INCH-POUND

MIL-B-162D
INT. AMENDMENT 3 (AR)
16 April 1990
SUPERSEDING
INT. AMENDMENT 2
7 March 1986

MILITARY SPECIFICATION

BARIUM NITRATE

This Interim Amendment is approved for use within the U.S. Army Armament, Munitions and Chemical Command with MIL-B-162D dated 7 February 1968.

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Add the following preamble underneath the title: "This Specification is approved for use by all Departments and Agencies of the Department of Defense."

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3.2 Table I, Class I: Delete "Heavy metals...None," and substitute "Heavy metals, max...0.05". For "Barium nitrate, min", delete "99.7" and substitute "99.0".

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* Add paragraph 4.3.1.1 as follows:

"4.3.1.1 Alternate method. Weigh about 45 mg of barium nitrate to the nearst 0.01 mg and dissolve in deionized water. Dilute this to one liter in a one liter volumetric flask. The sample should be analyzed in triplicate. After setting up the Lambda 5 uv-visible spectrophotometer and calibrating it to read in absorbance according to the nitrate method, analyze each solution of barium nitrate in turn. Record the readings obtained. Use the following calculations to determine the barium nitrate present in the sample and also the percent strontium as nitrate.

a. Percent Barium Nitrate

(1) Total nitrate in sample (mg/liter)

$$= \frac{\text{(Absorbance of sample)}}{\text{(Absorbance of standard)}} \times \frac{\text{(5.0 mg nitrogen)}}{\text{(liter (std))}} \times \frac{(124.0098)}{(28.0134)}$$

where: 124.0098 = Total molecular weight of nitrate in Barium Nitrate
28.0134 = Total molecular weight of nitrogen in Barium Nitrate

(2) mg strontium in sample used

$$= \text{(Sample weight (mg))} \times \frac{\text{percent strontium in sample (from AA)}}{100}$$

(3) mg strontium nitrate = (mg strontium) x $\frac{(211.6298)}{(87.62)}$

where: 211.6298 = Molecular weight of strontium nitrate
87.62 = Molecular weight of strontium

(4) mg nitrate attributed to strontium

= (mg strontium nitrate - mg strontium)

(5) mg nitrate attributed to barium =

(mg total nitrate in sample)-(mg nitrate attributed to strontium)

(6) mg of barium nitrate in sample

= (mg nitrate attributed to barium) x $\frac{(261.3498)}{(124.0098)}$

where:

261.3498 = Molecular weight of barium nitrate
124.0098 = Molecular weight of two nitrates

(7) Percent Barium Nitrate = 100 x $\frac{\text{(mg barium nitrate)}}{\text{(mg sample weight)}}$

b. Percent Strontium Nitrate

$$\text{Percent Strontium Nitrate} = (\text{Percent strontium (from AA analysis)}) \times \left(\frac{211.6298}{87.62}\right)$$

where: 211.6298 = Molecular weight of strontium nitrate
87.62 = Molecular weight of strontium"

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4.3.9: Delete in its entirety and substitute the following:

"4.3.9 Heavy metals (applicable to Class I only). Dissolve 500 grams of the sample in distilled water. Add a few drops of hydrochloric acid and then pass in hydrogen sulfide for two or three minutes. (Since it is imperative that no elemental sulfur be introduced into the sample solution from the hydrogen sulfide generator, suitable precautions must be taken.) Inspect for the formation of a precipitate. Render the solution ammoniacal and allow to stand for three hours. Again inspect for the formation of precipitate. If a precipitate is present, filter the material through a tared, fine porosity, fritted glass crucible. Wash the precipitate with ammoniacal water (3 or 4 washings of 10 ml. each). Dry the crucible at 100 degrees ± 5 degrees Centigrade for 1 hour. Cool in a dessicator, and weigh. Calculate percent heavy metals.

$$\% \text{ H.M.} = \frac{\text{wt. of residue}}{\text{wt. of sample}} \times 100$$

The margins of this interim amendment are marked with an asterisk or vertical lines to indicate where changes (additions, modifications, corrections, deletions) from the previous interim 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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