

W-C-575B  
January 15, 1981  
 SUPERSEDING  
 W-C-575a  
 May 23, 1962

## FEDERAL SPECIFICATION

### CONDUIT AND FITTINGS; NONMETALLIC, RIGID, BITUMINIZED FIBER; LAMINATED WALL

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

#### 1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers conduit of bituminized fiber with laminated wall, and fittings of equivalent material, for use in the installation of electrical wires and cables.

1.2 Classification. The conduit and fittings shall be of the following types, sizes, and classes (see 6.2).

Type I - Designed to be encased in concrete when installed with 600 pounds (lb) force per linear foot crushing strength.

Sizes - 2, 3, 4, 5, and 6 inches.

Type II - Designed for installation without encasement in concrete.

Class P - For usual service conditions with 1,200 lb per linear foot crushing strength.

Sizes - 2, 3, 4, 5, and 6 inches.

Class C - For unusual service conditions with 2,000 lb per linear foot crushing strength.

Sizes - 2, 3, and 4 inches.

1.2.1 Definitive part number. Items furnished in accordance with this specification shall be identified by a definitive part number (DPN). This number is intended for cataloging and ordering purposes; it is not intended for surface printing on items in accordance with this specification. The DPN shall consist of the Federal Specification symbol plus the specification part number (SPN) (see 1.2.2). The DPN shall be written as indicated below (see 6.5):

DPN	W-C-575B	XX
Federal Specification symbol	_____	
SPN (see 1.2.2)	_____	

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1.2.2 Specification part number. The SPN shall be a two position numeric code which identifies items in accordance with this specification (see table I).

TABLE I. SPN identification.

Sizes in inches for Type I conduit	Type I conduit and fittings SPN's								
	Conduit SPN	Reducer SPN	Increaser SPN	Bell Ends	Adapter SPN	Bends SPN's			
						90°	45°	22-1/2°	11-1/4°
2 inch	01	14	27	40	53	66	79	92	105
3 inch	02	15	28	41	54	67	80	93	106
4 inch	03	16	29	42	55	68	81	94	107
5 inch	04	17	30	43	56	69	82	95	108
6 inch	05	18	31	44	57	70	83	96	109

Sizes in inches for Type II, class "P"	Type II, class "P" conduit and fittings SPN's								
	Conduit SPN	Reducer SPN	Increaser SPN	Bell Ends	Adapter SPN	Bends SPN's			
						90°	45°	22-1/2°	11-1/4°
2 inch	06	19	32	45	58	71	84	97	110
3 inch	07	20	33	46	59	72	85	98	111
4 inch	08	21	34	47	60	73	86	99	112
5 inch	09	22	35	48	61	74	87	100	113
6 inch	10	23	36	49	62	75	88	101	114

Sizes in inches for Type II, class "C"	Type II, class "C" conduit and fittings SPN's								
	Conduit SPN	Reducer SPN	Increaser SPN	Bell Ends	Adapter SPN	Bends SPN's			
						90°	45°	22-1/2°	11-1/4°
2 inch	11	24	37	50	63	76	89	102	115
3 inch	12	25	38	51	64	77	90	103	116
4 inch	13	26	39	52	65	78	91	104	117

## 2. APPLICABLE DOCUMENTS

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

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards and Commercial Item Descriptions. The Index, which includes cumulative bi-monthly supplements as issued, is for sale on a subscriptions basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification, other Federal specifications, and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston; New York; Washington, DC; Philadelphia; Atlanta; Chicago; Kansas City, MO; Fort Worth; Houston; Denver; San Francisco; Los Angeles; and Seattle, WA.

(Federal Government activities may obtain copies of Federal specifications, standards, and commercial item descriptions, and the Index of Federal Specifications, Standards and Commercial Item Descriptions 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 Federal specifications and standards required by contractors 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 a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

National Electrical Manufacturer's Association (NEMA):

BC 1-1976 - Standard for Bituminous Fiber Conduit and Fittings.

(Application for copies should be addressed to the National Electrical Manufacturers Association, 2101 L Street, N.W., Washington, DC 20037.)

Underwriters' Laboratories, Inc. (UL):

UL 543 - Standard for Impregnated Fiber Conduit.

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

3. REQUIREMENTS

3.1 Description. The conduit and fittings shall be composed of a coal-tar pitch bituminous insulating compound reinforced with a multiple laminated convolute or spiral fibrous structure.

3.2 First article. When specified (see 6.2), the contractor shall furnish a complete conduit or conduit fitting of the type, size, and class as required for first article inspection and approval (see 4.2.1 and 6.4).

3.3 Standards compliance. Bituminized fiber conduit and fittings shall meet the applicable requirements of the following standards:

(a) NEMA BC 1-1976.

(b) UL 543.

3.3.1 NEMA certification. Prior to approval of the first article sample, if one is submitted, or prior to approval of the first shipment, the supplier shall submit to the contracting officer or his authorized representative, satisfactory evidence that the conduit or fittings he proposes to furnish under this specification meets the applicable requirements of NEMA BC 1-1976.

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Acceptable evidence of meeting these requirements shall be a certified test report from a nationally recognized independent testing laboratory acceptable to the contracting officer, stating that the conduit and fittings offered have been tested and conform to NEMA BC 1-1976 (see 6.3).

**3.3.2 UL certification.** Prior to approval of the first article if one is submitted, or prior to approval of the first shipment, the supplier shall submit to the contracting office or his authorized representative, satisfactory evidence that the conduit and fittings he proposes to furnish under this specification comply with the requirements of UL 543, as applicable. Acceptable evidence of meeting the requirements of UL 543 shall be the UL label or UL listing mark, or a certified test report from a recognized independent testing laboratory acceptable to the contracting officer, stating that the conduit and fittings have been tested and conform to UL 543, as applicable (see 6.3).

**3.4 Standard commercial product.** The conduit and fittings shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer's standard commercial product. Additional or better features which are not specifically prohibited by this specification but which are a part of the manufacturer's standard commercial product, shall be included in the conduit and fittings being furnished. A standard commercial product is a product which has been sold or is being currently offered for sale on the commercial market through advertisements or manufacturer's catalogs, or brochures, and represents the latest production model.

**3.5 Identical items.** All conduit and fittings of the same classification, furnished under any specific contract, shall be physically and mechanically identical. This requirement includes parts, assemblies, components, and accessories. No deviation will be acceptable without prior written approval of the contracting officer.

**3.6 Materials.** Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this specification unless otherwise specified.

**3.7 Identification marking.** Identification shall be permanently and legibly marked directly on the conduit and fittings at the source of manufacture. Identification shall include the manufacturer's name and trademark to be readily identifiable to the manufacturer. In addition, information required by NEMA BC 1-1976 or UL 543, as applicable, shall be included on the conduit or fittings.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the contractor 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.

4.1.1 Standards compliance. Proof of compliance with the standards cited in 3.3 shall be made available to the contracting officer or his authorized representative. Certification specified under 3.3.1 and 3.3.2 will be accepted as evidence of compliance.

4.2 Classification of inspection. The inspection requirements specified herein shall be classified as follows:

- (a) First article inspection (see 4.2.1).
- (b) Quality conformance inspection (see 4.2.2).

4.2.1 First article inspection. First article inspection shall be performed on one type, size, and class of conduit or fitting when a first article sample is required (see 3.2 and 6.2). This inspection shall include the examination of 4.5 and the tests of 4.6. The first article may be a standard production item from the supplier's current inventory provided the conduit or fitting meets the requirements of this specification and is representative of the design, construction, and manufacturing technique applicable to the remaining type, size, and class of conduit or fitting to be furnished under the contract.

4.2.2 Quality conformance inspection. Quality conformance inspection shall be performed on the conduit or fittings selected in accordance with 4.4. This inspection shall include the examination of 4.5 and the tests of 4.6.

4.3 Inspection lot. All units of the same type, size, and class offered to the Government at one time shall be considered a lot for purpose of inspection. The sample unit shall be one complete conduit or fitting.

4.4 Sampling. A random sample of conduit or fittings shall be selected from each lot in accordance with MIL-STD-105.

4.4.1 Sampling for examination. Examination of the conduit or fittings shall be based on inspection level II and an Acceptable Quality Level (AQL) of 2.5 percent defective.

4.4.2 Sampling for tests. Tests of the conduit or fittings shall be based on inspection level S-3 and an AQL of 4.0 percent defective.

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4.5 Examination. Each sample selected in accordance with 4.4.1 shall be examined for compliance with the requirements in section 3 of this specification. Any redesign or modification of the supplier's standard product to comply with specified requirements or any necessary redesign or modification following failure to meet specified requirements, shall receive particular attention for adequacy and suitability. This inspection shall encompass all visual examination and dimensional measurements.

4.6 Tests. Each sample selected in accordance with 4.2 shall be tested as specified in NEMA BC 1-1976 or UL 543, as applicable. Failure of the conduit or fittings to meet the requirements of the tests shall constitute cause for rejection.

4.7 Preparation for delivery inspection. An examination shall be made to determine compliance with the requirements of section 5. The sample unit shall be one unitized load fully prepared for delivery. Sampling shall be in accordance with MIL-STD-105. The inspection level shall be S-2 with an AQL of 4.0 percent defective.

## 5. PREPARATION FOR DELIVERY

5.1 Packing. Packing shall be level A or commercial as specified (see 6.2.1).

### 5.1.1 Level A.

5.1.1.1 The conduits and fittings shall be bundled into a unitized load, placed on a skid or pallet base to facilitate handling by forklift truck.

5.1.1.2 Cushioning, blocking, and bracing shall be provided, as necessary, to insure physical and mechanical protection.

5.1.1.3 The height of the unitized load shall not exceed 42 inches. The maximum dimensions of the unitized load shall be the length of the pipe by 42 inches.

5.1.1.4 The unitized load shall be secured by girthwise strapping. Pipe 5 feet and under shall have a minimum of two straps. Pipe over 5 feet shall be secured with a minimum of three straps. Straps shall be secured no less than 18 inches from each end. All additional straps shall be evenly spaced between the end straps.

5.2 Commercial. The conduits and fittings shall be packed in such a manner to insure arrival at destination in a satisfactory condition. Preparation for delivery shall comply with applicable carrier rules and regulations.

### 5.3 Marking.

5.3.1 Civil agencies. Marking shall be as specified in the contract or order.

5.3.2 Military agencies. Marking shall be in accordance with MIL-STD-129.



## 6. NOTES

6.1 Intended use. The conduit and fittings covered by this specification are intended for use as wire and cable raceways in an underground electrical power distribution system.

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

- (a) Title, number, and date of this specification.
- (b) Type, size, and class of conduit or fittings required (see 1.2).
- (c) When a first article sample is required for inspection and approval (see 3.2, 4.2.1, and 6.3).
- (d) Level of packing required (see 5.1).

6.3 Contract data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423 and invokes the provisions of paragraph 7-104.9(n) of the Defense Acquisition Regulation (DAR), the data requirements identified below will be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the Contract Data Requirements List (DD Form 1423) incorporated into the contract. When the provisions of DAR 7-104.9(n) are not invoked, the data specified below shall be delivered in accordance with the contract requirements. Deliverable data required by this specification is cited in the following paragraphs:

<u>PARAGRAPH</u>	<u>DATA REQUIREMENTS</u>	<u>APPLICABLE DD-1664</u>
3.3.1, 3.3.2, and 4.1.1	Certificate of compliance	DI-E-2121

(Copies of Data Item Descriptions required by contractors in connection with specific procurement functions should be obtained from the contracting officer.)

6.4 First article. When a first article is required, it shall be tested and approved under the appropriate provisions of paragraph 7-104.55 of the DAR. The first article should be a first production item consisting of one complete conduit or fitting or it may be a standard production item from the contractor's current inventory as specified in 4.2.1. The contracting officer should include specific instructions in all procurement documents regarding arrangement for examinations, tests, and approval of the first article.

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6.5 Definitive part number, example. The Federal specification number and the SPN combine to form the DPN.

Example:

DPN	W-C-575B	01
Federal Specification		
Type I, 2-inch conduit (see 1.2.2)	_____	

MILITARY CUSTODIANS:

Army - ME  
Navy - YD  
Air Force - 99

CIVIL AGENCY COORDINATING ACTIVITIES:

COMMERCE - NBS  
GSA - FSS  
USDA - AFS

User activities:

Army - CE  
Navy - MC

Preparing activity:

Navy - YD

Project No. 5975-0555

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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.