

MIL-C-0017124D(AR)
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MILITARY SPECIFICATION

CORD, DETONATING

This limited coordination Military Specification has been prepared by the US Army Armament, Munitions and Chemical Command based upon currently available technical information but it has not been approved for promulgation as a coordinated revision of MIL-C-17124. It is subject to modification. However, pending its promulgation as a coordinated Military Specification, it may be used in acquisition.

1. SCOPE

1.1 Scope. This specification covers the requirements, quality assurance provisions and packaging for Detonating Cord (see 6.1).

1.2 Classification. The detonating cord covered by this specification shall be of the following types and classes as specified (see Table I).

Type I - contains PETN as major component of explosive core.

Type II - contains RDX as major component of explosive core.

Type III - contains inert powder as a major component of inert core.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. Unless otherwise specified (see 6.2), the following specifications, standards and handbooks of the issue listed in that issue of the

FSC 1375

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Armament Research and Development Center, Attn. DRSMC-QA, Dover, New Jersey 07801 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

- L-P-390 - Plastic, Molding Material, Low and Medium.
- MMM-A-178 - Adhesive, Paper Label, Water Resistant.
- MMM-A-179 - Adhesive, Paper Label, Water Resistant, Water Emulsion Type.
- PPP-T-45 - Tape, Gummed, Paper, Reinforced and Plain, For Sealing and Securing.
- PPP-T-60 - Tape, Packaging, Waterproof
- PPP-B-636 - Box, Fiberboard.
- TT-I-1795 - Type II or III-Ink, Marking, Stencil, Opaque (Porous and Non-Porous Surfaces).

MILITARY

- MIL-P-116 - Preservation, Methods of.
- MIL-B-117 - Bag and Sleeve, Interior Packaging.
- MIL-P-223 - Powder, Black.
- MIL-P-387 - Pentaerythrite Tetranitrate (PETN).
- MIL-R-398 - RDX.
- MIL-B-2427 - Boxes, Ammunition Packing, Wood Nailed.
- MIL-C-46246 - Charge, Demolition, TNT, Block 1/4 Pound, 1/2 Pound, and 1 Pound.
- MIL-A-48078 - Ammunition, Standard Quality Assurance Provisions, General Specification for.
- MIL-F-50449 - Filler, Sheet Form (For Use in Ammunition Containers).

STANDARDS

FEDERAL

- FED-STD-595 - Colors

MILITARY

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

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- MIL-STD-1168 - Lot Numbering of Ammunition
- MIL-STD-1169 - Packaging, Packing and Marking for.
Shipment of Inert Ammunition
Components.

2.1.2 Other Government documents, drawings and publications.
The following other Government documents, drawings, and
publications form a part of this specification to the extent
specified herein.

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).

(Copies of specifications, standards, drawings and publications
required by manufacturers 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 100-199 - Department of Transportation Rules
and Regulations.

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(The code of Federal Regulations is available from the Superintendent of Documents, US Government Printing Office, Washington, DC 20402.) Orders should specify "49 CFR 71-90" (latest revision).

2.3 Order of precedence. In the event of a conflict between the text of this specification and the reference cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 General. The detonating cord shall comply with requirements given in this detailed specification as well as applicable drawings and referenced specifications.

3.2 Material.

3.2.1 PETN (applicable to Type I). The PETN used in the manufacture of the detonating cord shall comply with MIL-P-387, Class 1.

3.2.2 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 3.

3.2.3 Inert filler (applicable to Type III). The powder used in the production of inert detonating cord shall be inert and the filler shall have a blue color.

3.2.4 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.

3.3 Construction. The construction of the detonating cord for the specified type shall comply with Table I when tested as specified in 4.4.2.5.

3.4 Detonating velocity (applicable to Type I and Type II). The detonating velocity shall be not less than 5,900 meters per second when tested as specified in 4.5.5.

3.5 Propagation of detonation (applicable to Type I). The detonating cord shall propagate from a main line to branch line and all branch lines shall be initiated when tested as specified in 4.5.6.

3.5.1 Detonation of TNT (applicable to Type Ib and Type Ic and Type Ij only). Detonating cord shall initiate the TNT, high order when tested as specified in 4.5.6.1.

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TABLE I. Construction

Type	Class	Minimum Wt ² of Explosive Core Per 1000 Feet	Inner Construction	Finish	Diameter Inches Maximum ⁴	Maximum Wt of Finished Cord Per 1000 Feet	Breaking Strength Minimum
I	a	5 Pounds PETN	Textile	Plastic Coating	0.185	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
I	h	14.5 Pounds PETN	Textile	Plastic Coating	0.235	29.5 Pounds	110 Pounds
I	j	6.4 Pounds PETN	Textile ³ w/Plastic Sheath	Textile ³ w/Wax	0.210	18 Pounds	150 Pounds
II	a	7 Pounds RDX ¹	Textile	Plastic Coating	0.216	19 Pounds	175 Pounds
II	b	8.5 Pounds RDX ¹	Textile	Plastic Coating	0.235	22 Pounds	190 Pounds
III	All type III detonating cord shall be loaded with an inert powder. Construction, finish diameter and breaking strength requirements shall be the same as indicated above for the Type and Class specified. The inert powder and outer finish shall be colored blue #35109 Fed. Std. 595 for identification purposes.						

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NOTES TO TABLE I

¹For 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.

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

³Plastic sheath and outer braided or counter-wrapped textile shall be olive drab in color with a clear wax finish.

⁴If not otherwise indicated (see 6.5).

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3.6 Sensitivity (applicable to Type I and Type II only).

3.6.1 Flame. The detonating cord shall not detonate when tested as specified in 4.5.7.1.

3.6.2 Impact. The detonating cord shall not detonate through the ends of the sample when tested as specified in 4.5.7.2.

3.7 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 satisfactorily when tested as specified in 4.5.8.

3.8 Sealing ends (applicable to Type I and II only. The ends of each length of cord shall be sealed with tape conforming to PPP-T-60, to prevent spilling of the explosive. The tape shall be approximately 2 inches wide, Type IV, Class I, Olive Drab Semigloss Color X24087. The tape shall be placed so that the cord is approximately at the mid point of the tape width. The two sides of the tape shall then be pressed together so as to create a seal at the cord end. No explosive shall spill out of the cord. The cord shall be wrapped around the cord spool, with the first end of the cord inside the barrel. The last end shall be taped down to the outside and covered. The inspection to determine conformance with the requirement shall be as specified in 4.5.9.

3.9 Flexibility. The plastic coating shall not crack when tested as specified in 4.5.10.

3.10 Temperature conditioning. The following applies to First Article Inspection only for Types I and II.

3.10.1 Conditioning at 130°F and 360 BTU/Sq. ft./hr. solar radiation. When tested as specified in 4.5.11.1 the detonating cord shall show no change in physical characteristics such as form and color or diameter as given in Table 1.

3.10.2 Conditioning at -65°F. When tested as specified in 4.5.10.2 the detonating cord shall show no change in physical characteristics such as form and color and comply with diameter and breaking strength as given in Table I when tested in accordance with applicable test methods. In addition, the conditioned sample shall comply with 3.4 (Detonating velocity) when tested as specified in 4.5.5.

3.11 First article inspection. This specification contains technical provisions for first article inspection. Requirements for the submission of first article samples by the contractor shall be as specified in the contract.

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3.12 Workmanship. The manufacturer shall implement procedures and controls to assure that the process and the product produced are not compromised by foreign material or any other conditions which may degrade the material.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection and standard quality assurance provisions. Unless otherwise specified herein or in the contract, the provisions of MIL-A-48078 shall apply and are hereby made a part of this detailed specification.

4.2 Classification of inspections. The following types of inspection shall be conducted on this item:

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3 First article inspection.

4.3.1 Submission. The contractor shall submit a first article sample as designated by the Contracting Officer for evaluation in accordance with provisions of 4.3.2. The first article sample shall be five (5) complete spools. The sample shall be obtained from the first production lot which has been produced by the contractor using the same production processes, procedures and equipment as will be used in fulfilling the contract. All materials shall be obtained from the same sources of supply as will be used in regular production.

4.3.2 Inspection to be performed. The sample will be subjected by the Government to any or all of the examinations or tests specified in this specification (see MIL-A-48078 and Table II).

4.3.3 Rejection. See MIL-A-48078.

TABLE II - First Article Inspection

CLASSIFICATION OF DEFECTS & TESTS

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PARAGRAPH	TITLE	NO. OF SAMPLE UNITS	AQL OR 100%	SHEET 1 of 1	DRAWING NUMBER
CATEGORY	EXAMINATION OR TEST			REQUIREMENT PARAGRAPH	NEXT HIGHER ASSEMBLY
	Construction Weight of finished cord Diameter Breaking strength Weight of explosive Detonating velocity Propagation (as applicable) Sensitivity Flame Impact Waterproofness Sealing end Flexibility Temperature conditioning Workmanship			3.3 3.3 3.3 3.3 3.4 3.5 3.6.1 3.6.2 3.7 3.8 3.9 3.10 3.11	4.5.1 4.5.2 4.5.3 4.5.4 4.5.5 4.5.6 4.5.7.1 4.5.7.2 4.5.8 4.5.9 4.5.10 4.5.11 Visual
PARAGRAPH REFERENCE /INSPECTION METHOD					

NOTES:

npSMC-0A (D) Form 160, 1 Aug 83 replaces edition of 1 Jul 77 which may be used until exhausted.

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4.4 Quality conformance inspection.

4.4.1 Lot formation. A lot shall consist of one or more batches of detonating cord produced by one manufacturer, in accordance with the same specification, or same specification revision, under one continuous set of operating conditions. Each lot shall consist of that quantity of detonating cord that has been subjected to the same unit chemical or physical process intended to make the final product homogeneous. The lot shall comply with the provisions for submission of product as specified in MIL-STD-105. The criteria and procedure for the assignment of lot numbers shall be in accordance with MIL-STD-1168. Also, MIL-A-48078 applies.

4.4.2 Examination. See MIL-A-48078.

a. Sampling plans. Unless otherwise specified in the Classification of Defects and test tables, sampling plans and procedures for major and minor defects shall be in accordance with MIL-STD-105, Inspection Level II.

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CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE	SHEET 1 OF 1		DRAWING NUMBER
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH
4.4.2.1	Detonating Cord Spool			
<u>CRITICAL</u>	None defined			
<u>MAJOR</u>	None defined			
<u>MINOR</u>				
201	Cord spliced excessively		1.50%	Visual
202	Foreign matter		1.50%	Visual
203	Ends of cord not sealed		1.50%	Visual
204	Ends of cord not taped down onto spool		1.50%	Visual
205	Marking misleading or unidentifiable		1.50%	Visual

NOTES:

NP:SMC-OA (D) Form 160, 1 Aug 83 replaces edition of 1 Jul 77 which may be used until exhausted.

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CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	SHEET 1 of 1		DRAWING NUMBER
				AQL OR 100%	REQUIREMENT PARAGRAPH	
4.4.2.2	Box, Paper or Fiber, Sealed					NEXT HIGHER ASSEMBLY
CATEGORY						PARAGRAPH REFERENCE / INSPECTION METHOD
<u>CRITICAL</u>	None defined					
<u>MAJOR</u>	None defined					
<u>MINOR</u>						
201	Sealing strip torn, badly wrinkled or otherwise fails to seal box completely			2.50%	5.3	Visual
202	Box torn, cut or punctured			2.50%	5.3	Visual
203	Contents loose			2.50%	5.4	Visual
204	Marking missing, misleading or unidentifiable			2.50%	5.5	Visual
205	Barrier bag missing			2.50%	5.3.1	Visual
NOTES:						

DDSMC-0A (D) Form 160, 1 Aug 83 replaces edition of 1 Jul 77 which may be used until exhausted.

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CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE	SHEET 1 of 1		DRAWING NUMBER
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH
4.4.2.3	Sealed Wooden Packing Box			
<u>CRITICAL</u>	None defined			
<u>MAJOR</u>				
101	Box damaged to the extent that contents are exposed		0.40%	Visual
102	Strapping missing, broken or loose		0.40%	Visual
<u>MINOR</u>				
201	Contents loose		1.00%	Manual
202	Marking misleading or unidentifiable		1.00%	Visual
NOTES:				

NP-SMC-0A (D) Form 160, 1 Aug 83 replaces edition of 1 Jul 77 which may be used until exhausted.

Quality Conformance Inspection

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CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE	SHEET 1 of 1			DRAWING NUMBER	
		AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE / INSPECTION METHOD	NEXT HIGHER ASSEMBLY	
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS				
4.4.2.4	Metal drums, sealed					
<u>Critical</u>	None Defined					
Major 101	Cover not sealed	0.65%	5.4.3	Visual		
Minor 201	Contents loose	0.65%	5.4.3	Manual		
202	Gaskets missing, broken or improperly placed	0.65%	5.4.3	Visual		
203	Container punctured, dented or cracked	0.65%	5.4.3	Visual		
204	Seams cracked or split	0.65%	5.4.3	Visual		
205	Locking device bent or cracked	0.65%	5.4.3	Visual		
206	Marking misleading or unidentifiable	1.00%	5.5.2	Visual		
NOTES:						

DDSMC-NA (D) Form 160, 1 Aug 83 replaces edition of 1 Jul 77 which may be used until exhausted.

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PARAGRAPH	TITLE	SHEET 1 of 1			DRAWING NUMBER
4.4.2.5	Detonating Cord Construction				NEXT HIGHER ASSEMBLY
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE / INSPECTION METHOD
<u>CRITICAL</u>	None defined				
<u>MAJOR</u>					
101	Weight of finished cord	4.4.3.1.1	1	3.3	4.5.1
102	Diameter	4.4.3.1.1	1	3.3	4.5.2
103	Breaking strength	4.4.3.1.1	1	3.3	4.5.3
104	Weight of explosive	4.4.3.1.1	1	3.3	4.5.4
105	Sealing end	4.4.3.1.1	1	3.7.1	4.5.9
106	Color (Applicable to Type III)	4.4.3.1.1	1	Table 1	Visual
<u>MINOR</u>					
201	Inner construction	4.4.3.1.1	1	3.3	Visual
202	Finish	4.4.3.1.1	1	3.3	Visual
203	Workmanship	-		3.12	Visual
NOTES:					

NPSCM-0A (D) Form 160, 1 Aug 83 replaces edition of 1 Jul 77 which may be used until exhausted.

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4.4.3 Testing. PRECAUTION: This specification covers sampling and testing of toxic and hazardous materials. Accordingly, it is emphasized that all applicable safety rules, regulations and procedures must be followed in handling and processing the detonating cord.

4.4.3.1 Sampling. Five (5) spools shall be randomly selected from the lot and shall be subjected to the following tests:

4.4.3.1.1 Compliance with Table I. From each of these five spools, approximately 18 inches of detonating cord shall be selected and tested. If any sample fails to comply with the requirements given in Table I the lot shall be rejected.

4.4.3.1.2 Detonation velocity. Approximately 6 feet of detonating cord shall be selected from each of the five spools and tested. If any sample fails to meet the requirements given in 3.4 the lot shall be rejected.

4.4.3.1.3 Propagation of detonation. Approximately 3 feet of detonating cord from each of the five spools, plus an additional 20 feet section from any one of the 5 spools for use as a main line, shall be selected and tested. If any sample fails to comply with the requirement given in 3.5, the lot shall be rejected.

4.4.3.1.4 Sensitivity.

4.4.3.1.4.1 Flame. Approximately 6 inches of detonating cord shall be selected from each of the five spools and tested. If any sample fails to comply with the requirement given in 3.6.1 the lot shall be rejected.

4.4.3.1.4.2 Impact. Approximately 6 inches of detonating cord shall be selected from each of the spools and tested. If the sample fails to comply with the requirement given in 3.6.2, the lot shall be rejected.

4.4.3.1.5 Waterproofness. Only 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 given in 3.7, the lot shall be rejected.

4.4.3.1.6 Flexibility. Approximately 2 feet of detonating cord shall be selected from each of the five spools and tested. For Type Ic approximately 10 feet of detonating cord shall be selected from each of the five spools. If any sample fails to comply with the requirement given in 3.8, the lot shall be rejected.

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4.4.3.1.7 Temperature conditioning. A 10 foot sample from each spool shall be selected for this test. If any sample fails to comply with the requirements given in 3.10, the first article shall be rejected.

4.4.4 Inspection equipment. For inspection equipment required to perform the examinations and tests prescribed herein, the contractor shall submit for approval inspection equipment designs in accordance with the terms of the contract. See Section 6 of MIL-A-48078 and 6.3 herein.

4.4.5 Classification of defects. Unless otherwise noted in this detailed specification the classification of defects for tests required will be as given in Table III and MIL-STD-105 shall apply:

Table III. Classification of defects

<u>Test/Examination</u>	<u>Requirement Paragraph</u>	<u>Defect Classification</u>
Construction	Table I	As listed in 4.4.2.5
Detonating Velocity	3.4	Major
Propagation	3.5	Major
Detonation of TNT	3.5.1	Major
Sensitivity	3.6	Major
Waterproofness	3.7	Major
Sealing ends	3.8	Major
Flexibility	3.9	Major

4.5 Test methods and procedures (see 6.4).

4.5.1 Weight of finished cord. Determine the weight of the finished cord as follows: Accurately measure the total length of the five segments selected and record as feet (F). Also, obtain a Total Weight of the five segments and record as grams (W). Calculate the weight of finished cord as follows:

$$\text{Weight of finished cord, lbs} = \frac{W}{F \times 454} 1000$$

4.5.2 Diameter. Determine the diameter of each sample with a suitable gauge which has prior approval of the Technical Agency (see 6.3). (The requirement does not apply to the waterproofed ends of the detonating cord).

4.5.3 Breaking strength. Determine the breaking strength of each sample of the finished cord in accordance with a procedure which has prior approval of the Technical Agency (see 6.3).

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4.5.4 Weight of explosive. Determine the weight of explosive as follows: After all the tests have been completed to determine conformance with Table I, cut each of the five (5) selected samples to exactly 12.0 ± 0.05 inches. Obtain an accurate total weight (W_T) for these five 12 inch segments. Cut open each of the twelve inch segments and quantitatively remove the explosive without loosing any of the construction material and reweigh (W_A). Calculate the weight of explosive per 1000 feet as follows:

$$\text{Weight of explosive per 1000 feet, lbs} = \frac{(W_T) - (W_A)}{5 \times 454} \times 1000$$

4.5.5 Detonating velocity.

4.5.5.1 Type I. A number 6 commercial blasting cap shall be attached in parallel, and in close contact with the piece of dry detonating cord by means of adhesive tape, and detonated. The detonating velocity shall be measured by a procedure which has been submitted to the Technical Agency for prior approval (see 6.3).

4.5.5.2 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. The detonating velocity shall be measured by a procedure which has been submitted to the Technical Agency for prior approval (see 6.3).

4.5.6 Propagation of detonation (applicable to Type I). The samples shall be attached by a girth hitch to the main line and tested in accordance with a procedure submitted to the Technical Agency for prior approval (see 6.3).

4.5.6.1 Detonation of TNT (applicable to Type Ib, Ic and Ij). The cord shall be snugly tied around a TNT demolition block, conforming to MIL-C-46246, 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 procedure used to determine initiation of the TNT, high order, shall be submitted to the Technical Agency for prior approval (see 6.3).

4.5.7 Sensitivity.

4.5.7.1 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. The

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procedure used to determine non-detonation shall be submitted to the Technical Agency for prior approval (see 6.3) to determine compliance with 3.6.1.

4.5.7.2 Impact. Each piece of detonating cord shall be placed on a steel anvil and a 25 pound bar with a diameter of 2 inches at the striking face shall be dropped from a height of 16 feet onto each piece (see 6.3). Procedures used to determine non-detonation shall be submitted to the technical agency for prior approval (see 6.3) to determine compliance with 3.6.2.

4.5.8 Waterproofness. 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 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. The cord shall then be tested in accordance with a procedure which has prior approval of the Technical Agency, to determine compliance with 3.7 (see 6.3).

4.5.9 Sealing ends. A method which has prior approval of the Technical Agency (see 6.3) shall be used to determine conformance with the applicable requirement.

4.5.10 Flexibility. Condition the samples in a suitable chamber maintained at $-65 \pm 2^{\circ}\text{F}$ for a minimum of 72 hours. Remove only one sample and allow the other samples to remain at -65°F . Wrap a portion of the sample, securely, around a 1/4 inch diameter mandrel, a minimum of five times around and visually inspect for cracks. (A 3/4 inch diameter mandrel shall be used for detonating cords with an OD greater than 0.25 inches.) Then repeat the test on the additional samples.

In addition, the type 1c detonating cord shall be tied in any of two hitches and connections normally encountered in blasting and demolition operations (see 6.7) and visually inspected for cracks.

There shall be no delays from time sample is removed from the -65°F chamber until the wrapping operation is performed.

4.5.11 Temperature conditioning.

4.5.11.1 Conditioning at $130 \pm 5^{\circ}\text{F}$ and 360 BTU/sq. ft./hr. solar radiation (see 6.6). A 15 foot long detonating cord test sample shall be coiled in a single circle approximately 4 feet in diameter, and placed in a horizontal plane on a perforated

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stainless steel tray. The cord shall be exposed to $130 \pm 5^\circ\text{F}$ with 360 BTU/sq ft/hr solar simulation radiation for 4 hours minimum 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 temperature shall be restored to laboratory ambient level; the test sample shall be removed and visually inspected to determine that the cord was not broken, deformed or changed in color. For this visual examination a section of unconditioned detonating cord should be used as a reference standard.

4.5.11.2 Conditioning at -65°F . Using the sample from 4.5.11.1, wind the cord in a loose elliptical coil, approximately one foot by two feet and place in a perforated stainless steel basket. Place the basket containing the sample into a -65°F conditioning chamber and condition at $-65 \pm 2^\circ\text{F}$ for 72 hours minimum. After the 72 hours, gradually elevate the temperature to laboratory ambient conditions and then remove the sample from the chamber. Again visually inspect the sample against the reference sample for form and color. Check the diameter in accordance with 4.5.2, check the breaking strength in accordance with 4.5.3. Finally perform the detonation test as specified in 4.5.5.

5. PACKAGING

5.1 Spools.

5.1.1 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 in length, 5/8 inside diameter, 1 plus or minus 1/16 inch outside diameter and 1.30 plus or minus 0.05 ounces in weight. The detonating cord shall be wound on the core in three coils. The cord shall not extend beyond the ends of the core more than 3/16 inch, and the maximum diameter of the completed reel shall not exceed 2 1/2 inches.

5.1.2 Lengths. The 100 foot lengths shall be furnished on commercial spools. The 500, 1000 and 4000 foot lengths shall be furnished on commercial spools.

5.2 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.

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5.3 Packaging.

5.3.1 Level A. Each spool of detonating cord shall be placed in a fiberboard box conforming to PPP-B-636 for a Type CF, Class Domestic, Variety SW, Grade 200 minimum box. Boxes shall be closed by applying PPP-T-45, Type III, Class 2, Grade B tape, 2 inches wide over the full length of the center top and bottom box seam with an approximate 3 inch extension onto the end panels of the box. All corners of each box shall be blunted and each box inserted into a barrier bag conforming to MIL-B-117 for a Type I or II, Class E, Style 1 or 2. All excess air shall be exhausted from the bag and the opening closed by heat sealing. The bag shall meet the heat seal test of MIL-P-116.

5.3.2 Level B. Spools of detonating cord shall be packaged in the same manner as described in 5.3.1.

5.3.3 Level C. Spools of detonating cord shall be packaged in the same manner as described in 5.3.1 except the barrier bag is not required.

5.4 Packing.

5.4.1 Level A (for Army use). Detonating cord packaged in accordance with 5.3.1 shall be packed in wood boxes conforming to MIL-B-2427 for Type I, Class 1 box. All interior surfaces of the box shall be lined with fillers, sheet form MIL-F-50449. Additional fillers shall be placed on top of the box contents as required for a tight pack. The number of rolls per box shall be:

1000 ft. rolls - 3 per box	
500 ft. rolls - 6 per box	
100 ft. rolls and 50 ft. rolls -	as specified in
	contract or purchase
	order.
4000 ft. rolls - 1 per box	

Boxes shall be closed and strapped in accordance with instructions contained in the appendix of the box specification.

5.4.2 Level B. Level B packing shall be the same as described in 5.4.1.

5.4.4 Level C. Detonating Cord Type I and II packaged in accordance with 5.3.2 shall be packed in accordance with Code of Federal Regulations, Title 49, CFR 100-199, Part 173.104 except if a fiberboard box is used it shall conform to Grades V3C or V13V of PPP-B-636. Type III, (Inert) cord shall be packaged as specified in MIL-STD-1169.

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5.5 Marking.

5.5.1 Marking for Army use. Each spool, unit box and bag shall be labeled, stamped, or printed as follows:

1 - CORD, DETONATING
 Type () * Cl () * (No. Ft) *
 LOT (Mfr Symbol - No.) *

*Insert applicable number or letter

Letters shall be upper case. Letter and number size min. 1/4 inch. Labels shall be white gummed stock. Stamping ink shall be black conforming to specification TT-I-1795 or drawing 9211789. Labels shall be coated on exterior with waterproof adhesive conforming to MMM-A-178 or MMM-A-179 on Level A shipments.

Exterior boxes containing Type I or II detonating cord shall be marked in accordance with drawing 8796522. The DOT marking shall be CLASS A EXPLOSIVES FUSE-HANDLE CAREFULLY DO NOT STORE WITH ANY HIGH EXPLOSIVES.

Exterior boxes containing Type III (Inert) cord shall be marked in accordance with MIL-STD-1169 marking requirements.

6. NOTES

6.1 Intended use. The detonating cord covered by this specification is intended for military applications and includes: blasting, demolition, cutting charges, initiating devices and explosive initiating grains.

6.2 Ordering data. See MIL-I-45208. For Type III the material used for the inert filler shall be specified in the contract or purchase order.

6.3 Inspection equipment/test procedures.

6.3.1 Submission of inspection equipment designs for approval (see MIL-A-48078). Submit equipment designs as required to Commander, ARDC, AMCCOM, ATTN: AMSMC-QAR-I(D), Dover, NJ 07801.

6.3.2 Submission of test procedures for approval. Same as 6.3.1, except submit to AMSMC-QAR-R(D).

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6.4 Equivalent test methods. The test methods given in this specification are the official methods to be used. The contractor may request using other methods providing that the proposed method is equivalent (accuracy and precision) to the method given in this specification. Prior approval of the Contracting Officer is required for use of equivalent test methods. A description of the proposed method should be submitted through the Contracting Officer to: Commander, ARDC, AMCCOM, ATTN: AMSMC-QAR-R(D), Dover, NJ 07801. This description should include, but not be limited to, the procedures used, the accuracy and precision of the method, test data to demonstrate the accuracy and precision and drawings of any special equipment required (see MIL-I-45208).

6.5 International standardization. Certain provisions of this specification (Table I, para. 3.4, 3.7 and 3.9) are the subject of international standardization agreement STANAG 2818. When amendment, revision, or cancellation of this specification is proposed which will modify the international agreement concerned, the preparing activity will take appropriate action through international standardization channels including departmental standardization offices to change the agreement or make other appropriate accommodations.

6.5.1 Cord diameter. Deletion of a minimum diameter has not been an oversight. For cord manufactured for use by nations affected by the above international agreement, the diameter of the cord should be as follows, in accordance with this agreement:

Maximum: 0.2165 inch (5.50mm)
Minimum: 0.1950 inch (4.95mm)

6.6 Solar radiation. 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 #Q3550, S/N 1026920 or equal.

6.7 Hitches and connections. Hitches and connections are described in Chapter 13 of DuPont Blasters Handbook, Fifteenth Edition.

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6.8 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodian:
Army-AR

Preparing activity:
Army-AR

(Project 1375-A266)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER MI-C-0017124D		2. DOCUMENT TITLE CORD. DETONATING	
3a. NAME OF SUBMITTING ORGANIZATION		4. TYPE OF ORGANIZATION (Mark one) <input type="checkbox"/> VENDOR <input type="checkbox"/> USER <input type="checkbox"/> MANUFACTURER <input type="checkbox"/> OTHER (Specify): _____	
b. ADDRESS (Street, City, State, ZIP Code)			
5. PROBLEM AREAS			
a. Paragraph Number and Wording:			
b. Recommended Wording:			
c. Reason/Rationale for Recommendation:			
6. REMARKS			
7a. NAME OF SUBMITTER (Last, First, MI) - Optional		b. JRAK TELEPHONE NUMBER (Include Area Code) - Optional	
c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional		8. DATE OF SUBMISSION (YYMMDD)	