UL 651

STANDARD FOR SAFETY

Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings

UL Standard for Safety for Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings, UL 651

Eighth Edition, Dated October 25, 2011

Summary of Topics

This revision for ANSI/UL 651 dated March 24, 2020 includes editorial corrections for Section 6.4.

Text that has been changed in any manner or impacted by UL'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 July 26, 2019, August 23, 2019, and November 15, 2019.

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OCTOBER 25, 2011
(Title Page Reprinted: March 24, 2020)

ANSI/UL 651-2020

UL 651

Standard for Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings

Prior to the fourth edition, the requirements for the Schedule 40 products covered by this standard were included in the Standard for Rigid Nonmetallic Conduit, UL 651. Prior to the eighth edition, the requirements for Type EB and A products covered by this standard were included in the Standard for Type EB and A Rigid PVC Conduit, UL 651A.

First Edition – September, 1965
Second Edition – August, 1972
Third Edition – October, 1980
Fourth Edition – May, 1981
Fifth Edition – August, 1989
Sixth Edition – August, 1995
Seventh Edition – October, 2005

Eighth Edition

October 25, 2011

This ANSI/UL Standard for Safety consists of the Eighth Edition including revisions through March 24, 2020.

The most recent designation of ANSI/UL 651 as an American National Standard (ANSI) occurred on March 9, 2020. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

The Department of Defense (DoD) has adopted UL 651 on August 5, 1983. The publication of revised pages or a new edition of this Standard will not invalidate the DoD adoption.

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

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INTRODUCTION

1 Scope

1.1 General

1.1.1 These requirements cover Schedule 40, Schedule 80, Type EB and Type A extruded rigid PVC (polyvinyl chloride) electrical conduit and fittings. These requirements also cover elbows, couplings, adapters, expansion, expansion-deflection, or deflection joints, and similar fittings that are constructed at least in part of rigid PVC. The designations "Schedule 40", "Schedule 80", "Type EB", "Type A" refer to USA trade sizes of conduit having iron pipe-size outside diameters and specific wall thicknesses. Couplings, adapters, expansion, expansion-deflection, or deflection joints, and similar fittings are intended to be used with Schedule 40, Schedule 80, Type EB and Type A rigid PVC conduit, and elbows in accordance with the National Electrical Code (NEC), NFPA 70.

1.1.2 Rigid PVC conduit and fittings covered in these requirements are intended for use as rigid nonmetallic raceway for wires and cables in accordance with the National Electrical Code (NEC), NFPA 70.

1.1.3 Conduit bodies (pull boxes) and covers, flush-device boxes and covers, and outlet boxes and covers that are constructed of rigid PVC or another nonmetallic material and are for use with the rigid PVC conduit and fittings covered in these requirements are covered separately in the Standard for Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers, UL 514C.

1.1.4 Rigid PVC conduit and fittings covered in these requirements are intended to be joined to each other and to rigid PVC boxes, conduit bodies, and fittings in the field by such means as a push-fit or a cement that is or contains a solvent for polyvinyl chloride.

1.1.5 Unless the wording of a requirement that applies to rigid PVC conduit and fittings specifically limits the requirement to Schedule 40, Schedule 80, Type EB or to Type A, each such requirement in this standard applies to all types.

1.1.6 Reinforced thermosetting resin conduit and associated fittings are covered separately in the Standard for Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings, UL 2515 and the Standard for Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings, UL 2420.

1.2 Schedule 40 and 80 conduit and fittings

1.2.1 Schedule 40 rigid PVC conduit and fittings are for aboveground use indoors or outdoors exposed to sunlight and weather, and for underground use by direct burial or encasement in concrete. Schedule 40 rigid PVC conduit, elbows, that are specifically marked for underground use are suitable for use underground only by direct burial or encasement in concrete.

1.2.2 Schedule 80 rigid PVC conduit and fittings are for use wherever Schedule 40 rigid PVC conduit may be used and are for installation on poles in accordance with the National Electrical Code (NEC), NFPA 70.

1.2.3 The following restrictions apply to use of the Schedule 40 and Schedule 80 rigid PVC conduit and fittings mentioned in 1.1.1:

a) Use at 50°C (122°F) and lower ambient temperatures and

b) Use with 75°C (167°F) wiring, but the conduit and fittings may be used with 90°C (194°F) wiring if they comply with the construction (see Conduit for Use with 90°C Wire, 6.15) and marking (see 8.2.1, 8.2.4 and 8.2.5) requirements covering use with 90°C (194°F) wiring.

1.2.4 In addition to the applicable requirements specified in this standard, Schedule 40 and Schedule 80 rigid PVC conduit intended for directional boring shall be subjected to the performance requirements in 6.12.

1.2.5 *Deleted.*

1.3 Type EB and A conduit and fittings

1.3.1 The Type EB and Type A rigid PVC conduit and fittings mentioned in 1.1.1 are intended for use at 50°C (122°F) and lower ambient temperatures. Type A rigid PVC conduit and fittings are intended for use with 75°C (167°F) wiring. Type A and Type EB rigid PVC conduit and fittings, where encased in concrete in trenches outside of buildings, may be used with 90°C (194°F) wiring.

1.3.2 Type EB (encased burial) rigid PVC conduit is intended for encasement in concrete in trenches outside of buildings. Type A rigid PVC conduit is intended for encasement in concrete in any location.

1.4 Applications

1.4.1 Couplings covered by these requirements are fittings intended for joining:

a) Two lengths of rigid PVC conduit,

b) A length of rigid PVC conduit to a rigid PVC elbow and

c) In conjunction with a junction-box adapter, a length of rigid PVC conduit or a rigid PVC elbow to a box.

1.5 Fittings

1.5.1 Junction-box adapters covered by these requirements are fittings intended to connect a length of rigid PVC conduit, a PVC elbow to a rigid PVC box (not limited to junction boxes) with a coupling.

1.5.2 Internally-threaded adapters covered by these requirements are fittings intended for joining a length of rigid PVC conduit, a PVC elbow to threaded rigid metal conduit or other externally-threaded devices.

1.5.3 Externally-threaded adapters (also referred to as terminal adapters) covered by these requirements are fittings intended for joining a length of rigid PVC conduit or elbow to:

a) The knockout area of a metal box with a metal locknut,

b) A threaded metal hub or fitting on a metal box,

c) A threaded hub on a phenolic box, or

d) A knockout in a phenolic box.

1.5.4 Reducers covered by these requirements are fittings intended for joining lengths of two different sizes of rigid PVC conduit.