

**MIL-C-17124C**

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SUPERSEDING

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AND MIL-C-17124A

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**MILITARY SPECIFICATION****CORD, DETONATING**

*This specification is mandatory for use by all Departments and Agencies of the Department of Defense.*

**1. SCOPE**

1.1 This specification covers detonating cord for use in military blasting demolition operations, cutting charges (bombs), initiating devices and explosive initiating grains (harness assembly and so forth, for warhead application).

1.2 **Classification.** Detonating cord shall be of the types and class as shown on table I.

**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.

**SPECIFICATIONS****FEDERAL**

- L-P-390 — Plastic, Molding Material, Low and Medium.
- QQ-S-781 — Strapping, Flat; Steel.
- PPP-B-601 — Boxes, Wood, Cleated Plywood.

PPP-B-676 — Boxes, Set-up, Paper Board.

TT-I-559 — Ink, Marking Stencil, Opaque for Porous Surfaces (Wood Books, Fiber Cartons).

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- MIL-P-223 — Powder, Black.
- MIL-T-234 — Trinitrotoluene (TNT), Block.
- MIL-P-387 — Pentaerythrite Tetranitrate (PETN).
- MIL-R-398 — RDX.
- MIL-B-2427 — Boxes, Ammunition Packing, Wood Nailed.
- MIL-A-2550 — Ammunition and Special Weapons; General Specification for.
- MIL-I-45607 — Inspection Equipment, Supply and Maintenance of.

**MIL-C-17124C****STANDARDS****MILITARY**

MIL-STD-105 — Sampling Procedures and Tables for Inspection by Attributes (ABC-STD-105).

MIL-STD-109 — Quality Assurance Terms and Definitions.

MIL-STD-1168 — Lot Numbering of Ammunition.

MIL-STD-1235 — Single and Multilevel Continuous Sampling Procedures and Tables for Inspection by Attributes.

**FEDERAL**

FED-STD-595 — Colors.

**DRAWINGS****ARMY**

8796522 — Marking Diagram and Sealing, For Wood Packing Boxes.

9211789 — Ink, Marking Opaque for Porous Surfaces (For Automatic or Semi-automatic Machine Application).

**PUBLICATIONS****ORDNANCE CORPS****ET-8816048 — Equipment Tabulation.**

(Copies of specifications, standards, drawings and publications 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.

**CODE OF FEDERAL REGULATIONS**

49 CFR 71-90 — Interstate Commerce Commission Rules and Regulations for the Transportation of Explosives and other Dangerous Articles.

(The Interstate Commerce Commission Regulations are now a part of the Code of Federal Regulations (1949 edition and revisions) available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Orders for the above publication should cite "49 CFR 71-90 (latest revision).")

**3. REQUIREMENTS****3.1 Material.**

**3.1.1 PETN (Applicable to Type I).** The PETN used in the manufacture of the detonating cord shall comply with MIL-P-387. Applicable class shall be specified in the contract.

**3.1.2 RDX (applicable to Type II).** The RDX used in the manufacture of detonating cord shall comply with MIL-R-398, Type I or II, Class C.

**3.1.3 Polyvinylchloride (PVC) (applicable to Type III).** The PVC filler used in the production of inert loaded detonating cord shall be of standard commercial grade and quality.

**3.1.4 Thermoplastic resin.** The thermoplastic resin used for coating the cord shall comply with Specification L-P-390. The plastic outer covering shall be of smooth texture and unless otherwise specified unpigmented and colorless.

**3.2 Construction.** The construction of the detonation cord for the specified type shall be as indicated in table I.

**3.3 Breaking strength.** The detonating cord shall have the minimum breaking strength specified in table I, when tested as specified in 4.3.1.

**3.4 Detonating velocity (applicable to Type I and Type II).** The detonating ve-

locity shall be not less than 5,900 meters per second when tested as specified in 4.3.2. The velocity of detonation of the detonating cord used as a standard for comparison shall be measured electronically.

**3.5 Detonation of cord (applicable to Type I and Type II).** The detonating cord shall effectively and completely detonate when tested as specified in 4.3.2.

**3.6 Propagation of detonation (applicable to Type I).** The detonating cord shall reliably propagate detonation from a main line to branch line when tested as specified in 4.3.3.

**3.6.1 Detonation of TNT (applicable to Type Ib and Type Ic and Type Ij only).** Detonating cord shall perform reliably when tested as specified in 4.3.2.4.

**3.7 Sensitivity (applicable to Type I and Type II only).**

TABLE I.

Type	Class	Minimum weight of explosive core per 1000 feet	Inner construction	Finish	Diameter inches maximum *	Maximum weight of finished core per 1000 feet	Breaking strength minimum
I	a	5 pound <sup>2</sup> PETN	Textile	Plastic Coating	0.175 ±.010	14 pounds	60 pounds
I	b	6 pounds PETN	Textile	Plastic Coating	0.216	19 pounds	175 pounds
I	c	6.4 pounds PETN	Textile	Plastic Coating	0.200 ±.005	18 pounds	175 pounds
I	d	7 pounds PETN	Textile	Plastic Coating	0.200	19 pounds	110 pounds
I	e	7 pounds PETN	Textile	Plastic Coating	0.235	22 pounds	190 pounds
I	f	12.5 pounds PETN	Textile	Plastic Coating	0.245	26 pounds	75 pounds
I	g	12.5 pounds PETN	Textile	Plastic Coating	0.270	33 pounds	190 pounds

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TABLE I—(Continued)

Type	Class	Minimum weight of explosive core per 1000 feet	Inner construction	Finish	Diameter inches maximum *	Maximum weight of finished core per 1000 feet	Breaking strength minimum
I	h	14.5 pounds PETN	Textile	Plastic Coating	0.235	29.5 pounds	110 pounds
I	j	6.4 pounds PETN	Textile w/ plastic sheath <sup>(3)</sup>	Textile w/ wax <sup>(4)</sup>	0.200 ±.010 -.005	18 pounds	150 pounds
II	a	7 pounds RDX <sup>1</sup>	Textile	Plastic Coating	0.216	19 pounds	175 pounds
II	b	8.5 pounds RDX <sup>1</sup>	Textile	Plastic Coating	0.235	22 pounds	190 pounds
III	All type III detonating cord shall be inert loaded with PVC filler. Weight, construction, finish and breaking strength requirements shall be the same as indicated above for the Type and Class specified to be inert. <sup>(6)</sup>						

<sup>1</sup> For identification purposes, the RDX Core shall be dyed pink with one percent maximum of water soluble dye suitable for combination with the ingredients of the core.

<sup>2</sup> In order to change pounds per 1000 feet to grains per foot multiply the number of pounds by 7.

<sup>3</sup> Textile shall be rayon.

<sup>4</sup> Wax shall be olive drab in color.

<sup>5</sup> Outer finish shall be blue (#35109 Fed. Std. 595) in color.

\* If not otherwise indicated.

**3.7.1 Flame.** The detonating cord shall not detonate when tested as specified in 4.3.4.1.

**3.7.2 Impact.** The detonating cord shall not detonate through the ends of the sample when tested as specified in 4.3.4.1.

**3.8 Waterproofness (Applicable to Type I and Type II only).** The detonating cord shall withstand immersion in water for not less than 72 hours and function satisfactory when tested as specified in 4.3.5.

**3.8.1 Waterproofing ends (Applicable to Type I and II only).** The ends of each length of cord shall be sealed by dipping to a depth of one inch in a suitable waterproofing compound, or by any other ap-

proved method affording comparable protection.

**3.9 Flexibility.** The plastic coating shall not crack when tested as specified in 4.3.6.

**3.10 Diameter.** The diameter shall be as specified in table I. This requirement does not apply to waterproofed ends.

**3.11 Temperature conditions (see 4.2 initial production only).** The detonating cord shall be exposed to a temperature + 125° F and 360 BTU/sq ft/hr solar radiation for a period of 4 hours. After the detonating cord has been exposed to the above conditions, the detonating cord shall show no change in physical characteristics such as color, form, dimensions, etc. Then

the detonating cord shall be exposed to a temperature of  $-65^{\circ}\text{F}$  for a period of 72 hours. After the detonating cord has been exposed to a temperature of  $-65^{\circ}\text{F}$  for a period of 72 hours, the detonating cord shall show no change in physical characteristics such as color, form, dimensions, etc. Then the detonating cord shall be detonated and pass the requirements of paragraph 3.4.

**3.12 Workmanship.** Workmanship shall be of the highest grade throughout and in accordance with the best standard practice.

#### 4. QUALITY ASSURANCE PROVISIONS

**4.1 General quality assurance provisions.** 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, the supplier may utilize his own facilities or any commercial laboratory acceptable to 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. Reference shall be made to MIL-STD-109 in order to define the terms used herein. The provisions of MIL-A-2550 shall apply.

**4.1.1 Submission of product.** At the time the completed lot of product is submitted to the Government for acceptance the contractor shall supply the following information accompanied by a certificate which attests that the information provided is correct and applicable to the product being submitted:

- (a) A statement that the lot complies with all quality assurance provisions specified within this specification.
- (b) Number of units of product inspected.

- (c) Results obtained, by defect code, for all inspections performed.

- (d) Drawing, specification number and date, together with an identification and date of changes.

- (e) Certificates of conformance on all material purchased by the contractor when such material is controlled by Government or commercial specifications referenced in any of the contractual documents.

- (f) Number of items in the lot.

- (g) Date submitted.

The certificate shall be signed by a responsible agent of the certifying organization. The initial certificate submitted shall be substantiated by evidence of the agent's authority to bind his principal. Substantiation of the agent's authority will not be required with subsequent certificates unless, during the course of the contract, this authority is vested in another agent of the certifying organization.

**4.1.2 Government verification.** Using the contractor's written quality assurance procedure, this detail specification, the applicable drawings and other contractual documents as a guide, the Government inspector shall verify at unscheduled intervals all quality assurance operations performed by the contractor. Verification will be performed to the extent necessary to assure compliance with the contractual requirements. Severity of Government inspection of individual characteristics will be directly related to the seriousness of the classification assigned. In no instance will a characteristic classified "critical" be accepted solely on the basis of the contractor's records.

**4.1.3 Initial production inspection.**

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**4.1.3.1 Submission.** Prior to the start of regular production the contractor shall submit an initial production, sample to a Government approved facility as designated by the Contracting Officer (see 6.4) for evaluation in accordance with the provisions of 4.1.3.2. The initial production sample shall consist of five spools which have been produced by the contractor or furnished by a supplier and which have been manufactured using the same production processes, procedures and equipment which will be used in fulfilling the contract. All materials, including packaging and packing, shall be obtained from the same sources of supply as will be used in regular production. The sample shall be accompanied by certificates of conformance for materials. An initial production sample, or portion thereof, as directed by the contracting officer, shall also be submitted whenever there is a lapse in production for a period in excess of 90 days or whenever a change occurs in manufacturing process, material used or source of supply such as to significantly affect product uniformity as determined by the Government. Prior to submission, the contractor shall inspect the sample to the degree necessary to assure that it conforms to the requirements of the contract and submit a record of this inspection with the sample. A sample containing known defects will not be submitted unless specifically authorized by the contracting officer.

**4.1.3.2 Inspections to be performed.** The spools will be subjected by the Government to any or all of the examinations specified in this specification and any or all requirements of the applicable drawing.

**4.1.3.3 Rejection.** If any sample fails to comply with any or all of the applicable requirements, the initial production sample shall be rejected. The Government reserves the right to terminate its inspection upon any failure of any component in the sample to comply with any of the stated requirements. In the event of rejection, the Government reserves the right to require the

contractor to take corrective action and submit a new initial production sample or portion thereof. Until an initial production sample is accepted, the contractor is in no way authorized by the Government to initiate regular production unless otherwise directed by the Contracting Officer.

**4.2 Inspection provisions.**

**4.2.1 Lot formation.** The term "lot" as used throughout this specification refers to an inspection lot, which is defined as an essentially homogeneous collection of units of product from which a representative sample is drawn and inspected to determine conformance of the lot with applicable requirements. The sample selected shall represent only that quantity of units from which the sample was drawn and shall not be construed to represent any prior or subsequent quantities presented for inspection. Homogeneity shall be considered to exist provided the lot has been produced by one manufacturer, in one unchanged process, in accordance with the same drawing, specification, or revision thereof. Changes to either the process, specification, or drawing not affecting safety, performance, interchangeability or storage, as determined by the Government inspector, shall not be deemed to alter the homogeneity of the lot. Inspection lots shall comply with MIL-STD-105 and shall be numbered in accordance with MIL-STD-1168.

Unless otherwise approved by the contracting officer, the inspection lot size of major assemblies or end items deliverable under the contract shall be not less than the smallest weekly estimate of quantities contractually scheduled for production during the contract period nor more than the largest quantity contractually scheduled for delivery during any month of the contract period. Inspection lots for components or subassemblies, other than the items of delivery, shall be homogeneous and of a size convenient to the contractor.

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4.2.2 *Examination.* Inspection for Critical defects (and Major defects, when so specified,) shall be 100 percent. Sampling plans and procedures for Major and Minor defects shall be in accordance with MIL-STD-105 except that continuous sampling plans in accordance with MIL-STD-1235 may be used if approved by the procuring activity. Also, at the option of the procur-

ing activity, AQL's and sampling plans may be applied to individual characteristics listed using an AQL of 0.65 percent for each Minor defect and an AQL of 0.40 percent for each Major defect, except where 100 percent inspection is specified. Equipment necessary for the performance of the inspections listed shall be in accordance with 4.2.4.

4.2.2.1 *Detonating cord or spool.*

<i>Categories</i>	<i>Defects</i>	<i>Method of inspection</i>	<i>Code No. (see 6.2)</i>
Critical:	None defined.		
Major:	None defined.		
Minor:	AQL 1.50 percent		
201.	Cord spliced excessively (see 5.1.2) .....	Visual	01001
202.	Foreign matter (see 3.11) .....	Visual	01002
203.	Ends of cord not sealed .....	Visual	01003

4.2.2.2 *Box, Paper or Fiber, sealed.*

<i>Categories</i>	<i>Defects</i>	<i>Method of inspection</i>	<i>Code No.</i>
Critical:	None defined.		
Major:	None defined.		
Minor:	AQL 1.50 percent		
201.	Sealing strip torn, badly wrinkled or otherwise fails to seal box completely .....	Visual	02001
202.	Box torn, cut or punctured .....	Visual	02002
203.	Contents loose .....	Visual	02003
204.	Marking missing, misleading or unidentifiable .....	Visual	02004

4.2.2.3 *Sealed wooden packing box.*

<i>Categories</i>	<i>Defects</i>	<i>Method of inspection</i>	<i>Code No.</i>
Critical:	None defined.		
Major:	AQL 0.40 percent		
101.	Box damaged to the extent that contents are exposed or likely to be exposed .....	Visual	03001
102.	Strapping missing, broken or loose .....	Visual	03002

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<i>Categories</i>	<i>Defects</i>	<i>Method of inspection</i>	<i>Code No.</i>
Minor:	AQL 1.00 percent		
201.	Contents loose .....	Manual	03003
202.	Marking misleading or unidentifiable .....	Visual	03004

**4.2.3 Testing.**

**4.2.3.1 Sampling.** Five spools shall be randomly selected from the lot.

**4.2.3.2 Breaking strength—Major defect (3.3).** From each of the spools selected in accordance with 4.2.3.1, approximately 18 inches of detonating cord shall be tested. If any sample fails to comply with the requirement, the lot shall be rejected. Code No. 04001.

**4.2.3.3 Detonation and detonation velocity—Major defect (see 3.4 and 3.5).** Approximately 6 feet of detonating cord shall be selected for this test from each spool selected in accordance with 4.2.3.1. If any sample fails to meet the requirements of 3.4 and 3.5, the lot shall be rejected.

Velocity	05001
Detonation	06001

**4.2.3.4 Propagation of detonation—Major defect (see 3.6).** Approximately 3 feet of detonating cord from each of the spools selected in accordance with 4.2.3.1 shall be tested. If any sample fails to comply with the requirement, the lot shall be rejected.

**4.2.3.5 Sensitivity.**

**4.2.3.5.1 Flame—Major defect (see 3.7.1)—Code No. 08001.** Approximately 6 inches of detonating cord from each of the spools selected in accordance with 4.2.3.1 shall be tested. If any sample fails to comply with the requirement, the lot shall be rejected.

**4.2.3.5.2 Impact—Major defect (see 3.7.2) Code No. 09001.** Approximately 6 inches of

detonating cord from each of the spools selected in accordance with 4.2.3.1 shall be tested. If any sample detonates thru from the center to either end, the lot shall be rejected.

**4.2.3.6 Waterproofness—Major defect (see 3.8) Code No. 10001.** One continuous piece 80 feet long shall be selected (if the lot is comprised of 50 foot spools two 50 foot spools shall be selected) for this test. If the sample fails to comply with the requirement, the lot shall be rejected.

**4.2.3.7 Flexibility—Major defect (see 3.9) Code No. 11001.** Approximately 12 feet of detonating cord from each of the spools selected in accordance with 4.2.3.1 shall be tested. If any sample fails to comply with the requirement, the lot shall be rejected.

**4.2.3.8 Diameter—Major defect (see 3.10) Code No. 12001.** The sample selected in accordance with 4.2.3.4 shall be used for this test. If the sample fails to comply with the requirement, the lot shall be rejected.

**4.2.3.9 Temperature conditions (see 3.11) Major defect—Code No. 13001.** A 10 foot sample shall be selected for this test. If the sample fails to comply with the requirements of paragraph 3.11, the initial production sample shall be rejected.

**4.2.4 Inspection Equipment.** Equipment Tabulation Number ET-8816048 identifies the inspection equipment required to perform the examinations and tests prescribed in this section. The contractor shall design inspection equipment in accordance with the instructions in 6.3.

**4.2.4.1 Government rights to documentation.** Inspection equipment drawings and lists provided and revised in accordance with the requirements of the ET may be used by DOD activities for design, procurement, manufacture, testing, evaluation, production and receiving inspection, overhaul, shipping, storage, identification of stock, ordering and storage of replacement parts, inspection of items at overhaul, general maintenance of equipment, construction, survey and whenever inspection equipment drawings are needed.

**4.2.4.2 Supply and maintenance.** Supply and maintenance of the equipment listed in the ET shall be in accordance with MIL-I-45607.

**4.2.4.3 Government use of contractor's inspection equipment.** The contractor shall make available to the Government all inspection equipment necessary for determining conformance with contract requirements. Personnel for operating the equipment and verification of its accuracy, shall be supplied by the contractor for the performance of examination or test by the Government.

### 4.3 Test methods and procedures.

**4.3.1 Breaking strength.** Each piece shall be tested at 70 degrees F. plus or minus 5 degrees F. in a machine having 1 inch diameter, minimum split-barrel type grips or equal. There shall be approximately seven inches of detonating cord between the grips. The test speed shall be twelve inches per minute.

#### 4.3.2 Detonation and detonating velocity.

**4.3.2.1 Type I.** A number 6 commercial blasting cap shall be attached parallel, and in close contact with the piece of dry detonating cord by means of adhesive tape, and detonated.

**4.3.2.2 Type II.** A number 6 commercial blasting cap shall be securely attached to a

square cut dry end of the cord using a butt joint with the end of the blasting cap in line with the cord and in immediate contact with the explosive core and detonated.

**4.3.2.3 Examination.** The detonating velocity of each piece of detonating cord shall be determined by utilizing the equipment specified on ET-8816048. After determining the detonation velocity, a visual inspection shall be performed to ascertain that detonation of the cord is complete.

**4.3.2.4 Detonation of TNT (Applicable to Type Ib,j and Ic).** The cord shall be snugly tied around a TNT demolition block, conforming to MIL-T-234, with 3 turns plus a half hitch on the end leading to the detonating cap and the other end securely beneath all the turns. The TNT shall be detonated.

**4.3.3 Propagation of detonation (Applicable to Type I).** The samples shall be attached by a girth hitch to the main line. When the main line is detonated by any satisfactory means, all branch lines shall be initiated.

#### 4.3.4 Sensitivity.

**4.3.4.1 Flame.** Four ounces of black powder complying with MIL-P-223, Class 5, shall be spread around and over (including the open ends) each piece of detonating cord and ignited.

**4.3.4.2 Impact.** Each piece of detonating cord shall be placed on a steel anvil and a 25 pound bar with a diameter of 2 inch at the striking face shall be dropped from a height of 16 feet onto each piece.

**4.3.5 Waterproofing.** The sample, except for one end approximately five feet long which shall be kept dry, shall be immersed in water not more than one foot in depth for not less than 72 hours. After immersion, the sample shall be cut into a fifty foot length (including the dry end) for use as trunk line and ten three foot sections for

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branch lines. Beginning fifteen feet from the dry end of the trunk line, the branch lines shall be attached at three foot intervals by means of girth hitch knots. A visual inspection shall be performed to ascertain that detonation of the cord is complete.

**4.3.6 Flexibility.** Each piece of plastic coated detonating cord with an 0.25" OD or less shall be wrapped five times around a 1/4 inch mandrel. Each piece of cord with an OD greater than .25" shall be wrapped five times around a 3/4 inch mandrel. All samples will be conditioned for 72 hours at minus 65°F. In addition, the type Ic detonating cord shall be tied in different hitches and connections normally encountered in blasting and demolition operations. The cord shall be tested within one minute after removal from conditioning chamber.

**4.3.7 Diameter.** Each sample shall be accurately measured to determine compliance with the applicable requirement.

**4.3.8 Temperature conditions.** A 10 foot long detonating cord test sample shall be coiled in a single circle approximately 3 ft. in diameter, and placed in a horizontal plane on a perforated stainless steel tray. The cord shall be exposed to + 129°F ambient air with 360 BTU/sq ft/hr solar radiation condition for 4 hours in the test chamber. The intensity of solar radiation shall be monitored once/hr during the 4 hours exposure period. Upon completion of the solar radiation test, the chamber ambient temperature shall be restored to laboratory ambient level (+72°F); the test shall be removed, visually inspected, and then placed in the test chamber for exposure to - 65°F. The detonating cord shall be oriented horizontally in a perforated stainless steel basket during the 72 hours exposure at - 65°F. Test chamber ambient temperature shall be reduced to - 65°F and maintained there as specified for 3 days, after which the temperature shall be gradually elevated to laboratory ambient conditions. The test sample shall then be removed from the chamber,

and the required visual inspection of the detonating cord shall be performed. The sample shall then be detonated in accordance with paragraph 4.3.2 (see 6.6).

## 5. PREPARATION FOR DELIVERY

### 5.1 Preservation and packaging.

#### 5.1.1 Spools.

**5.1.1.1 Fifty-foot lengths.** The 50 foot length of detonating cord shall be furnished on a fiberboard or chipboard core 8 plus or minus 1/4 inch outside diameter, and 1.30 plus or minus 0.05 ounces in weight. The detonating cord shall be wound on the cord in three layers, pressed so that the adjacent coils adhere to each other. The cord shall not extend beyond the ends of the core more than 3/16 inch, and the maximum diameter of the completed coil shall not exceed 2 1/2 inches.

**5.1.1.2 One hundred-foot lengths.** The 100 foot lengths shall be furnished on commercial spools.

**5.1.1.3 Five hundred and 1000-foot lengths.** The 500 and 1000 foot lengths shall be furnished on commercial spools.

**5.1.2 Splicing all types.** Two splices maximum shall be permitted per 1000 feet. One splice maximum shall be permitted per 500 feet. No splice shall be permitted for 100 or 50 feet.

#### 5.1.3 Packaging.

**5.1.3.1 Level A.** Each spool of detonating cord as specified in 5.1.1 shall be packaged in unit containers conforming to Specification PPP-B-676, Type I or II, Variety 2 or PPP-B-636, W6. The detonating cord shall be wrapped and cushioned to the extent necessary to provide protection from hazards of contamination and physical damage encountered in handling and storage. Boxes shall be in accordance with closure instructions contained in the appendix of the applicable box specification.

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5.1.3.2 *Level C.* Spools of detonating cord as specified in 5.1 shall be packaged to afford protection from contamination and physical damage during direct shipment from source of supply to the first receiving activity for immediate use.

## 5.2 Packing.

5.2.1 *Level A.* Detonating cord packaged according to 5.1.3.1 shall be packed in wooden ammunition boxes conforming to MIL-B-2427 Grade A, Type I, Class I. Pack three (3) unit containers per wooden ammunition box. Boxes shall be closed and strapped in accordance with instructions

contained in the appendix of the box specification.

5.2.2 *Level C.* Detonating cord packaged as specified in 5.1.3.2 shall be packed in accordance with Code of Federal Regulations 49 CFR 71-90 and afford adequate protection from damage during shipment from source of supply to the first receiving activity. The shipping container shall comply with carrier rules and regulations applicable to the mode of transportation.

5.3 **Marking.** Each unit box shall be labeled, stamped or printed with the following:

1—CORD, DETONATING, (No. Ft.) Class, type,  
LOT NO. DATE PKD (MO/YR)

Letters shall be upper case. Letter and number size min  $\frac{1}{4}$  inch. Labels shall be white gummed stock. Stamping ink shall be black conforming to Specification TT-I-559 or drawing 9211789. Labels shall be coated on exterior with waterproof adhesive conforming to MIL-A-3941 on Level A shipments.

Exterior boxes shall be marked in accordance with drawing 8796522. The ICC marking shall be *CORDEAU DETONANT FUSE—HANDLE CAREFULLY.*

## 6. NOTES

6.1 **Ordering data.** Procurement documents shall specify the following:

- (a) Title, number and date of this specification.
- (b) Type and length required (see Table I).
- (c) Level of preservation and packaging and level of packing required (see 5.1.3, 5.2).

(d) *Data cards.* Data cards shall be prepared for each lot in accordance with MIL-STD-1167.

6.2 **Inspection code numbers.** The five digit code numbers assigned to the inspections herein are to facilitate future data collection and analysis by the Government.

6.3 **Inspection equipment.** The contractor shall design inspection equipment as required by the referenced Equipment Lists (EL) in accordance with the instructions of paragraph 6.3.1 through 6.3.7.

6.3.1 *Inspection equipment lists.* Inspection equipment lists indicate the availability of inspection equipment designs by showing in the "number" column of the list of inspection equipment (SMUPA Form 1010) the numbers of drawings of existing equipment designs or codes as indicated in paragraph 6.3.2. Design action required of the contractor with respect to the different types of drawings that may be listed is described in paragraphs 6.3.3 and 6.3.4. Action required by the contractor with respect to commercial inspection equipment is de-

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scribed in 6.3.5. The contractor will be required to prepare detailed drawings in accordance with 6.3.6 for all the equipment coded as "Contractor Design" in the number column. These contractor designs must be approved by the Government prior to fabrication or procuring of the equipment. Designs shall be submitted for approval as specified in 6.3.7.

**6.3.2 Inspection equipment list codes.** The inspection equipment as defined in 6.3.3, 6.3.4, 6.3.5 and 6.3.6 will be designated in the EL by the following codes:

CDAF — Contractor's design responsibility on Army format in accordance with MIL-D-45608.

CDCF — Contractors design responsibility on contractor format.

AD — Army design.

ADMU — Army design, mandatory for use.

CE — Commercial equipment.

SCD — Specification control drawing.

**6.3.3 Army designs.** Army designs are reflected on detailed drawings which completely depict all the information necessary for the fabrication of the item of inspection equipment. The contractor need provide no design when an Army design is listed for an item of inspection equipment. Army designs fall into two basic classifications, mandatory and non-mandatory. When an inspection equipment list references mandatory Army designs, the contractor shall comply with, and use these designs accordingly. The contractor may, however, in connections with non-mandatory designs and with the approval of the Government, design alternate inspection equipment or use

comparable commercial equipment to facilitate his operations. Such contractor prepared designs (see 6.3.6) or commercial equipment selections (see 6.3.5) must be approved by the Government prior to fabrication or procuring of the equipment. Designs shall be submitted for approval as specified in 6.3.7.

**6.3.4 Specification control drawings.** Specification control drawings depict the minimum equipment requirements in outline, descriptive, diagrammatic or pictorial form only and specify the required performance or other characteristics. Contractors must prepare detailed drawings (see 6.3.6) of their designs in support of specification control drawings. These contractor prepared designs must be approved by the Government prior to the fabrication or procuring of the equipment. Commercial equipment meeting the requirements of specification control drawings must be described in sufficient detail to permit identification and evaluation by the Government (see 6.3.5). Designs shall be submitted for approval as specified in 6.3.7.

**6.3.5 Commercial equipment.** Commercial equipment is inspection equipment that has universal application for a specific function. It is comprised of items commonly used by industry and Government. Contractors normally are not required to furnish drawings of commercial inspection equipment, but a list of such equipment must be approved by the Government. When commercial inspection equipment requires the use of special fixturing, the design of this fixturing shall be considered as part of the total design, and 6.3.6 shall apply. In the latter case, only those portions of the commercial equipment need be detailed in the designs as are necessary to completely fabricate, calibrate, and operate the total item of inspection equipment. Lists and fixturing designs shall be submitted for approval as specified in 6.3.7.

**6.3.6 Contractor designs.** Contractor designs are designs of inspection equipment

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for which the Government has assigned design responsibility to the contractor. Contractor designs shall be supported by detailed drawings which depict all information necessary to completely fabricate, calibrate and operate an item of inspection equipment. This requires that the necessary views, dimensions, materials, finish, notes, operating and calibration instructions be properly depicted in accordance with approved practices to the extent that further calculation or clarification will not be required. Contractor designs identified as CDCF may be developed on the format the contractor normally employs in his equipment design procedure provided such format reflects the detail and information specified above. Contractor designs identified as CDAF shall comply with the format and requirements of MIL-D-45608, and in addition, contain the detail and information specified above.

**6.3.7 Submission of contractor designs.** Unless otherwise specified on the EL, all designs of equipment for inspection of defects classified as critical and major shall be submitted for approval to the Commanding Officer, Picatinny Arsenal, ATTN: SMUPA-ND. All other designs of inspection equipment shall be approved by the inspection element of the agency administering the contract; submission shall be as directed by the Contracting Officer. Partial submission of inspection equipment designs is permissible and encouraged. However, the Arsenal completion date for design re-

view will be based on the date of the final submission of designs. Picatinny Arsenal design review will be accomplished normally within one month after receipt.

**6.4 Submission of initial production sample.** Instructions as to the location for evaluation of initial production shall be obtained from the contracting officer. Upon receipt of such request, the contracting officer shall advise Picatinny Arsenal and instructions will be issued accordingly.

**6.5 Certain provisions referring to Type I Class C Detonating Cord of this specification are the subject of international standardization agreement ABC Army Standard 146.** When Amendment, revision or cancellation of this specification is proposed, the departmental custodians will inform their respective Departmental Standardization Office (Dep SO) so that appropriate action may be taken respecting the international agreement concerned.

**6.6 The following have been found satisfactory for use in monitoring the intensity of solar radiation:**

- (a) Pyroheliometer, Eppley Laboratory, Inc. Model 10, S/N 27370, Horizontal Surface Type or equal.
- (b) Portable Potentiometer, Leeds & Northrop, FA #Q3440, S/N 1026920 or equal.

**Custodian:**

Army—MU  
Navy—OS

**Review activities:**

Army—MU  
Navy—OS

**User activities:**

Army—MO  
Air Force—70  
Navy—YD, MC, CG

International (see 6.5)

**Preparing activity:**

Army—MU  
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