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MILITARY SPECIFICATION

BARIUM PEROXIDE

This specification has been approved by the Department of Defense and is mandatory for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers anhydrous barium peroxide for use in pyrotechnic mixtures.

1.2 Classification. Barium peroxide shall be of the following grades and classes, as specified (see 6.2):

Grade A

Class 1

Class 2

Grade B

2. APPLICABLE DOCUMENTS

2.1. The following documents of the issue in effect on date of invitation for bids or request for proposal, forms a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

L-P-378 – Polyethylene Film, Thin Gauge

RR-S-366 – Sieves; Standard, Testing

MILITARY

MIL-D-3464 – Desiccants, Activated, Bagged, Packaging Use and Static Dehumidification

MIL-D-6054 – Drums, Metal-Shipping and Storage

MIL-D-26993 – Drum, Fiber, for Domestic Shipment of Desiccant

STANDARD

MILITARY

MIL-STD-129 – Marking for Shipment and Storage

FSC 6810

(Copies of specifications, standards, drawings, and publications required by suppliers 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 document forms 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.

INTERSTATE COMMERCE COMMISSION

49 CFR 71-78 – Interstate Commerce Commission Rules and Regulations for the Transportation of Explosives and Other Dangerous Articles

(The Interstate Commerce Commission regulations are now a part of the Code of Federal Regulations (1949 Edition–Revised 1950) available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Orders for the above publication should cite "49 CFR 71-78").

3. REQUIREMENTS

3.1 Material. Barium peroxide shall be grayish-white, or tan-white.

3.1.1 Grade A material shall be manufactured so as to be an anhydrous material consisting essentially of barium peroxide with some barium monoxide and barium carbonate.

3.1.2 Grade B material shall be manufactured by the wet precipitation method and shall consist of anhydrous barium peroxide.

3.2 Chemical and physical properties. The chemical and physical properties shall conform to the requirements shown in table I.

TABLE I. *Chemical and physical requirements.*

Requirements	Grade A		Grade B
	Class 1	Class 2	
Moisture, max. percent			0.3
Apparent density, gm/ml. min.			1.3
Available oxygen, min. percent	8.5	8.5	8.8
Total iron, max. percent			0.03
Strontium, max. percent			0.85
Calcium, max. percent			0.15
Magnesium, max. percent			0.02
Sodium, max. percent			0.05
Aluminum, max. percent			0.05
Chlorides (as barium chloried), max. percent			0.1
Nitrate (as barium nitrate), max. percent	[1]	[1]	0.1
Insoluble matter, max. percent	2.0	2.0	
Grit, max. percent	0.005		
Barium content, max. percent	76.0	76.0	

[1] To be specified by interested agency.

3.3 Granulation. The granulation requirements shall be in accordance with table II.

TABLE II. *Granulation requirements.*

	Grade A		Grade B
	Class 1	Class 2	
Thru No. 100 U.S. Standards sieve	99.9		100
Thru No. 140 U.S. standards sieve, min.			95
Thru No. 170 U.S. standard sieve, min.	98.0		
Thru No. 200 U.S. standard sieve, min.		99.9	
Thru No. 325 U.S. standard sieve, min.	90.0		

3.4 **Workmanship.** The barium peroxide shall be free flowing and free from lumps, grit, foreign matter or injurious material.

4. QUALITY ASSURANCE PROVISIONS

4.1 **Responsibility for inspection.** Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 **Lot.** A lot shall consist of 5,000 pounds maximum.

4.3 **Sampling.** Select 10 percent but in no case more than 10 of the containers in such a manner as to be representative of the lot. Select by thief method a one pound sample from each 5th consecutively numbered container; i.e., 5th, 10th, 15th, etc. drum until 10 samples have been obtained representing a 5,000 pound lot. Divide each sample into 2 one-half pound samples placing them in sealed airtight containers properly labeling each to identify it with the drum number and lot number. Blend half the number of one-half pound samples and take one pound of this blend to make a composite sample for acceptance analysis in accordance with requirements set forth in paragraph 3.2. The additional samples will be analyzed for available oxygen content and half in storage for possible future tests. If during sampling, it becomes apparent that the lot is not uniform throughout, the inspector may test or require tests to be made on any portion of the lot for compliance with the requirements of the specification.

4.4 **Tests.**

4.4.1 *Moisture content.* Accurately weigh approximately 10 gms. of the samples in a tared weighing bottle, approximately 6 cm. in diameter and place in an oven at 275° plus or minus 2°F for 1½ hours. Cool in a desiccator, weigh and calculate the loss in weight as percent moisture in the sample.

4.4.2 *Apparent density test.* Assemble a Scott volumeter as shown in figure 1, having a No. 8 U. S. standard sieve in the upper hopper, so that the tared receiving cube, one cubic inch in volume, is directly under the lower funnel and rests on the base of the apparatus. Slowly pour approximately 15 to 20 gm. of the sample into the hopper and brush if necessary through the sieve in order to fill the receiving cube to overflowing. By means of a spatula, carefully strike off the excess barium peroxide from the cube taking care not to jar the cube during this operation. Weigh the cube and contents, and from the volume and weight of barium peroxide calculate its apparent density. Make three tests and calculate the average of the apparent density values as follows:

$$D = \frac{W}{V}$$

where D = apparent density

W = gm. of sample

V = volume of receiving cube in ml.

4.4.3 *Available oxygen content.* Weigh 0.35 to 0.40 gm. of sample on a tared watch glass. To a 300 ml. tall form beaker add 70 ml. of acid solution (100 ml. of 70 percent perchloric acid, 30 ml. of 85 percent phosphoric acid and 0.1 gm. of manganese chloride made up to one liter with distilled water.) From a burette run into the beaker about ¾ of the amount of N/10 potassium permanganate needed for the titration. Then while this solution is being mechanically stirred, carefully add the sample to it and wash down the watch glass with a fine stream of acid solution. Cover the beaker with a holed watch glass. After solution of the sample is complete, titrate with N/10 potassium permanganate. Calculate the percent available oxygen as follows:

$$\text{Percent available oxygen} = \frac{0.8\ VN}{W}$$

where V = ml. of N/10 potassium permanganate solution used

N = normality of N/10 potassium permanganate solution

W = gm. of sample

(*Note.* Prime importance should be attached to time and solution of the sample in testing barium peroxide, as with all peroxides. The sample should be dissolved completely as rapidly as possible, and the titration must follow immediately. Any delay will cause a lower result regardless of stabilizers or lowering of temperatures. The solutions used should not be much above 77°F, which increases decomposition, nor below 77°F which retards solution of the sample.)

4.4.4 *Wet method of analysis for impurities.*

4.4.4.1 *Total iron content.* Transfer 5 gm. of the sample to a 250 ml. beaker. Dissolve the peroxide by the addition of a solution containing 100 ml. of distilled water and 40 ml. of concentrated hydrochloric acid. Cool the solution and filter washing with warm distilled water. Transfer the filtrate to a 400 ml. beaker and add 4 gm. of ammonium chloride. Heat to boiling and boil for 5 minutes to decompose peroxides. Add ammonium hydroxide until the solution is just alkaline to methyl red. Boil for one minute and filter. Wash the precipitate with hot 1 percent ammonium chloride solution which has been made ammoniacal to methyl red. Dissolve the precipitate from the paper into the original beaker with approximately 20 ml. of hot 1:1 hydrochloric acid, and wash the paper with hot water. Reprecipitate the iron and aluminum filter, and wash as above. Ash the filter carefully in a weighed platinum crucible and ignite. Cool, add 2 drops of sulfuric acid and 3 to 5 ml. of hydrofluoric acid. Evaporate to dryness, ignite, cool, and weigh the combined oxides of iron and aluminum. Record the weight of the combined oxides since this is required for the determination of aluminum. If the weight of combined oxides is less than 0.03 percent by weight of the sample, both iron and aluminum can be reported less than the determined percentage of combined oxides, and the following specific tests on iron or aluminum are not necessary. Fuze the oxides with 5 to 10 gm. of potassium bisulfate and dissolve the cooled melt by heating with 75 ml. of 5 percent sulfuric acid in a 400 ml. beaker. Remove the crucible and wash thoroughly with hot water. Dilute the solution to 150 ml., pass through a Jones reductor, and titrate with approximately 0.03N potassium permanganate solution. Run a blank determination on 200 ml. of 5 percent sulfuric acid passed through the reductor.

$$\text{Percent iron} = \frac{5.6\ VN}{W}$$

where V = ml. of potassium permanganate used, corrected for blank

N = normality of the permanganate solution

W = gm. of sample

4.4.4.2 *Calcium content.* Transfer 2 gm. of sample to a nickel crucible and fuse with about 10 gm. of anhydrous sodium carbonate. Dissolve the melt by boiling with 200 ml. of distilled water in a 400 ml. beaker. Cool, remove the crucible, and wash with hot water. Filter the solution and wash with hot water. (Retain the filtrate for the determination of chlorides). Place the filter paper containing the residue into a 250 ml. beaker to which is added a minimum but sufficient amount of 1:1 nitric acid to dissolve the residue. Boil the solution for a few minutes and filter. Wash with warm water. Evaporate the filtrate carefully to dryness. Dissolve the residue in a minimum amount of water, add 50 ml. of amyl-alcohol, and boil (away from flame) until the volume is reduced to 20 ml. Filter and wash the residue with 3 ml. portions of amyl alcohol. Save the residue for the determination of strontium. Evaporate the filtrate to dryness, add 10 ml. of distilled water, and boil for 10 minutes. Filter the solution and wash with distilled water, keeping the volume of the filtrate at not more than 75 ml. Add 5 ml. of concentrated ammonium hydroxide, 5 ml. of 10 percent ammonium chloride solution and 5 ml. of saturated ammonium oxalate solution. Heat on a steam bath for at least 2 hours. Filter and wash thoroughly with hot 1 percent ammonia solution. Place paper and precipitate in a weighed platinum crucible. Dry and burn off the paper at a low temperature. Ignite at red heat for 3 minutes. Cool, and weigh. Calculate the percent calcium as follows:

$$\text{Percent calcium} = \frac{71.47A}{B}$$

where A = gm. of calcium oxide
B = gm. of sample

4.4.4.3 *Strontium content.* Dissolve the residual nitrates from the calcium determination in approximately 75 ml. of water. Transfer to 100 ml. volumetric flask, dilute to mark with water and mix. Remove a 25 ml. aliquot. Add 75 ml. of water and acidify solution with acetic acid. Add 2 gm. of ammonium chloride and add ammonium hydroxide until the solution has a faint odor of ammonia. Heat to boiling, let the precipitate settle, and filter. Wash the precipitate with hot 1 percent ammonium chloride solution made ammoniacal to methyl red. Discard the precipitate. Acidify the filtrate with acetic acid and add 10 ml. of 30 percent ammonium acetate solution (neutralized with ammonium hydroxide). Bring the solution to boiling and while swirling, add sufficient 10 percent ammonium dichromate solution to precipitate all the barium. Allow to settle, decant the clear liquid through a filter, and wash the precipitate with neutral 1 percent ammonium acetate solution until the filtrate is no longer perceptibly colored. Save the filtrate. Transfer the precipitate by a jet of water to a beaker, place the beaker under the funnel, dissolve the precipitate on the paper with warm 1:1 nitric acid and wash the paper with hot water. Add more acid if necessary until the precipitate is completely dissolved. Add a few drops of 10 percent ammonium dichromate followed by dilute ammonium hydroxide slowly and with stirring until the precipitate first formed no longer redissolves. Add 10 ml. of neutral 30 percent ammonium acetate solution, bring the solution to boiling while keeping it in swirling motion, and cool slowly. Filter and wash with 1 percent ammonium acetate solution. Discard the residue. Add a little nitric acid to the combined filtrates, and evaporate to a small volume. Add ammonium hydroxide until the solution has a faint odor of ammonia. Then add an excess of 1 percent ammonium carbonate solution. Allow the precipitate to settle, filter and wash with a little hot water. Dissolve the residue in just enough 1:1 hydrochloric acid. Add a ten-fold excess of dilute sulfuric acid and then a

volume of alcohol equal to that of the solution. Stir, let stand for 12 hours, filter and wash with 50 percent alcohol containing a little sulfuric acid, then with 95 percent alcohol till the acid is displaced. Dry paper and residue, transfer to a platinum crucible burn off the paper at as low a temperature as possible. Heat to dull redness, cool, and weigh as strontium sulfate. Calculate the percent strontium as follows:

$$\text{Percent strontium} = \frac{190.8A}{W}$$

where A = gm. of strontium sulfate

W = gm. of sample

4.4.4.4 *Magnesium content.* Transfer 5 gm. of the sample to a 250 ml. beaker and decompose the peroxide by the addition of 10 ml. of concentrated hydrochloric acid in small portions. Dilute to 50 ml. and warm until the sample is completely dissolved. Add 5 gm. of ammonium acetate and a slight excess of ammonium hydroxide. Heat to boiling, boil for 1 minute and filter, washington with hot water. Heat the filtrate to approximately 176°F and add a fresh 2 percent alcoholic solution of 8-hydroxyquinoline in 95 percent ethyl alcohol in small amounts until the solution is distinctly yellow. Add ammonium hydroxide until the solution is alkaline to phenolphthalein paper. Stir vigorously, scratching the sides of the beaker, until precipitation begins. Let settle while warm and cool in running water for 30 minutes. Filter through a medium paper and wash with a hot solution containing 5 percent ammonium acetate and 5 percent ammonium hydroxide until the washings are colorless. Dissolve the precipitate from the paper in 50 ml. of 10 percent hydrochloric acid, catching the solution in a 250 ml. Erlenmeyer flask. Add 3 drops of 1 percent aqueous indigo-carmine solution and titrate with approximately 0.05 N potassium bromate-bromide solution until the color of the solution turns yellow and add 2 ml. in excess. Immediately add 5 ml. of freshly prepared 20 percent potassium iodide solution and titrate with approximately 0.05 N sodium thiosulfate solution until the brown color has almost disappeared. Add 5 ml. of 1 percent starch solution and stir vigorously after the addition of each drop of thiosulfate solution near the end point. Determine the bromate-bromide titer of the thiosulfate solution as follows: Pipet 10 ml. of the bromate-bromide solution into a 250 ml. Erlenmeyer flask, add 5 ml. of concentrated hydrochloric acid and 5 ml. of a freshly prepared 20 percent potassium iodide solution. Titrate with the thiosulfate solution until the yellow color has almost disappeared, add 50 ml. of 1 percent starch solution, and continue the titration to the disappearance of the blue color. The titer is equal to 10.00 divided by the number of ml. of thiosulfate solution used. Calculate the percent magnesium as follows:

$$\text{Percent magnesium} = \frac{0.304\ (V - vF)N}{W}$$

where V = ml. of bromate-bromide used

v = ml. of thiosulfate used

F = bromate-bromide titer of the thiosulfate solution

N = normality of the bromate-bromide solution

W = gm. of sample

4.4.4.5 *Sodium content*

a. *Magnesium uranyl acetate reagent.* Prepare magnesium uranyl acetate reagent as follows: Prepare solution A by mixing 85 gm. of crystallized uranyl acetate with 60 gm. of glacial acetic acid and diluting to 1 liter with distilled water. Prepare solution B by mixing 500 gm. of crystallized magnesium acetate with 60 gm. of glacial acetic acid and diluting to 1 liter with distilled water. Heat each mixture at approximately 158°F until the salts are dissolved. Mix the

two solutions and cool to 68°F. Place the beaker containing the mixture in water at 68°F and maintain it at this temperature for 2 hours. With the aid of suction, filter the solution through a dry filter into a dry bottle. If a precipitate forms on standing, filter the solution before use.

b. *Wash liquid.* Prepare a wash liquid as follows: Shake 1 ml. of 1 percent sodium chloride solution with 25 ml. of magnesium uranyl acetate reagent. Catch the precipitate on a filter paper and wash thoroughly with 95 percent ethyl alcohol. Mix the precipitate with 1 liter of 95 percent ethyl alcohol and allow to stand for 1 hour with frequent shaking. Filter the solution and use the filtrate as a wash liquid.

c. *Procedure.* Transfer a portion of approximately 0.5 gm. of the sample to 150 ml. beaker. Dissolve the sample in a minimum amount of 1:1 nitric acid and evaporate carefully to dryness. Dissolve the salts in approximately 5 ml. of distilled water. Add 25 ml. of the magnesium uranyl acetate reagent and cool to 68°F. While maintaining the temperature of 66°F to 68°F, rapidly stir the contents of the beaker for 30 minutes by means of a mechanical stirrer. Transfer the precipitate to a tared filtering crucible, using a total of 25 to 30 ml. of the wash liquid for transferring and washing the precipitate. Dry the crucible and precipitate at 212°F to 230°F for 30 minutes, cool in a desiccator and weigh. Calculate the weight of the magnesium sodium uranyl acetate $MgNa(UO_2)_3(C_2H_3O_2)_9{:}6H_2O$ to percent sodium in the sample as follows:

$$\text{Percent sodium} = \frac{1.54A}{W}$$

where A = gm. of precipitate

W = gm. of sample

4.4.4.6 *Aluminum content.* Calculate the percent aluminum as follows: unless noted "less than" as in paragraph 4.4.5.1.

$$\text{Percent aluminum} = \frac{52.9\ (A - 0.0143BW)}{W}$$

where A = gm. of the combined oxides as determined in 4.4.4.1

B = percent iron found as specified in 4.4.4.1

W = gm. of sample

4.4.4.7 *Chloride content.* Transfer the filtrate from the calcium determination to a 500 ml. Erlenmeyer flask. Make acid with 1:1 nitric acid and add 5 ml. in excess. Add about 5 ml. of 10 percent ferric nitrate solution. Add an excess of 0.1N silver nitrate solution and titrate with 0.05N ammonium thiocyanate solution to the appearance of a brownish tinge which is permanent on shaking. Determine the silver nitrate titer of the thiocyanate solution by diluting 20.00 ml. of silver nitrate to 100 ml. and titrating with the thiocyanate solution using 3 to 5 ml. of the indicator. The titer is equal to 20.00 divided by the ml. of ammonium thiocyanate solution used. Calculate the percent chlorides as barium chloride as follows:

$$\text{Percent barium chloride} = \frac{10.4\ (V - vF)N}{W}$$

where V = ml. of silver nitrate used

v = ml. of thiocyanate used

F = Silver nitrate titer of thiocyanate

N = normality of silver nitrate solution

W = weight of sample (gms.)

4.4.4.8 *Nitrate content.* Transfer 10 gms. of the sample to a 500 ml. Kjeldahl flask. Add 50 ml. of distilled water and sufficient glacial acetic acid to dissolve the peroxide. Add 1 gm. of powdered Devarda's metal and enough cold 50 percent sodium hydroxide

solution to render the contents alkaline to phenolphthalein. (The indicator may be added to the flask just before the addition of the alkali.) Immediately connect with a trap and condenser, with end of the condenser tube dipping just below the surface of 50 ml. of 4 percent boric acid. Digest for 2 hours, then distill over about 100 ml. of solution. Add 4 drops of methyl red to the distillate and titrate with approximately N/20 sulfuric acid. Match the end-point color against the color produced by adding four drops of methyl red to 50 ml. of 4 percent boric acid and diluting to the same volume as the titrated solution. Run a blank determination using the same amounts of acetic acid and Devarda's metal as used in the analysis. Calculate the percent nitrates as barium nitrate as follows:

$$\text{Percent barium nitrate} = \frac{13.07\ (V - v)\ (N)}{W}$$

where V = ml of sulfuric acid used

v = ml. of sulfuric acid used in the blank

N = normality of the sulfuric acid

W = gm. of sample

4.4.4.9 *Insoluble matter.* Place a weighed portion of approximately 2 gm. of the sample in a 250 ml. beaker and add 25 ml. of 10 percent hydrochloric acid. Evaporate the solution nearly to dryness on an electric hot plate. Dry the residue completely on a steam bath and heat the dry material at 221°F to 230°F for 2 hours. Add 10 ml. of 20 percent hydrochloric acid, cover the beaker with a watch glass, and heat on a steam bath for 10 minutes. Add 50 ml. of cold distilled water and filter immediately through a coarse, ashless filter paper, catching the filtrate and washings in a 500 ml. volumetric flask. Save the filtrate and washings for the determination of barium content as described in 4.4.4.11. Thoroughly wash the insoluble material on the filter with 0.5 percent hydrochloric acid solution. Dry the filter paper and contents, transfer to a tared porcelain crucible, burn off the paper slowly and heat the residue until all carbonaceous matter is removed. Ignite the residue in the crucible at a cherry-red heat in a muffle furnace or over a gas flame, cool in a desiccator, and weigh. Calculate the increase in weight to percentage of insoluble matter in the sample.

4.4.4.10 *Grit.* Transfer a 50 gm. portion of the sample to an 800 ml. beaker and treat with hydrochloric acid in the manner described in 4.4.4.9 using proportionally larger amounts of acid. Add 200 ml. of cold distilled water, and filter through a coarse filter paper. Wash and evaporate nearly to dryness. Add 5 ml. of concentrated nitric acid and evaporate to dryness. Repeat the treatment with nitric acid and again evaporate to dryness. Add 5 ml. of distilled water, and by means of a rubber-tipped glass rod break up the insoluble residue. By means of a jet of distilled water, transfer the solid matter to a No. 170 U. S. standard sieve and wash thoroughly. If any solid material is retained by the sieve, wash this well with water, alcohol, and finally ether. Transfer the material to a tared weighing bottle, weigh, and calculate to percentage in the sample. Transfer the material to a smooth glass slide. Rub the material on the slide by exerting pressure with a smooth steel spatula blade. Note if the material consists of grit as indicated by the persistence of a scratching noise when pressing and rubbing of the material on the glass slide is continued.

4.4.4.11 *Barium content.* Dilute the filtrate and washings obtained as described in 4.4.4.9 to 500 ml. with distilled water. Transfer a 50 ml. aliquot to a 600 ml. beaker, and dilute to approximately 400 ml. with distilled water. Neutralize the solution with ammonium hydroxide, add 4 ml. of 40 percent hydrochloric acid, and heat to boiling. Add 20 ml. of one percent sulfuric acid solution in a fine stream with rapid agitation. Place the beaker on a steam bath and allow the pre-

cipitate of barium sulfate to settle for at least an hour, preferably overnight. Filter the solution through a tared filtering crucible having a thick filter pad. Wash the precipitate with 1 percent sulfuric acid solution, dry, ignite at cherry-red heat for ½ hour, cool in a desiccator, and weigh. Calculate the gain in weight to percentage of barium in the sample.

$$\text{Percent of barium} = \frac{58.85A}{W}$$

where A = gain in weight

W = weight of sample represented by the aliquot

4.4.5 *Spectrographic test.* The metallic impurities may be determined by spectrographic methods as approved by the contracting officer.

4.4.6 *Granulation test.* Nest the U. S. standard sieves, conforming to specification RR-S-366, properly superimposed, on a bottom pan. Place a 100 gram portion of sample on the upper sieve. Add 2 metal disks about the size and weight of nickel coins. Cover, and shake for 5 minutes by means of a mechanical shaker geared to produce 300 plus or minus 15 gyrations and 150 plus or minus 10 taps of the striker per minute. Weigh the amounts retained or passing through the sieves, and calculate the percentage on the basis of total sample recovered.

4.5 **Resubmission.** If the composite sample representative of the lot fails to pass the inspection tests, the manufacturer shall have the option of having analysis of each primary sample made without expense to the Government. The manufacturer may then remove or replace defective portions of the lot represented by the primary sample which fails to meet the requirements, and submit the lot for acceptance, provided that the markings on the containers are such that complete removal or replacement of defective portions of the lot can be made to the satisfaction of the inspector.

4.6. The packing and marking of the containers shall be examined to determine compliance with the requirements of section 5 of this specification.

5. PREPARATION FOR DELIVERY

5.1 **Packing.** Packing shall be level A, B or C as specified.

5.1.1 *Level A.* Barium peroxide shall be packed in 12 gallon (150 lbs.) steel drums conforming to specification MIL-D-6054. Steel drums shall be with a full open head provided with a twist lock closure or bolted ring closure. The lid shall have a tubular rubber gasket. The drums shall be provided with a bag liner fabricated from nominal 6 ml. thick polyethylene conforming to L-P-378, type I, finish 1. All bag seams and closure shall be heat sealed. Three units of desiccant conforming to specification MIL-D-3464 shall then be put on top of the sealed polyethylene bag (to absorb any moisture which may be entrapped). A printed card identified with marking in accordance with standard MIL-STD-129 shall be inserted just before the drum is closed.

5.1.2 *Level B.* Barium peroxide shall be packed in fiber drums conforming to specification MIL-D-26993 and to ICC Regulation 21C. Polyethylene bag as specified in 5.1.1 shall be provided. Fiber drums shall be a full open head provided with locking ring closure. Net weight of the material of each drum shall be 150 lbs.

5.1.3 *Level C.* Barium peroxide shall be packed in accordance with the manufacturer's commercial practice to assure acceptance by common carrier for safe delivery at first destination for immediate use. Container shall comply with Interstate Commerce Commission Regulations (see Code Federal Reg-

ulations CFR 71-78) and regulations of carriers as applicable to the mode of transportation.

5.2 Marking. In addition to any marking required by the contract or order, shipments shall be marked in accordance with standard MIL-STD-129.

6. NOTES

6.1 Intended use. Barium peroxide, grade A, is intended for pyrotechnic use. Barium peroxide, grade B, is intended for use in the manufacture of ignition and tracer compositions.

6.2 Ordering data. Procurement documents should specify the following:

(a) Title, number and date of this specification.

(b) Grade and class required.

(c) Level of packing required (see 5.1).

Custodian:	Preparing activity:
Army—MU	Army—MU
Navy—WP	Project No. 6810-0222

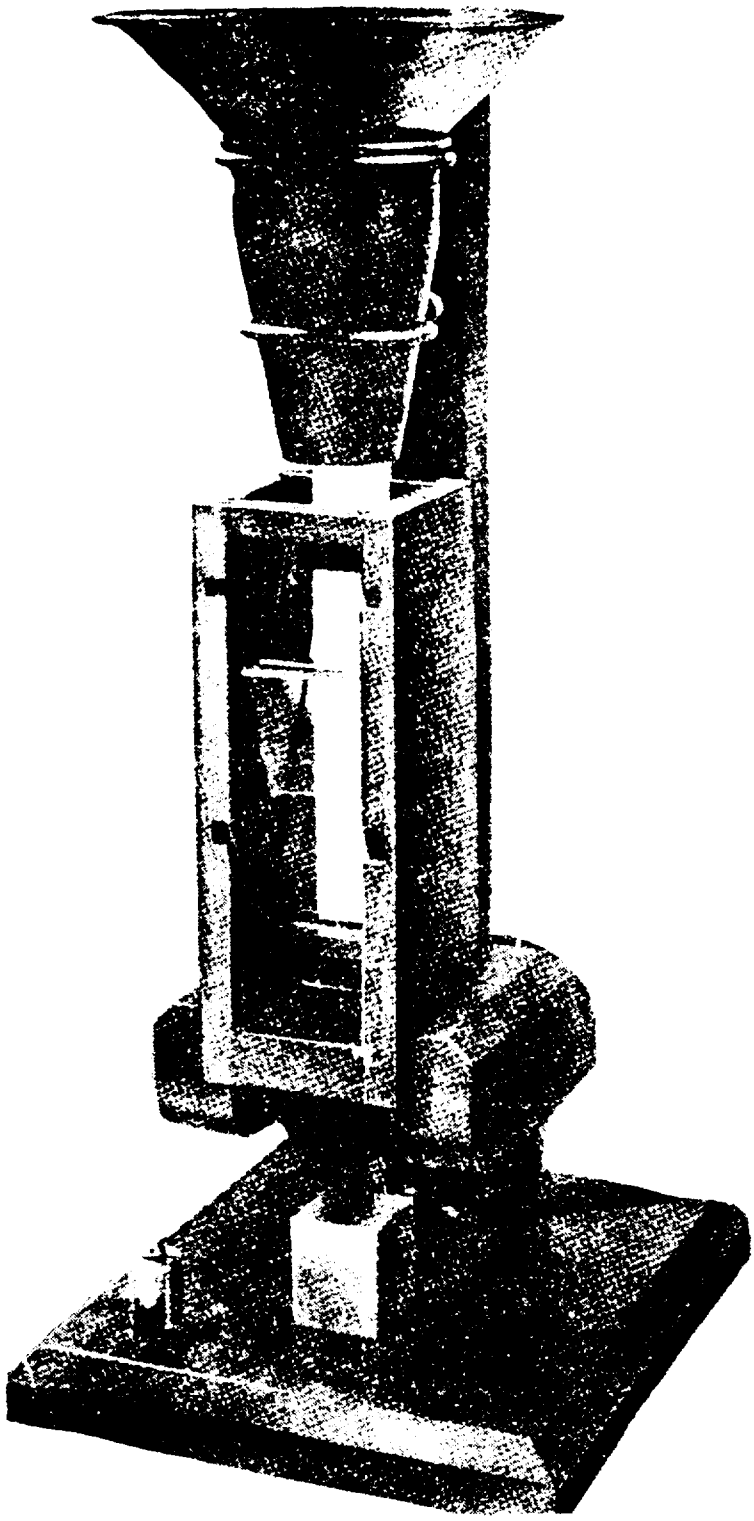

FIGURE I. *Apparatus for determining of apparent density.*