

W-C-1094A
July 3, 1975
SUPERSEDING
Fed. Spec. W-C-1094
February 10, 1966 and
MIL-C-23571A(YD)
8 November 1968

FEDERAL SPECIFICATION

CONDUIT AND CONDUIT FITTINGS
PLASTIC, RIGID

This specification was approved by the Commissioner, Federal Supply Services, General Services Administration, for use of all Federal Agencies

1. SCOPE

1.1 Scope. This specification covers rigid plastic conduit and conduit fittings used for installation of electrical wires and cables.

1.2 Classification.

1.2.1 Conduit. The conduit shall be one of the following types and styles as specified (see 6.2)

- Type I - Thin-wall polyvinyl chloride (PVC) designed for underground and in walls when encased in concrete.
- Type II - Heavy-wall PVC designed for installation above ground or below ground and with or without concrete encasement.
- Type III - Heavy-wall polyethylene (PE) designed for installation directly in earth with or without concrete encasement.

- Style A - Straight (nominal 10-foot length).
- Style B - 45 deg. elbow.
- Style C - 90 deg. elbow.
- Style D - 45 deg. long sweep bend.
- Style E - 90 deg. long sweep bend.
- Style F - S bend.
- Style G - 22-1/2 deg. curved segment.
- Style H - 30 deg. bend.

FSC 5975

W-C-1094A

1.2.2 Conduit fittings. Conduit fittings furnished under this specification shall be one of the following classes and designs as specified (see 6.2).

Class 1 - Coupling (threaded).

Design A - Regular.

Design B - Expansion joint.

Class 2 - Coupling (nonthreaded).

Design A - Regular.

Design B - Expansion joint.

Design C - Drive on.

Class 3 - Adapter (plastic to steel).

Design A - Internal threadless, and internal threaded connections.

Design B - Internal threadless and external threaded connections.

Class 4 - End bell.

Class 5 - Junction box and cover with no hubs.

Design A - 4- by 4- by 4 inches deep.

Design B - 6- by 6- by 4 inches deep.

Design C - 6- by 6- by 6 inches deep.

Class 6 - Junction box adapter.

Design A - Regular.

Class 7 - Reducing bushing.

Class 8 - Cap.

Class 9 - Conduit boxes.

Design FS - One hub in one end.

Design FSS - Two hubs in one end.

Design FSC - One hub in each end.

Design FD - Deep no hubs.

Class 10 - Conduit outlet bodies.

- Design C - One hub in each end.
- Design E - One hub one end.
- Design LB - One hub in one end and one hub placed at a
90 deg. angle at the opposite end, in the back.
- Design LL - One hub in one end and one hub placed at a
90 deg. angle at the opposite end, on the left
side.
- Design LR - One hub in one end and one hub placed at a
90 deg. angle at the opposite end, on the right
side.
- Design T - One hub in each end and one hub in a side.

1.2.3 Sizes. Conduit and conduit fittings furnished under this specification shall conform to standard commercial sizes and as specified (see 6.2). For sizes normally available commercially, see 6.3. Unless otherwise specified (see 6.2), conduit furnished under this specification shall be in standard lengths of 10 feet including coupling, one coupling to be furnished with each length.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

Federal Specifications:

- PPP-B-601 - Boxes, Wood, Cleated-Plywood.
- PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner.
- PPP-B-636 - Boxes, Shipping, Fiberboard.
- PPP-C-650 - Crates, Wood, Open and Covered.
- PPP-T-60 - Tape: Packaging, Waterproof.

Federal Standard:

- Fed. Std. No. 123 - Marking for Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, US Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General

W-C-1094A

Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Standards:

MIL-STD-105 - Sampling procedures and Tables for Inspection
by Attributes.

MIL-STD-129 - Marking for Shipment and Storage.

(Copies of Military Specifications and Standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

American National Standards Institute, (ANSI)

ANSI B2.1 - Pipe Threads (Except Dryseal).

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 10018.)

American Society for Testing and Materials (ASTM)

D2564 - Specification for Solvent Cements for Poly (Vinyl Chloride)
(PVC) Plastic Pipe and Fittings.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

National Motor Freight Traffic Association, Inc., Agent

National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Association, Inc., Tariff Order Section, 1616 P Street, N.W., Washington, DC 20036.)

Underwriters' Laboratories, Inc. (UL)

- UL514 - Standard for Outlet Boxes and Fittings (With Supplement Covering Boxes and Fittings for Rigid PVC Conduit).
- UL651 - Standard for Rigid Nonmetallic Conduit.

(Application for copies should be addressed to the Underwriters' Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL 60062.)

Uniform Classification Committee, Agent

Uniform Freight Classification.

(Application for copies should be addressed to the Uniform Classification Committee, Tariff Publishing Officer, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.

3. REQUIREMENTS

3.1 Description. Conduit and conduit fittings covered by this specification shall conform to the applicable requirements of UL651 and UL514 respectively.

3.2 Construction. The construction of conduit and conduit fittings shall insure sufficient strength and rigidity in the finished product to enable the product to resist damage during shipment, rough handling, installation, and use.

3.2.1 Type I and II. Type I and II conduit and conduit fittings shall not be threaded or tapered and fittings shall be attached by a solvent cement.

3.2.2 Type III. Unless otherwise specified (see 6.2), type III conduit and conduit fittings shall be nonthreaded, drive-on type.

3.2.3 Class 9. Conduit boxes shall be designed to accommodate wiring devices and have two tapped No. 6, 32 threads per inch, devices attaching screw holes located on 3-9/32 inch centers for each wiring device position. Outlet boxes shall be provided with a top ridge over which the cover shall fit.

3.2.3.1 Covers. Blank covers or special purpose with or without gaskets as required shall be furnished as specified (see 6.2).

W-C-1094A

3.2.4 Class 10. Conduit outlet bodies shall essentially be an enlarged section of conduit. Covers for conduit outlet bodies of the same size supplied under the same contract shall be interchangeable.

3.3 Solvent cement. When specified (see 6.2) a solvent cement conforming to ASTM D2564, for joining type I and type II conduit and conduit fittings shall be furnished in a sufficient quantity, as recommended by the supplier, for the particular procurement of conduit and conduit fittings.

3.4 Threads. When specified (see 6.2), type III conduit and conduit fittings shall have tapered pipe threads conforming to ANSI B2.1 and Appendix C thereof. Class 3 adapters shall have straight or tapered threads conforming to ANSI B2.1. All threads shall be full and clean, and the taper of threads shall be 3/4-inch per foot.

3.5 Fire and casualty hazards.

3.5.1 Each contractor shall submit, to the contracting agency, proof that the conduit and conduit fittings he proposes to supply under this specification conforms to the requirements of UL651 and UL514, as applicable. The label or listing of the UL may be accepted as evidence that the conduit and conduit fittings conform to this requirement.

3.5.2 In lieu of the label or listing, the bidder may submit independent proof satisfactory to the contracting agency, his conduit and conduit fittings conform to the applicable requirements of the published standards including methods of tests, of UL651 and UL514, respectively.

3.5.3 Compliance with the above preliminary requirements in regards to fire and casualty hazards does not absolve the bidder from complete compliance with the requirements of this specification in order to secure acceptance of his materials.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Inspection lot. All conduit and conduit fittings of the same type, style, class, design, and size offered for delivery at one time shall be considered a lot for purpose of inspection.

4.3 Sampling. Random samples of conduit and conduit fittings shall be selected from each lot in accordance with MIL-STD-105.

4.3.1 Sampling for examination. Examination of the conduit and conduit fittings shall be based on inspection level II and an Acceptable Quality Level (AQL) of 4.0 percent defective.

4.3.2 Sampling for tests. Tests of the conduit and conduit fittings shall be based on inspection level S-2 and an AQL of 6.5 percent defective.

4.4 Examination. Each sample selected in accordance with 4.3.1 shall be examined for compliance with the requirements of this specification and UL514 or UL651. This element of inspection shall encompass all visual examinations and dimensional measurements. The UL label may be accepted as evidence of the conduit and conduit fittings conforming to the applicable UL standard.

4.5 Testing. Each sample selected in accordance with 4.3.2 shall be tested in accordance with the applicable tests in UL514 or UL651. The UL label may be accepted as evidence of the conduit and conduit fittings meeting the tests of the applicable UL standard.

4.6 Preparation for delivery inspection. The packaging, packing, and marking of the conduit and conduit fittings, and solvent cement when furnished, shall be inspected to verify conformance to the requirements of section 5.

5. PREPARATION FOR DELIVERY

5.1 Packaging. Packaging shall be level A or C as specified (see 6.2).

5.1.1 Level A. All plain conduit shall have the ends sealed with nonmetallic caps or plugs. All threaded conduit and all exterior threaded fittings, shall have the ends sealed and the threads protected with non-metallic threaded caps or with tape conforming to PPP-T-60, type IV. Fittings of like size and description shall be packaged in fiberboard boxes conforming to PPP-B-636, weather-resistant and cushioned to prevent movement. Solvent cement, when furnished, shall be packed as specified for fittings.

W-C-1094A

5.1.2 Level C. The conduit and conduit fittings shall be packaged in accordance with the supplier's standard practice. When solvent cement is furnished it shall be packaged in the standard commercial containers, and quantities normally specified by the pipe manufacturer for this product.

5.2 Packing. Packing shall be level A, B, or C, as specified (see 6.2).

5.2.1 Level A.

5.2.1.1 Conduit. The conduit shall be packed in open wood crates conforming to PPP-C-650, type II, style A. The contents shall be blocked and braced in accordance with the crate specification.

5.2.1.2 Fittings. The fittings shall be packed in close-fitting boxes conforming to PPP-B-601, overseas type, or PPP-B-621, class 2. The contents shall be blocked and braced to prevent movement.

5.2.1.3 Solvent cement. Solvent cement, when furnished, shall be packed as specified for fittings.

5.2.2 Level B. The conduit and conduit fittings, and solvent cement, when furnished, shall be packed as specified for level A except that boxes shall be the domestic type or class, as applicable.

5.2.3 Level C. The conduit and conduit fittings, and solvent cement, when furnished, shall be packed in a manner which will insure arrival at destination in satisfactory condition and which will be acceptable to the carrier at lowest rates. Containers and packing shall comply with Uniform Freight Classification rules or National Motor Freight Classification rules.

5.3 Marking.

5.3.1 Civil agencies. In addition to marking required by the contract or order, the interior packaging and shipping containers shall be marked in accordance with Fed. Std. No. 123.

5.3.2 Military agencies. In addition to markings required by the contract or order, the interior packaging and shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The plastic conduit and conduit fittings covered by this specification are in accordance with the provision of article 347 of the National Electrical Code, and are intended for wire and cable raceway applications.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Type and style conduit required (see 1.2.1).
- (c) Type, class, and design conduit fittings required (see 1.2.1 and 1.2.2).
- (d) Size required (see 1.2.3).
- (e) Length when other than specified (see 1.2.3).
- (f) When threads are required (see 3.2.2 and 3.4).
- (g) Type of cover required (see 3.2.3.1).
- (h) When solvent cement is to be provided (see 3.3).
- (i) Level of packaging and level of packing required (see 5.1 and 5.2).

6.3 Standard sizes. Sizes for conduit and classes 1, 2, 3, and 4 fittings normally available for type I material are 1/2 through 4 inch; type II, 1/2 through 6 inch; and type III, 1/2 through 6 inch. Class 6 adapters and class 10 conduit outlet bodies are normally available in sizes 1/2 through 2 inch. Class 9 conduit boxes normally have hub sizes available in 1/2, 3/4, and 1 inch.

6.4 Covers produced by some manufacturers cannot be used on outlets which are products of another manufacturer.

6.5 Classification changes. Changes in classification of the conduit and conduit fittings between this revision of the specification and the previous edition and superseded military specification MIL-C-23571A is as follows:

<u>New designation</u>	<u>Old designation</u>	<u>MIL-C-23571A</u>
Type I	Class I	Type I
Type II	Class II	Type II, Grade A
Type III	Class III	Type II, Grade B
Style A	Kind A	
Style B	Kind B	Design 45 deg. bend
Style C	Kind C	Design 90 deg. bend
Style D	Kind D	
Style E	Kind E	
Style F	Kind F	
Style G	Kind G	

W-C-1094A

Style H		Design 30 deg. bend
Class 1, Design A	Kind H	Coupling regular
Class 1, Design B	Kind R	Coupling expansion joint
Class 3	Kind K	Adapter to steel
Class 4	Kind L	
Class 5	Kind P	Junction boxes
Class 6	Design A	Junction box adapter
Class 7	Kind J	
Class 8	Kind M	
Class 9		Conduit access fittings

6.6 It is believed that this specification adequately describes the characteristics necessary to secure the desired conduit and conduit fittings, and that normally no samples will be necessary prior to award, to determine compliance with this specification. If, for any particular purpose, samples with bids are necessary, they should be specifically asked for in the invitation for bids, and the particular purpose to be served by the bid samples should be definitely stated, the specification to apply in all other respects.

MILITARY CUSTODIANS:

Army - EL
Navy - YD
Air Force - 85

Civil Agency Coordinating Activities:

GSA - FSS
FAA - SMS

Preparing activity:

Navy - YD

Project No. 5975-0511

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein. Price 35 cents each.