Guidance for determination of clearances, creepage distances and requirements for solid insulation for equipment with a rated voltage above 1 000 V AC and 1 500 V DC, and up to 2 000 V AC and 3 000 V DC

National foreword

This Published Document is the UK implementation of IEC TS 62993:2017.

The UK participation in its preparation was entrusted to Technical Committee GEL/109, Insulation co-ordination for low voltage equipment.

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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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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GUIDANCE FOR DETERMINATION OF CLEARANCES, CREEPAGE DISTANCES AND REQUIREMENTS FOR SOLID INSULATION FOR EQUIPMENT WITH A RATED VOLTAGE ABOVE 1 000 V AC AND 1 500 V DC, AND UP TO 2 000 V AC AND 3 000 V DC

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 62993, which is a technical specification, has been prepared by IEC technical committee 109: Insulation co-ordination for low-voltage equipment.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
109/158A/DTS	109/162/RVDTS

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

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

In this standard, the following print types are used:

– requirements: in roman type;

– NOTES: in small roman type;

– *conformity and tests: in italic type;*

– terms used throughout this standard which have been defined in Clause 3: SMALL ROMAN CAPITALS.

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

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

IEC TS 62993 is developed in a JWG between several interested committees: TC 9, SC 22G, TC 31, TC 66, TC 82, SC 121A, and ACOS under the leadership of TC 109.

This document provides additional steps for a smooth transition between the low voltage (up to 1 000 V AC and 1 500 V DC) in IEC 60664 (all parts) and high voltage insulation coordination (although IEC 60071-1 is applicable from above 1 000 V, it only gives values starting at 3 600 V). IEC 60071-1 states that it does not cover the requirements for human safety. Moreover IEC 60071-1 does not provide values for creepage distances.

This document has been requested by several TCs dealing with equipment with a rated voltage above 1 000 V AC and 1 500 V DC up to 2 000 V AC and 3 000 VDC.

It is not the intention to extend the limit of low voltage range – having a conventionally accepted limit of 1 000 V AC and 1 500 V DC – into the high voltage range.

GUIDANCE FOR DETERMINATION OF CLEARANCES, CREEPAGE DISTANCES AND REQUIREMENTS FOR SOLID INSULATION FOR EQUIPMENT WITH A RATED VOLTAGE ABOVE 1 000 V AC AND 1 500 V DC, AND UP TO 2 000 V AC AND 3 000 V DC

1 Scope

IEC TS 62993, which is a Technical Specification, gives guidance to technical committees which deal with equipment having a RATED VOLTAGE of more than 1 000 V AC and up to 2 000 V AC, or a RATED VOLTAGE of more than 1 500 V DC and up to 3 000 V DC. RATED VOLTAGES up to 1 000 V AC and 1 500 V DC, as well as higher or lower internal voltages, are covered by IEC 60664-1.

This document applies to equipment for use up to 2 000 m above sea level, and provides guidance for use at higher altitudes.

This document gives guidance for CLEARANCES, CREEPAGE DISTANCES and SOLID INSULATION for equipment to achieve safety. It includes methods of electric testing.

NOTE Requirements for functional insulation are not specified as they are not regarded as safety requirements.

This document does not deal with distances

- through liquid insulation,
- through gases other than air, and
- through compressed air.

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 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

IEC 60068-2-14, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60112:2003, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*
IEC 60112:2003/AMD1:2009

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 61180:2016, *High-voltage test techniques for low-voltage equipment – Definitions, test and procedure requirements, test equipment*