UL 1666

STANDARD FOR SAFETY

Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER
REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

UL Standard for Safety for Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts, UL 1666

Sixth Edition, Dated July 9, 2026

Summary of Topics

This new Sixth Edition of ANSI/UL 1666 dated July 9, 2026 includes the following changes in requirements:

– Test Procedure Revisions: 9.2 and 9.7; and

– Restructuring and editorial revisions to align with the ULSE Style Manual for UL Standards for Safety.

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated May 8, 2026.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical photocopying, recording, or otherwise without prior permission of ULSE Inc. (ULSE).

ULSE provides this Standard "as is" without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability or fitness for any purpose.

In no event will ULSE be liable for any special, incidental, consequential, indirect or similar damages, including loss of profits, lost savings, loss of data, or any other damages arising out of the use of or the inability to use this Standard, even if ULSE or an authorized ULSE representative has been advised of the possibility of such damage. In no event shall ULSE's liability for any damage ever exceed the price paid for this Standard, regardless of the form of the claim.

Users of the electronic versions of UL's Standards for Safety agree to defend, indemnify, and hold ULSE harmless from and against any loss, expense, liability, damage, claim, or judgment (including reasonable attorney's fees) resulting from any error or deviation introduced while purchaser is storing an electronic Standard on the purchaser's computer system.

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

No Text on This Page

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

UL 1666

Standard for Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts

First Edition – November, 1986
Second Edition – January, 1991
Third Edition – February, 1997
Fourth Edition – November, 2000
Fifth Edition – February, 2007

Sixth Edition

July 9, 2026

This ANSI/UL Standard for Safety consists of the Sixth Edition.

The most recent designation of ANSI/UL 1666 as an American National Standard (ANSI) occurred on July 9, 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.

Our Standards for Safety are copyrighted by ULSE Inc. Neither a printed nor electronic copy of a Standard should be altered in any way. All of our Standards and all copyrights, ownerships, and rights regarding those Standards shall remain the sole and exclusive property of ULSE Inc.

© 2026 ULSE Inc. All rights reserved.

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

No Text on This Page

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

CONTENTS

INTRODUCTION

1 Scope 5
2 Units of Measurement 5
3 Referenced Publications 5

PERFORMANCE

4 Fire Test Room 5
5 Fire Test Apparatus 5
5.1 Fire test chamber 5
5.2 Burner apparatus 6
5.3 Burner fan 9
5.4 Propane 9
5.5 Exhaust blower and duct 9
5.6 Temperature and flow measurement instrumentation 9
5.7 Data acquisition equipment 11
6 Specimen Conditioning 11
7 Determination of Specimen Diameter 11
8 Number of Cable Lengths 11
9 Test Procedure 12

REQUIREMENTS AND REPORT

10 Acceptance Criteria 13
11 Report 13

GUIDE TO MOUNTING METHODS

12 Introduction 13
13 Method 13

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

No Text on This Page

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

INTRODUCTION

1 Scope

1.1 This is a fire test for determining values of flame propagation height for electrical and optical-fiber cables that are for installation vertically in shafts or in vertical runs that penetrate one or more floors.

1.2 The purpose of this test is to determine whether the flame propagation characteristics of these "riser" cables are in accordance with the NFPA 70®, *National Electrical Code®* (NEC®).

NFPA 70®, *National Electrical Code®*, and NEC® are registered trademarks of the National Fire Protection Association, Quincy, MA.

1.3 This test does not investigate the toxicity or corrosivity of the products of combustion or decomposition.

1.4 This test does not cover the construction requirements for any cable or the electrical, optical, and other performance requirements for any cable.

2 Units of Measurement

2.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

3 Referenced Publications

3.1 Any undated reference to a code or standard appearing in the requirements of this Standard shall be interpreted as referring to the latest edition of that code or standard.

3.2 The following publications are referenced in this Standard:

NFPA 70®, *National Electrical Code®* (NEC®)

PERFORMANCE

4 Fire Test Room

4.1 The fire test room in which the chamber is located is to have provision for a free inflow of air to maintain the room at a controlled pressure of 0 – 0.05 inch (0 – 12 Pa) of water column with respect to barometric pressure and at a temperature of 73 ±5 °F (23 ±3 °C) and a relative humidity of 50 ±5 % throughout each test.

5 Fire Test Apparatus

5.1 Fire test chamber

5.1.1 The test chamber is to be as shown in Figure 5.1. The test chamber, all equipment, and the cable specimens are to be protected from the wind and other conditions of weather that could affect the test results. The walls of the structure are to be of standard concrete masonry nominally 8 inches (203 mm) thick. The first and second floors shall be constructed of reinforced concrete nominally 5 – 8 inches (127 – 203 mm) thick. The roof shall be constructed of a suitable building construction capable of providing a tight seal with the walls of the structure. A slot measuring 1 foot by 2 feet (305 mm by 610 mm) is to be located in the first floor, and an identical slot is to be located directly above in the second floor. As shown in Figure 5.1, each slot is to be 8 inches (203 mm) from the back wall of the room and 4 inches (102 mm) from the

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.