

NEMA TC 3-2016

Standard for Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing



NEMA Standards Publication TC 3-2016

*Polyvinyl Chloride (PVC) Fittings for Use with
Rigid PVC Conduit and Tubing*

Published by:

National Electrical Manufacturers Association

1300 North 17th Street, Suite 900
Rosslyn, Virginia 22209

www.nema.org

© 2016 National Electrical Manufacturers Association. All rights, including translation into other languages, reserved under the Universal Copyright Convention, the Berne Convention for the Protection of Literary and Artistic Works, and the International and Pan American copyright conventions.

NOTICE AND DISCLAIMER

The information in this publication was considered technically sound by the consensus of persons engaged in the development and approval of the document at the time it was developed. Consensus does not necessarily mean that there is unanimous agreement among every person participating in the development of this document.

The National Electrical Manufacturers Association (NEMA) standards and guideline publications, of which the document contained herein is one, are developed through a voluntary consensus standards development process. This process brings together volunteers and/or seeks out the views of persons who have an interest in the topic covered by this publication. While NEMA administers the process and establishes rules to promote fairness in the development of consensus, it does not write the document and it does not independently test, evaluate, or verify the accuracy or completeness of any information or the soundness of any judgments contained in its standards and guideline publications.

NEMA disclaims liability for any personal injury, property, or other damages of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly, resulting from the publication, use of, application, or reliance on this document. NEMA disclaims and makes no guaranty or warranty, expressed or implied, as to the accuracy or completeness of any information published herein, and disclaims and makes no warranty that the information in this document will fulfill any of your particular purposes or needs. NEMA does not undertake to guarantee the performance of any individual manufacturer or seller's products or services by virtue of this standard or guide.

In publishing and making this document available, NEMA is not undertaking to render professional or other services for or on behalf of any person or entity, nor is NEMA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstance. Information and other standards on the topic covered by this publication may be available from other sources, which the user may wish to consult for additional views or information not covered by this publication.

NEMA has no power, nor does it undertake to police or enforce compliance with the contents of this document. NEMA does not certify, test, or inspect products, designs, or installations for safety or health purposes. Any certification or other statement of compliance with any health- or safety-related information in this document shall not be attributable to NEMA and is solely the responsibility of the certifier or maker of the statement.

Foreword

In the preparation of this standards publication, input of users and other interested parties has been sought and evaluated. Inquiries, comments, and proposed or recommended revisions should be submitted to the concerned NEMA product subdivision by contacting:

Senior Technical Director, Operations
National Electrical Manufacturers Association
1300 North 17th Street, Suite 900
Rosslyn, Virginia 22209

This standards publication was approved by the Polymer Raceway Section. At the time of publication, the section had the following members:

Anamet Electrical, Inc., Mattoon, IL, www.anacondasealtite.com
AFC Cable Systems, a part of Atkore International, New Bedford, MA, www.afcweb.com
Allied Tube & Conduit, a part of Atkore International, Harvey, IL, www.alliedtube.com
Champion Fiberglass, Inc., Spring, TX, www.championfiberglass.com
Electri-Flex Company, Roselle, IL, www.electriflex.com
FRE Composites Inc., St. Andre-d'Argenteuil, PQ, Canada, www.frecomposites.com
Hubbell Incorporated, Shelton, CT, www.hubbell.com
IPEX Group, Mississauga, ON, Canada, www.ipexinc.com
Legrand North America, West Hartford, CT, www.legrand.us
Panduit Corporation, Tinley Park, IL, www.panduit.com
Royal Building Products, Shelby Township, MI, www.royalbuildingproducts.com
Southern Pipe, Inc., New London, NC, www.southern-pipe.com
Thomas & Betts, a member of the ABB Group, Memphis, TN, www.tnb.com
Underground Devices, Inc., Northbrook, IL, www.udevices.com
United Fiberglass of America, Springfield, OH, www.unitedfiberglass.com

The members of the working group who contributed to the development of this standard:

AFC Cable Systems, a part of Atkore International	New Bedford, MA
IPEX Group	Mississauga, ON, Canada
Thomas & Betts, a member of the ABB Group	Memphis, TN

CONTENTS

Foreword	i
Section 1 General	1
1.1 Scope	1
1.2 Referenced Standards	1
Section 2 Definitions	3
2.1 General	3
2.2 Definitions	3
Section 3 General Requirements	4
3.1 Materials.....	4
3.2 Dimensions	4
3.2.1 Fittings.....	4
3.2.2 Compression-Formed Couplings	4
3.2.3 Elbows.....	4
3.3 Depth of Penetration	4
3.4 Threads	4
Section 4 Performance Requirements	12
4.1 Qualification Tests.....	12
4.1.1 Bending	12
4.1.2 Axial Pull Test on Joints	12
4.2 Quality Control Test	12
4.2.1 Workmanship	12
4.2.2 Dimensions.....	12
Section 5 Test Methods	13
5.1 Conditioning, Test Conditions, and Sampling.....	13
5.1.1 Conditioning Test Specimens	13
5.1.2 Sampling	13
5.2 Dimensions	13
5.3 Threads	13
5.3.1 Gauging External Tapered Threads.....	13
5.3.2 Gauging Internal Tapered Threads.....	13
5.3.3 Gauging Chamfered, Countersunk, or Recessed Threads	14
5.3.4 Gauging of Straight Threads.....	14
5.4 Bending	14
5.5 Axial Pull Test on Joints.....	15
5.6 Retests	16
Section 6 Markings	17
6.1 Markings	17
6.1.1 General.....	17
6.1.2 Conduit, Long Elbows, and Other Bends.....	17
6.1.3 Short Elbows and Other Bends.....	17
Figures	
Figure 1 Molded Fitting Dimensions	6
Figure 2 Compression-Formed Couplings.....	9
Figure 3 Elbows	9
Figure 4 Bending Test Arrangement	15
Tables	
Table 1 Sizes and Dimensions of PVC Fittings.....	5
Table 2 External and Internal Tapered Threads	7

Table 3 External and Internal Straight Threads..... 8
Table 4 Dimensions for Compression-Formed PVC EPC-40 and EPC-80 Couplings 10
Table 5 Dimensions for Integral Bell PVC EPC-40 and EPC-80 Elbows..... 11
Table 6 Bending Load on Coupling or Fitting 15
Table 7 Axial Load for Pull Test on Joints 16

Currently in preview, click buy full version

< This page intentionally left blank >

Currently in preview, click buy full version

Section 1 General

1.1 Scope

This standard covers polyvinyl chloride (PVC) fittings intended to be joined in the field by means of a solvent cement system to PVC rigid conduit, tubing, or other fittings, based on the outside diameters given in NEMA TC 2-2013.

Included in this publication are requirements for materials, workmanship, dimensions, physical properties, couplings, female adapters, male terminals, junction box adapters, reducers, elbows, caps, and end caps. Methods of marking, inspection, and practices for indicating compliance with these standards are also given. Junction boxes and access fittings are not included.

Note: The values stated in U.S. customary units are to be regarded as the standard. Metric units are provided for information.

1.2 Referenced Standards

The following publications are adopted in part, by reference in this publication and are available from the organizations below. Unless otherwise noted, references are to the most recent edition.

American National Standards Institute (ANSI)

25 West 43rd Street
New York, NY 10036

ANSI/ASME B1.20.1 *Pipe Threads, General Purpose (Inch)*

American Society for Testing and Materials (ASTM)

100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

D618 *Standard Practice for Conditioning Plastics for Testing*
D1784 *Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds
and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds*
D2855 *Standard Practice for the Two-Step (Primer and Solvent Cement)
Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl
Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets*
D1600 *Standard Terminology for Abbreviated Terms Relating to Plastics*
F412 *Standard Terminology Relating to Plastic Piping Systems*
D883 *Standard Terminology Relating to Plastics*

Government Services Administration (GSA)

Specification Section
7th and D Streets, SW, Room 6654
Washington, DC 20407

FED-STD-H28/2 (2006) *Screw-Thread Standards for Federal Services, Section 2, Unified Inch
Screw Threads—UN and UNR Thread Forms*