



UL 66

STANDARD FOR SAFETY

Fixture Wire

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UL Standard for Safety for Fixture Wire, UL 66

Third Edition, Dated January 18, 2023

Summary of Topics:

This revision of ANSI/UL 66 dated July 17, 2024 includes changes for Gasoline Resistance Rating, revising [Table 27.1](#).

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 revised requirements are substantially in accordance with Proposal(s) on this subject dated June 14, 2024.

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ANSI/UL 66-2024

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UL 66

Standard for Fixture Wire

First Edition – April, 2002
Second Edition – June, 2018

Third Edition

January 18, 2023

This ANSI/UL Standard for Safety consists of the Third Edition including revisions through July 17, 2024.

The most recent designation of ANSI/UL 66 as an American National Standard (ANSI) occurred on July 17, 2024. 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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INTRODUCTION

1 Scope

1.1 This standard states basic construction, test, and marking requirements for fixture wires. Fixture wires are single conductor and are of the following types:

600 volt Types:	PTF, PTFE, PAF, PAFF, KF-2, KFF-2, PF, PFF, PGF, PGFF, SF-2, SFF-2, ZF, ZFF, ZHF, TF, TFF, TFN, TFFN, RFH-2, FFH-2, FFHH-2, HF, HFF, RFHH-2, and RFHH-3
300 volt Types:	KF-1, KFF-1, SF-1, SFF-1, RFH-1, XF, and XFF

These types are for use as specified in Article 402 and other applicable parts of the National Electrical Code (NEC), ANSI/NFPA 70. These types are as described individually in index [Table 4.1](#) – [Table 4.10](#) of this standard.

2 Units of Measurement

2.1 In addition to being stated in inch/pound units, each numerical requirement in this standard is also stated in units that make the requirement conveniently usable in the various metric systems (practical SI and customary). Equivalent – although not necessarily exactly identical – results are to be expected from applying a requirement in inch/pound or metric terms. Equipment calibrated in metric units is to be used when a requirement is applied in metric terms.

3 References

3.1 Whenever the designation “UL 1581” is used in this wire standard, reference is to be made to the designated part(s) of the Reference Standard for Electrical Wires, Cables, and Flexible Cords, UL 1581. Whenever the designation UL 2556 is used, reference is to be made to the designated sections of UL 2556, the Standard for Wire and Cable Test Methods.

4 Index Tables

4.1 [Table 4.1](#) – [Table 4.10](#) each serve as an index to the requirements for construction details, test performance, and marking of the wire types described in the particular table. Each vertical column summarizes and references the requirements that apply to the particular wire whose type letters appear at the top of the column. The applicable paragraphs and tables in this standard (UL 66) are indicated in parenthesis. Square brackets [...] indicate the applicable parts of UL 1581.

Table 4.1
PTFE insulated Types PTF and PTFF^a

Type-letter designation		PTF	PTFF
Maximum temperature		250 °C (482 °F)	150 °C (302 °F)
Maximum voltage		600	
CONDUCTOR	Sizes	18, 16, and 14 AWG	
	Metal	Nickel-base alloy or nickel-coated copper (6.1.2)	Nickel-coated copper or silver-coated copper (6.1.2)
	Stranding	Solid or 7-strand (6.1.1, 6.2.2, and 6.3.1)	Flexible-stranded (6.1.1, 6.2.2, and 6.3.1)
	Size verification	(6.4.1, 6.4.2, and 6.4.3)	
	Maximum length of lay of strands	48 x individual strand diameter (6.3.2)	(Table 6.2)
	General	Continuity, joints, metal coating, and separator (6.5.1 – 7.3)	
INSULATION	Material	PTFE [Table 50.219 of UL 1581] (8.1.1 – 8.1.4, 8.2.2.1, and 8.2.2.4)	
	Minimum average thickness	20.0 mils or 0.51 mm (8.3.1)	
	Minimum thickness at any point	18.0 mils or 0.46 mm (Table 8.1)	
Covering over the insulation		No covering	
TESTS ON FINISHED WIRE	Physical properties tests of insulation	PTFE [Table 50.219 of UL 1581] (8.2.2.1 and 8.2.2.4)	
	Continuity test of conductor	(6.5.1, 11.1, and 11.2)	
	D-C resistance test of conductor	(12.1 – 12.3)	
	Spark test	(13.1)	
	Deformation test	Not applicable	
	Cold bend test	(15.1 – 15.7)	
	Test for insulation resistance at 60 °F	(16.1 and 16.2)	
	Flame tests for VW-1 wire (elective)	(17.1)	
	Vertical flame test (required)	(18.1)	
Durability test of ink printing	(20.1)		
MARKINGS	Polarity ID	(22.1)	
	Legibility of printing	(23.1)	
	Sequence of printed markings	No sequence is specified (24.1)	
	Responsible organization and factory IDs	(25.1 – 25.3 and 25.5)	
	Temperature ID	(26.1 and 26.2)	
	ID of VW-1 wire	(28.1)	
	Tag, reel, and carton markings	(29.1)	
	Current designation	Prohibited (30.1)	
Date of manufacture	(31.1)		

^a Index tables are explained in 4.1.