

INCH-POUND

MIL-R-48878 (AR)  
 AMENDMENT 5  
 16 March 1995  
 SUPERSEDING  
 AMENDMENT 4  
 22 June 1990

## MILITARY SPECIFICATION

RDX/ESTANE (PBX 0280) MOLDING POWDER  
 (For Use in Ammunition)

This Amendment forms a part of Military Specification MIL-R-48878 (PA) dated 4 December 1975 and is approved for use by the U.S. Army Armament Research, Development and Engineering Center and is available for use by all Departments and Agencies of the Department of Defense.

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1.2 Classification. Change "Type I-Coarse" and Type II-Fine" to "Type I-Fine" and "Type II-Coarse".

2.1 After MIL-A-48078 add "MIL-P-63196 - Polyurethane Elastomer Binder (For use in ammunition)".

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3.1 Materials. Delete "Rubber-like binder" and replace with "elastomeric binder complying with Type II of MIL-P-63196 (AR)".

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3.4 Composition. Delete in its entirety and substitute the following:

<u>Constituent</u>	<u>Percent by Weight</u>		
	<u>Lot</u>	<u>Batch</u>	<u>Applicable Paragraphs</u>
RDX	95.0 ± 0.5	95.0 ± 0.8	4.5.3.1
Binder	5.0 ± 0.5	5.0 ± 0.8	4.5.3.2

\* 3.5 Vacuum stability test. Delete in its entirety.

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DISTRIBUTION STATEMENT A

Approved for public release; distribution is unlimited.

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3.6 Delete Table II in its entirety and substitute the following:

"TABLE II

U.S. Standard Sieve No.	Cumulative Percent Retained		
	Type I	Type II	Type III
4	--	0	0
18	0	50 max.	50 max.
30	--	95 min.	--
50	5 max.	--	93 min.
60	98 min.	99 min.	99 min.
80	99 min.	--	--"

3.7 Delete "foreign material" and substitute "foreign material when determined as specified in 4.5.6".

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4.4.1 Inspection lot formation. Delete in its entirety and substitute the following:

"4.4.1 Inspection lot formation. Inspection lots shall comply with the lot formation provisions of MIL-A-48078. For the material covered by this specification, a lot shall consist of 40,000 pounds of molding powder maximum and shall be a homogeneous blend of one or more batches of molding powder produced by one manufacturer in accordance with the same specification or same specification revision under one continuous set of operating conditions. Each batch shall consist of molding powder that has been subjected to the same unit chemical or physical mixing process intended to make the final product homogeneous."

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4.4.3 Sampling for test 4.5.1 through 4.5.5. Delete in its entirety and substitute the following:

"4.4.3 Sampling. Approximately 500 grams of molding powder shall be sampled from each batch using ASTM Procedure E300 for solids. The batch samples shall be tested to determine compliance with 3.4 and 3.7 using methods 4.5.3 and 4.5.6. If any of these samples fail to meet these test requirements, the batch represented by the sample shall be rejected. Two independent representative samples shall be taken from each lot using ASTM Procedure E300 for solids. These samples shall be tested for all requirements in 3. using the applicable methods given in 4.5.1 through 4.5.5 (see 6.7). If any of these samples fail to meet the test requirements, the lot represented by the sample shall be rejected".

\* 4.4.3 Table III, Classification of Defects. Delete "Vacuum Stability Test Major B" from the table.

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## 4.4.3 Add the following new paragraph:

## "PRECAUTION WARNING

This specification covers sampling and testing of 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."

4.5 Test methods and procedures (see 6.6). After "(see 6.6)" add the following:

"The tests in 4.5.1 through 4.5.5 shall be performed using prescribed analytical procedures for replicate determinations given in standard analytical textbooks."

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4.5.3 Composition. Delete 4.5.3.1.1 and 4.5.3.1.2 in their entirety and substitute the following:

"4.5.3.1.1 Reagent. Prepare the extraction solvent by adding excess RDX and HMX to 1, 2-dichloroethane (EDC). The mixture shall be maintained for at least eight hours at the temperature ( $\pm 2$  degree C) at which the analysis will be performed. Prior to use for extraction the EDC solution shall be agitated for two hours and filtered.

4.5.3.1.2 Procedure. Approximately 2.5g of the dried sample shall be accurately weighed (recorded to the nearest 0.1 mg) and quantitatively transferred to a 250 ml screw cap bottle. Add 150 ml of the saturated EDC solution (see 4.5.3.1.1), attach the screw cap, and place the bottle on a mechanical shaker. The bottle shall be shaken for at least thirty minutes, until visual examination indicates complete dissolution of the elastomeric binder. The sample solution shall then be transferred to a tared filtering crucible attached to a vacuum flask. About 30 ml of the saturated EDC solution shall then be poured into the bottle, the screw cap shall be replaced, the bottle shall be shaken by hand, and the contents transferred to the filtering crucible. This procedure shall be repeated at least twice in order to remove all residue from the bottle. The bottle and cap shall then be rinsed twice with 30 ml aliquots of the EDC solution, with the washings being transferred to the filtering crucible. The crucible shall then be removed from the flask, 20 ml of the saturated EDC solution shall be added, and the crucible shall be reconnected to the flask, allowing the liquid to filter through the residue. This procedure shall be performed a total of three times. The crucible shall then be removed from the flask and the interior portions, beneath the glass frit, shall be carefully rinsed with the saturated EDC. After rinsing, the crucible shall again be connected to the flask and aspirated for approximately two minutes. The crucible shall then be placed in an oven ( $100 \pm 5$  degrees C) for one hour, or until dry. After cooling

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to room temperature the crucible shall be accurately weighed (recorded to the nearest 0.1 mg). The RDX content of the sample shall be calculated as shown below.

$$\% \text{ RDX} = \frac{100 (A-B)}{W}$$

A = Final weight of crucible (g)

B = Tare weight of crucible (g)

W = Sample weight (g)"

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\* 4.5.4 Vacuum stability test. Delete in its entirety.

4.5.6 Add new paragraph as follows:

"4.5.6 Workmanship. Each batch shall be visually examined, preferably in the reaction kettle or other convenient location for the presence of foreign particulates."

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6.2 Inspection code numbers. Delete this paragraph in its entirety.

\* 6.4 Delete in its entirety and substitute the following:

"6.4 Binder. A binder which has been found satisfactory for use in PBX 0280 is Estane 5703 F1 or Estane 5703P having a viscosity range of 225 to 900 centipoises (15 percent solution in Methyethyl Ketone). This material is a poly (esterurethane) elastomer manufactured by the B.F. Goodrich Chemical Company. Use of any other materials shall require prior approval of ARDEC, ATTN: AMSTA-AR-QAT-P."

6.5 Delete "Picatinny Arsenal, ATTN: SARPA-QA-T, Dover, New Jersey 07801" and substitute "U.S. Army Armament Research, Development and Engineering Center, ATTN: AMSTA-AR-QAT-P, Picatinny Arsenal, New Jersey 07806-5000".

6.6 Delete "Picatinny Arsenal, ATTN: SARPA-QA-T, Dover, New Jersey 07801" and substitute "U.S. Army Armament Research, Development and Engineering Center, ATTN: AMSTA-AR-QAT-P, Picatinny Arsenal, New Jersey 07806-5000".

6.7 Add new paragraph as follows:

"6.7 The analytical composition of the blended batches forming a lot shall be as specified in TABLE I. If a lot consists of one batch only, the batch shall conform to all lot requirements given."

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The margins of this amendment are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment were made. This was done as a convenience only and the Government assumes 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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