

TECHNICAL REPORT

Electrical insulation systems – Thermal evaluation of modifications to an established electrical insulation system (EIS)
Part 3: Clarification of electrical insulating materials (EIMs) and auxiliary materials

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 29.080.30

ISBN 978-2-8322-9135-1

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD	3
INTRODUCTION.....	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 General information	7
4.1 Purpose of evaluation	7
4.2 Categories of evaluation	7
5 Evaluation procedures	8
5.1 Procedure G – Proof of generic identical materials.....	8
5.2 Procedure A – Without test	8
5.3 Procedure B – Chemical compatibility test	8
5.4 Procedure C – Standard single-point thermal aging test.....	8
5.5 Procedure D – Full thermal aging.....	8
6 EIS assessment.....	8
Bibliography.....	9

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRICAL INSULATION SYSTEMS – THERMAL EVALUATION OF
MODIFICATIONS TO AN ESTABLISHED ELECTRICAL
INSULATION SYSTEM (EIS)****Part 3: Clarification of electrical insulating
materials (EIMs) and auxiliary materials**

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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

IEC TR 61858-3 has been prepared by IEC technical committee 112: Evaluation and qualification of electrical insulating materials and systems. It is a Technical Report.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
112/465/DTR	112/500A/RVDTR

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 Technical Report 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/standardsdev/publications.

A list of all parts in the IEC 61858 series, published under the general title *Electrical insulation systems – Thermal evaluation of modifications to an established electrical insulation system (EIS)*, can be found on the IEC website.

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

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

INTRODUCTION

This part of IEC 61858 describes procedures for the evaluation of changes to an established electrical insulation system (EIS) and the effect of these changes on the thermal classification of the established EIS.

Part 1 of IEC 61858 covers wire-wound winding EISs. Part 2 of IEC 61858 addresses modifications of form-wound winding EISs.

This Part 3 provides guidance for the selection of appropriate procedures (as defined in Part 1 and Part 2) for the evaluation of changes of individual materials, which have functions of different importance in the EIS, also known as "major" electrical insulating materials (EIMs) and "minor" (auxiliary) materials.

General principles for the evaluation and qualification of EISs can be found in IEC 60505. Unless the procedures of this document indicate otherwise, the principles of IEC 60505 should be followed.

The thermal classification of an EIS is established either by known service life, in accordance with IEC 60505, or evaluated in accordance with IEC 61857 (all parts).

ELECTRICAL INSULATION SYSTEMS – THERMAL EVALUATION OF MODIFICATIONS TO AN ESTABLISHED ELECTRICAL INSULATION SYSTEM (EIS)

Part 3: Clarification of electrical insulating materials (EIMs) and auxiliary materials

1 Scope

This part of IEC 61858 provides information on the identification of electrical insulating materials and auxiliary components for the assessment of modifications to an established insulation system and gives guidance on the selection of feasible test procedures.

2 Normative references

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.

IEC 61857 (all parts), *Electrical insulation systems – Procedures for thermal evaluation*