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MIL-P-14067B (MU)
 AMENDMENT 3
 15 November 1971
 SUPERSEDES
 AMENDMENT 2
 16 May 1968

MILITARY SPECIFICATION

POWDERS, METAL, ATOMIZED
 (FOR USE IN AMMUNITION)

This Amendment forms a part of Specification MIL-P-14067B (MU), dated 10 March 1967.

Paragraph 3.2, Chemical and Physical Properties, Table I, Alloy as Iron Percent, Maximum, Type I, Magnesium:

Delete "0.5" and substitute "0.05"

Type I, Magnesium Powder; Type IV, Ellipsoidal Magnesium:

Delete the following in its entirety: "Nitrogen, PPM, Maximum, 20.0, 20.0, 4.3.18"

Paragraph 3.3, Granulation, Table II, Type IV, Ellipsoidal Magnesium:

Add the following granulations:

<u>"U.S.S Sieve No.</u>	<u>Percent Retained On</u>		
	<u>Type I 30/40 Atomized</u>	<u>Type IV 30/50 Ellipsoidal Magnesium</u>	<u>20/50 Type IV Ellipsoidal Magnesium</u>
20	0.0 - 0.1 max	0.0 - 0.1 max	0.0 - 1.0 max
30	0.0 - 7.0 max	0.0 - 7.0 max	0.0 - 16.0 max
40	43 - 53	43 - 53	45 - 65
50	40 - 56	40 - 56	20 - 35
60	0 - 3.0	0 - 3.0	0 - 3.0
Thru 60	0 - 0.1	0 - 0.1	0 - 0.1

Paragraph 4.1.3:

Add the following:

"a. Verification at the point of manufacture shall be accomplished at unscheduled intervals in accordance with 4.1.3.1 and 4.1.3.2"

b. Verification at the point of delivery shall be in accordance with 4.1.3.2."

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Add the following paragraphs:

"4.1.3.1 Surveillance.-Surveillance shall include, but is not limited to:

- a. Observation of procedures concerning lot formation and identification.
- b. Observation of sampling procedures and application of acceptance criteria.
- c. Determination that all required examinations and tests are performed in accordance with the prescribed procedures of this specification, or approved equivalent thereto.
- d. Review of procedures for control and disposition of non-conforming material.

4.1.3.2 Product inspection.-Product inspection shall consist of Government inspection of product which has been previously inspected by the contractor and found to meet the quality assurance provisions of this specification. The inspection by the Government shall be performed in order to determine that the product is of the quality required by this specification and that the contractor's records are reliable."

Add:

"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 drawings, same drawing revisions same specifications and same specification revisions. Changes to the process, specification, or drawings not affecting safety, performance, interchangeability, or storage, as determined by the Government, shall not be deemed to alter the homogeneity of the lot. Inspection lots shall comply with MIL-STD-105".

Delete paragraphs 4.2.3.1 and 4.2.3.1.3 in their entirety and substitute the following:

"4.2.3.1 Sampling lot.- (For Chemical Test).-A portion of the stream of the powder flowing into the drums shall be diverted into a gallon container. The portions shall be at such intervals so that representative material from the bottom, middle and top portions of each drum is obtained. The sample in the gallon container shall be put through a 16 to 1 sample reducer and run through once to collect a five pound sample. The five pound sample shall then be run through a sample splitter to obtain two samples. If the sample fails to comply with any of the requirements specified, the lot shall be rejected."

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Paragraph 4.2.3.1.2:

Change: "4.2.3.1.2" to "4.2.3.1.1"

Delete paragraph 4.2.3.1.3 in its entirety and substitute the following:

"4.2.3.1.2 Alternate sampling.-Alternate sampling for granulation and particle size.-The composite sample prepared in accordance with 4.2.3.1 may be used in lieu of the samples required in 4.2.3.1.1. If the composite samples fail to comply with the requirements in Tables II and III, the lot shall be rejected, or each container may be sampled in accordance with 4.2.3.1.1 for acceptance determination and if any container fails to comply with the requirements of Tables II and III the container shall be rejected."

"4.3.4.1 Alloyed Iron as Fe, (alternate method).-Code Number 22001.-The alloyed iron as Fe shall be determined by the atomic absorption method in accordance with Method ASTM Designation P-77."

"4.3.6.1 Zinc (alternate method - Code Number 21001.-The zinc shall be determined by the atomic absorption method in accordance with Method ASTM Designation P-77."

Delete in its entirety and substitute the following:

"4.3.17 Ellipsoidal Type IV, Code Number 19001; Microscopic Analysis.- Remove approximately a 10-gram sample from the top, middle and bottom strata of the quart jar, and then place the sample into a container, cover, and tumble container for five minutes. With a scoop, remove a 1/4 gram sample from the container and sprinkle the sample on a microscopic slide. The slide shall be placed on a stereo microscope (magnification may be 16X to 24 range) equipped with an eyepiece micrometer (photographic). Light shall be transmitted through the top and bottom of the sample. The length and width of 100 particles shall be measured. For each particle, the length shall be divided by the width to obtain the L/W oblong shape ratio. The percentage of ratio above 1.5% shall be determined."

Paragraph 4.3.18 Nitrogen: Delete in its entirety.

Add the following paragraphs:

"4.3.11.2.1 Magnesium (alternate method) Code No. 20001

4.3.11.2.1.1 Reagents.- Chromic acid solution, approximately 0.1N as the acid. Dissolve 10.00 grams of CrO₃ in water and dilute to 1000 ml. Magnesium standard

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solution. (One ml contains approximately 1.8 mg of magnesium). Dissolve 1.8 grams (+ 0.5 mg) of pure magnesium in 125 ml of 1:4 hydrochloric acid. Dilute to 1000-ml in a volumetric flask. EDTA, standard solution, 0.1M. Dissolve 40.0 grams of disodium dihydrogen ethylenediaminetetraacetate dihydrate in distilled water and dilute to 1000-ml in a volumetric flask. Standardize against a 0.1M calcium or magnesium standard solution. Buffer solution, approximately pH 10. Dissolve 65.5 grams of reagent grade ammonium chloride in 300 ml of water. Add 570 ml of concentrated ammonium hydroxide and dilute to one liter. Eriochrome Black T indicator solution. Dissolve 0.8 gram of Eriochrome Black T in a mixture of 40 ml of methanol and 60 ml of triethanolamine.

4.3.11.3.1.2 Standardization.-Pipet 50.00 ml of magnesium standard into a 500-ml flask. Dilute to about 300 ml with distilled water. Add 20 ml of buffer solution and 6-10 drops of Eriochrome Black T indicator. Titrate with EDTA to a color change of red to blue against a reflected-light background. There should be no red color remaining. Record the volume of EDTA consumed:

$$\text{mg of magnesium per ml EDTA} = \frac{50.00 \times \text{mg magnesium per ml of standard}}{\text{ml of EDTA}}$$

4.3.11.2.1.3 Procedure.-Weigh approximately 1 gram (+ 0.2 mg) of sample in a 250-ml beaker. Add 50 ml of 0.1N chromic acid to the sample and allow to stand for 15 minutes, swirling the beaker every five minutes. Transfer the sample to a 30-ml, fine-porosity sintered-glass crucible and wash the sample with 25-ml portions of distilled water 6 times. The last washing should be colorless. Wash the sample back into the original beaker with distilled water. Treat the crucible with two 10-ml portions of 10% hydrochloric acid to dissolve any metal remaining in it, returning the washings into the beaker with distilled water. Cover with a watch glass. - Add 10 ml of concentrated hydrochloric acid in small amounts to the sample. Heat to dissolve any remaining metal. Cool and transfer the solution to a 500-ml volumetric flask. Dilute to the mark with distilled water and mix. Pipet 50.00 ml of magnesium standard into a 500 ml flask. Dilute to about 300 ml with distilled water. Add 20 ml of buffer solution and 6-10 drops of Eriochrome Black T indicator. Titrate with EDTA to a color change of red to blue against a reflected-light background. There should be no red color remaining. Record the volume of EDTA consumed and calculate.

$$\% \text{ metallic magnesium} = \frac{\text{ml EDTA} \times \text{mg Mg per ml} \times 100}{\text{grams of sample in aliquot} \times 100}$$

CUSTODIAN:
ARMY-MUPREPARING ACTIVITY:
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