UL 840

STANDARD FOR SAFETY

Insulation Coordination Including Clearances and Creepage Distances for Electrical Equipment

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UL Standard for Safety for Insulation Coordination Including Clearances and Creepage Distances for Electrical Equipment, UL 840

Third Edition, Dated January 6, 2005

Summary of Topics

This reaffirmation of ANSI/UL 840 dated July 7, 2026 is issued to update the title page to reflect the most recent designation as a Reaffirmed American National Standard (ANS). No technical changes have been made.

Text that has been changed in any manner or impacted by ULSE's electronic publishing system is marked with a vertical line in the margin.

The requirements are substantially in accordance with Proposal(s) on this subject dated May 15, 2026.

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UL 840

Standard for Insulation Coordination Including Clearances and Creepage Distances for Electrical Equipment

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Third Edition

January 6, 2005

This ANSI/UL Standard for Safety consists of the Third Edition including revisions through July 7, 2026.

The most recent designation of ANSI/UL 840 as a Reaffirmed American National Standard (ANS) occurred on July 7, 2026. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

Comments or proposals for revisions on any part of the Standard may be submitted to ULSE at any time. Proposals should be submitted via a Proposal Request in the Collaborative Standards Development System (CSDS) at https://csds.ul.com.

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CONTENTS

INTRODUCTION

1 Scope 5
2 Glossary 5
3 Units of Measurement 7
4 Undated References 7
5 Components 7
6 Insulation Coordination 8

CONSTRUCTION

7 Clearance A (Equivalency) 9
8 Clearance B (Controlled Overvoltage) 10
9 Creepage Distances 13
10 Measurement of Clearance and Creepage Distances 17
11 Use of Coatings to Achieve Insulation Coordination 23

PERFORMANCE

12 Switching Test 23
13 Recurring Peak Voltage Determination 23
14 Dielectric Voltage-Withstand Tests 23
14.1 Testing in lieu of measuring clearances 23
14.2 Testing for controlled overvoltage 24
15 Printed Wiring Board Coating Performance Test 24
15.1 General 24
15.2 Dielectric voltage-withstand test 27
15.3 Environmental cycling test 27
15.4 Humidity conditioning test 28
15.5 Thermal conditioning test 28
15.6 Coating adhesion 30
15.7 Insulation resistance between conductors 30
15.8 Impulse withstand voltage 30
15.9 Resistance to soldering heat 30
15.10 Flammability 31
15.11 Comparative tracking index (CTI) 31

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INTRODUCTION

1 Scope

1.1 These requirements cover an alternate approach to specifying through air and over surface spacings for electrical equipment through the use of the principles of insulation coordination.

1.2 The complete principles of insulation coordination involve the consideration of the combination of clearances, creepage distances, and the properties of solid insulation used to constitute the insulation system. The empirical data gathered thus far has been used to develop the requirements for clearances and creepage distances as presented in this standard. The data needed to develop the evaluation procedure for solid insulation is still being gathered. When available, this evaluation procedure will be added to this standard and is not expected to affect the requirements for clearances and creepage distances.

1.3 These requirements may be used as an alternate to required spacing levels specified in end-product standards. The end product standard spacing requirements may be based on use and systems where overvoltages are not controlled, or if controlled, the level of control is unknown.

1.4 These alternate requirements are intended to be applied to a particular product category if the standard covering the product category specifically references UL 840 or any of the requirements therein.

1.5 Users of these requirements may need to specify the overvoltage levels and the methods of control which will be utilized, and establish the pollution degree to which the product insulation system will be expected to be subjected.

1.6 It is not intended that the test values in this standard be employed for production line testing. However, users of these requirements will need to establish a means to ensure that production controls applied to permit the spacing reduction remain in effect during the manufacture of the product. This could include sample testing or physical measurements or another equivalent means.

1.7 Users of these requirements will additionally need to ensure that influencing factors not addressed in this standard, such as mechanical movement, field placement of conductive material, and product damage, will not affect the system for insulation coordination. Examples are the deformation of the enclosure, movement of the fittings for conduit or armored cable, or the improper installation of field wiring. Clearances and creepage distances at those locations must be verified for compliance by physical measurement in accordance with Section 10, Measurement of Clearance and Creepage Distances.

2 Glossary

2.1 For the purpose of this standard, the following definitions apply.

2.2 CLEARANCES – Through air spacing.

2.2A COMBINATION WAVEFORM – A surge delivered by a generator which has the inherent capability of applying a 1.2/50 µs voltage wave across an open circuit, and delivering an 8/20 µs current wave into a short circuit. Also called a combination surge.

2.3 CREEPAGE DISTANCES (CREEPAGES) – Over surface spacings.

2.4 FUNCTIONAL OVERVOLTAGE – Deliberately imposed transient overvoltages necessary for the function of a device.

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