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INCH-POUND
MIL-C-45010A
AMENDMENT 5
26 July 1996
SUPERSEDING
AMENDMENT 4
2 March 1990

MILITARY SPECIFICATION

COMPOSITION C4

This Amendment forms a part of Military Specification MIL-C-45010A (MU) dated 26 September 1963, and is approved for use by all Departments and Agencies of Department of Defense.

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Paragraph 1.2 - Classification: Add the following:.

"Class 4 - with plasticity of 0.030 units maximum and dyed (see 3.3)."

Paragraph 2.1 - Specifications: Add the following:

"JAN-L-488 - Lead Chromate (For Use in Ammunition)".

Paragraph 2.1 - Specifications: Delete "MIL-P-14536 - Polyisobutylene Binder" and substitute "MIL-P-14536 - Polylsobutylene Binder (see 6.10)".

Paragraph 3.1: Delete entirely and substitute as follows:

"3.1 Material. RDX complying with the requirements of MIL-R-398, Type A or B, shall be thoroughly and uniformly incorporated with a binder complying with the requirements of MIL-P-14536 or Holston Procedure Number 1340-5100-10-B (Preparation of Lacquer for Composition C-4 Building 150) to form a homogeneous composition having a soft, putty-like consistency (see 6.2 and 6.10)".

Paragraph 3.1.1 - Delete in its entirety and substitute:

"3.1.1 Granulation. The RDX content of Class 3 Composition C4 shall consist of three parts nominal Class 1 and one part nominal Class 5 RDX."

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Paragraph 3.3: Delete "Polyisobutylene" and substitute "Polyisobutylene Binder", and wherever it appears in this paragraph.

Paragraph 3.3 - Composition: Add the following:

"Class 4 (see 6.2 and 6-7)

RDX	89.9 ± 1 percent
Polyisobutylene	10.0 ± 1 percent
Dye Composition	0.2 ± .02 percent
Dye Composition	
Lead Chromate	90 percent - JAN-L-483
Lamp Black	10 percent - Commercial Grade"

* Paragraph 3.3 : Delete in its entirety and substitute:

"3.3 Composition - Prior to the additional of 2,3 Dimethyl 2,3 Dinitrobutane (DMDNB), the proportion of RDX and binder which comprise Composition C4 shall be sampled and analyzed for acceptance for all attributes except DMDNB content, Composition C4 will be tagged and analyzed for DMDNB. When tested in accordance with 4.3.2 the composition shall be as follow:

Class 1 and 2

RDX	91.0 ± 1.0 percent
Polyisobutylene Binder	9.0 ± 1.0 percent
DMDNB	1.25 ± 0.25 percent

Class 3

RDX	90.5 ± 0.7 percent
Polyisobutylene Binder	9.5 ± 0.7 percent
DMDNB	1.25 ± 0.25 percent

Class 4

RDX	90.0 ± 1.0 percent
Polyisobutylene Binder	10.0 ± 1.0 percent
DMDNB	1.25 ± 0.25 percent
Dye Composition	0.2 ± 0.02 percent
Dye Composition	
Lead Chromate	90 percent - JAN-L-483
Lamp Black	10 percent - Commercial Grade"

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Paragraph 4.2.3: Delete in its entirety and substitute:

"4.2.3 Testing

PRECAUTION WARNING

This specification covers sampling and testing or toxic or hazardous materials. Accordingly, it is emphasized that all applicable safety rules, regulations and procedures must be followed in handling and processing these materials.

4.2.3.1 Sampling - The tests described in 4.3 shall be performed on samples representative of the batch which were taken in accordance with ASTM Procedure E300, for solids. Approximately 1 kg sample shall be taken in accordance with MIL-STD-1235, CSP-1 Plan, Sample Frequency Code Letter B, AQL 6.5%. It any sample fails to meet any test requirement, the batch represented by the sample shall be rejected. All batches produced between the time that the last batch was tested and accepted and the batch which failed shall be tested in accordance with the applicable methods given in paragraph 4.3. If any of these batches fail to meet any of the test requirements, that batch shall also be rejected. In addition, after any failure or a batch the contractor will return to 100% Inspection until "i" successive batches are accepted as required by NIL-STD-1235."

Paragraph 4.3.1: Delete in Its entirety and substitute:

"4.3.1 Moisture - The moisture shall be determined in accordance with MIL-STD-650, Method 101.4 or an approved equivalent method. (See 6.9)"

Paragraph 4.3.2.1.1 Titration Method: Delete "carbon tetrachloride" wherever It appears and substitute "aliphatic naphtha (No. 49) (see 6.8)".

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Paragraph 4.3.2.1.2 Gravinetric Method: Delete "carbon tetrachloride" wherever it appears and substitute "aliphatic naphtha (No. 49) (see 6.8)".

Paragraph 4.3.2.1.3: Delete In its entirety. (Paragraph 4.3.2.1.3 was added in Amendment 2).

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Paragraph 4.3.2.2 Polyisobutylene binder: Add the following new paragraph:

"4.3.2.2 Polyisobutylene binder - The percent of polyisobutylene binder shall be calculated on a dry basis by subtracting from 100 percent the percent of RDX as obtained in 4.3.2.1."

Add the following new paragraph:

"4.3.2.3 Dye composition - The percent dye Composition shall be certified by the contractor that the percent dye composition has been mixed with the composition in compliance with paragraph 3.3."

* Add the following new paragraph:

"4.3.2.4 DMDNB Content - One sample shall be taken from each of the tagged product blend. Combine one half of the sample from each of the tagged product blend and use to determine the DMDNB content of the overall composition C4 batch. This composite sample will be divided into four discrete increments, and each increment shall be analyzed to determine the DMDNB content in accordance with HDC Analytical Standard Method No. I-227 or an approved equivalent method. The results from the four DMDNB analyses shall be reported as the final DMDNB concentration and for acceptance of the composition C4 batch. If one or more of the four samples fails the DMDNB requirement, analyze the remaining sample from each blend in duplicate for the acceptance of each blend in the composition C4 batch."

Paragraph 4.3.3: Delete entirely and substitute as follows:

"4.3.3 Determination of insoluble particles - A weighed portion of approximately 50 gms. of the sample shall be placed in a 600 ml. beaker. A 400 ml. aliquot of petroleum ether or naphtha shall be added and the sample heated on a steam bath until all lunps are broken down and all soluble material is dissolved. The solution shall be decanted through a small number 40 U.S. Standard sieve placed on a number 60 U.S. Standard sieve. The insoluble material shall be retained in the beaker. Acetone shall be added to the beaker and the beaker and contents warmed on a steam bath to dissolve the insoluble matter. This mixture shall be poured through the nest of sieves making sure all insoluble matter is transferred to the sieves. Any residue left on the sieve shall be washed with acetone. The sieves dried on a closed steam bath, and the particles of residue counted."

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Paragraph 6.2 Composition C-4: Delete "C-R" and substitute C4."

Add the following:

"Class 4 composition C4 using RDX Type I or II, Class 8 has been found satisfactory"

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Add new paragraph 6.7:

"6.7 Method of manufacture for Dyed Composition C4 - The lead chromate and lamp black should be mixed thoroughly before adding to the polyisobutylene at a rate of 4 to 5 grams per minutes. The mixture should be agitated slowly in a folding action at 90 degrees C. After all the pigment has been added, the mixture should be added to a RDX/water slurry at 21 degrees C with fast agitation. Then the composition C4 should be poured directly into a vacuum pan to draw off the water. (At this point the C4 should have the appearance of tapioca pudding.) The composition should be processed in a Wabash type Incorporator for 30 minutes and then dried in a drying house."

Add the following new paragraph:

"6.8 Atlantic Solvent No. 49, manufactured by Arco Chemical Company, 260 S. Broad Street, Philadelphia, PA has been found satisfactory. The aliphatic naphtha (No. 49) produced by Arco has the properties specified in Mellan, 1, Handbook of Solvents, Reinhold Publishing Corporation, New York (1957)."

Add a now paragraph

"6.9 Moisture determination. Holston AAP Analytical Standard Method, ASM I-7 is approved as an equivalent method and may be used in lieu of Method 101.4 of-MIL-STD-650."

Add new paragraph 6. 10:

"6.10 Holston slurry process. The alternate method of manufacture of Composition C-4 is by the Holston Slurry Process. Manufacture of Composition C-4 by the Holston Slurry Process exempts the manufacturer from the requirements of MIL-P-14536 except as follows:

a. Paragraph 1 and 2 shell remain in effect and in addition, the manufacture, shall use only raw materials conforming to military specification cited in paragraph 2.

b. The ratio of binder components shall be in accordance with paragraph 3.1.3 and shall be controlled on the basis of input

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quantities to the Holston Slurry Process. MIL-P-14536 shall be adhered to its entirely when any other Composition C-4 manufacturing process is used or when the polylsobutylene binder exists as an isolable intermediate.

Add new paragraph 6.11:

"6.11 Composition C4 manufactured before Jan 94 and in accordance with MIL-C-45010A (Amendment 4) does not contain DMDNB in the formulation of Composition C4."

NOTE: The margins of this amendment are marked with an asterisk or vertical line to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment were made. This was done as a convenience only and the Government assumed no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

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