materials - Thermal endurance properties - Part 5: Determination of relative thermal endurance index (RTE) of an insulating material	EN 60216-5	-
IEC 60493-1	-	Guide for the statistical analysis of ageing test data - Part 1: Methods based on mean values of normally distributed test results	-	-
IEC 60544-1	-	Electrical insulating materials - Determination of the effects of ionizing radiation - Part 1: Radiation interaction and dosimetry	EN 60544-1	-
IEC/TS 61251	-	Electrical insulating materials - A.C. voltage endurance evaluation - Introduction	-	-
IEC 62539	-	Guide for the statistical analysis of electrical insulation breakdown data	-	-

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INTRODUCTION

The life of an electrical insulation system (EIS) or systems frequently determines the life of electrical equipment which can be affected by electrical, thermal, mechanical or environmental stresses acting either individually or in combination.

Intended, estimated or proven service life times are essential parameters for describing the life of electrical insulation systems. In the early days of electrotechnical engineering, life figures were rather vague. The limitation of the life of the insulation under thermal stress was one of the first indicators of the effect of ageing in some equipment in service. As experience in using EIS increased, it was appreciated that there was a need to select specific materials having satisfactory life time at a given temperature, to enable the required service life to be achieved and to allow for the calculation of the thermal capability of equipment.

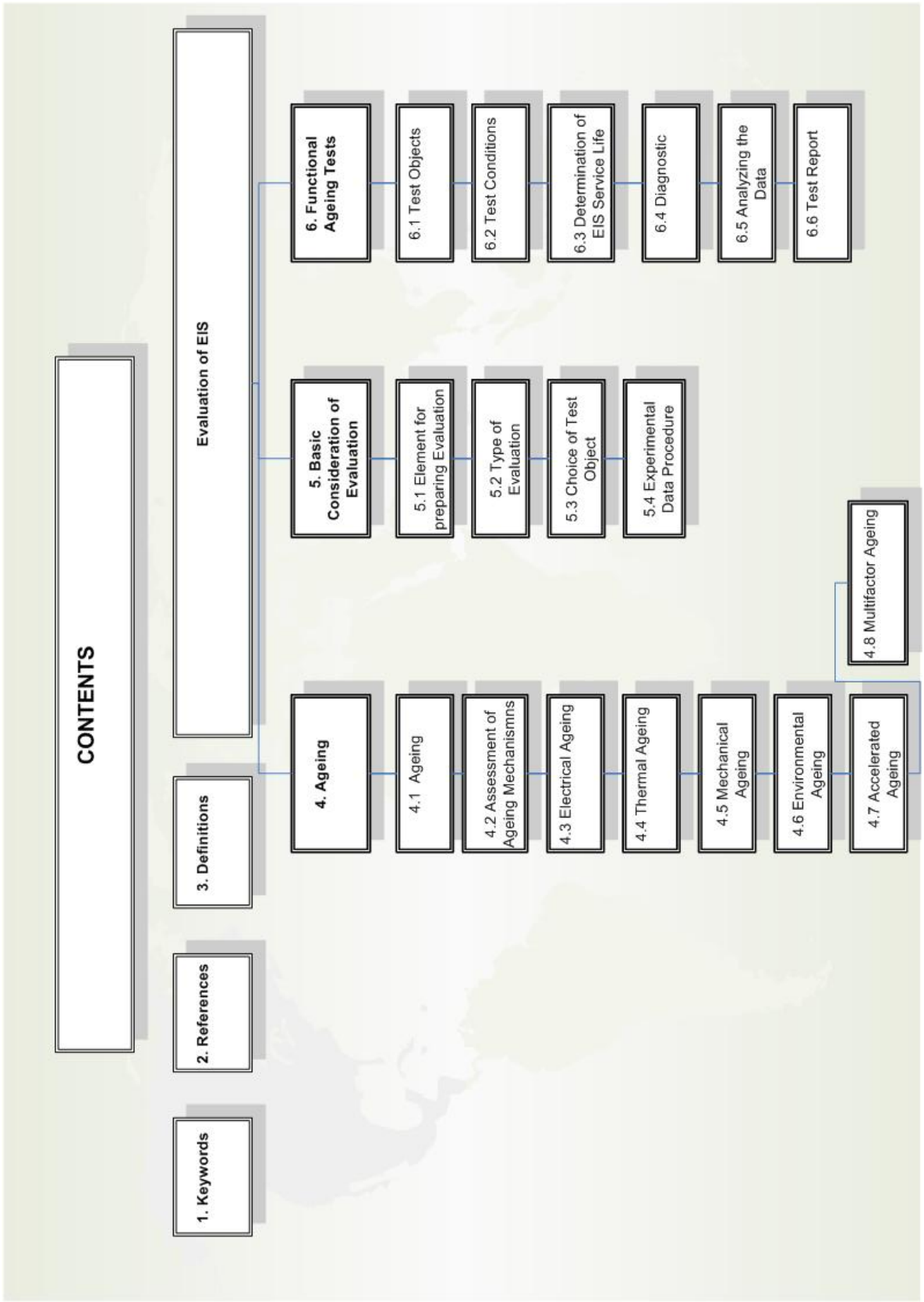
The user of this standard may evaluate existing test methods and provide correlation with his equipment. Therefore, the user of this standard is responsible for demonstrating the validity of the existing test method in accordance with the principles of this standard.

The determination of the prospective life is a fundamental task when developing and designing an EIS. Estimated service life of an EIS needs to be established for several reasons:

– for type testing when introducing a new EIS into production;
– for quality assurance of production;
– for estimating the life expectancy of new equipment;
– for estimating the remaining life for maintenance purposes.

“Ageing” focuses on the mechanisms affecting the EIS performance. “Evaluation” links these potential mechanisms by “Analysis” and “Diagnostics” to the design of a specific kind of evaluation test procedure.

The keyword structure below meets such requirements and allows an easier choice of the parts of interest.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EVALUATION AND QUALIFICATION OF ELECTRICAL INSULATION SYSTEMS

1 Scope

This International Standard establishes the basis for estimating the ageing of electrical insulation systems (EIS) under conditions of either electrical, thermal, mechanical, environmental stresses or combinations of these (multifactor stresses).

It specifies the principles and procedures that shall be followed, during the development of EIS functional test and evaluation procedures, to establish the estimated service life for a specific EIS.

This standard should be used by all IEC technical committees responsible for equipment having an EIS.

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 60216-2, *Electrical insulating materials – Thermal endurance properties – Part 2: Determination of thermal endurance properties of electrical insulating materials – Choice of test criteria*

IEC 60216-3, *Electrical insulating materials – Thermal endurance properties – Part 3: Instructions for calculating thermal endurance characteristics*

IEC 60216-5, *Electrical insulating materials – Thermal endurance properties – Part 5: Determination of relative thermal endurance index (RTE) of an insulating material*

IEC 60493-1, *Guide for the statistical analysis of ageing test data – Part 1: Methods based on mean values of normally distributed test results*

IEC 60544-1, *Electrical insulating materials – Determination of the effects of ionizing radiation – Part 1: Radiation interaction and dosimetry*

IEC/TS 61251, *Electrical insulating materials – AC voltage endurance evaluation – Introduction*

IEC 62539, *Guide for the statistical analysis of electrical insulation breakdown data*