MILITARY SPECIFICATION

LEAD AZIDE (SPECIAL PURPOSE) (FOR USE IN AMMUNITION)

1. SCOPE

1.1 This specification covers a grade of lead azide to be used in Aerial Mines.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

MILITARY

MIL-S-51132 - Sodium Carboxymethyl Cellulose (For Ammunition Use) (See 6.3)

STANDARDS

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes (ABC-STD-105)
MIL-STD-109 - Quality Assurance Terms and Definitions
MIL-STD-129 - Marking for Shipment and Storage
MIL-STD-650 - Explosive: Sampling, Inspection and Testing
MIL-STD-1235 - Single and Multilevel Continuous Sampling Procedure and Tables for Inspection by Attributes

(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.)

FSC: 1345

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 shall apply.

CODE OF FEDERAL REGULATIONS

49 CFR 71-90 - 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 and Revisions) available from the Superintendent of Documents, Government Printing Office, Washington 25, D.C. Orders for the above publications should cite "49 CFR 71-90 (Latest Revision).")

3. REQUIREMENTS

3.1 Crystal growth control agent.-Lead Azide shall be precipitated from a solution of sodium carboxymethyl cellulose (NaCMC) which shall be used as the crystal growth control agent. The NaCMC shall be in accordance with Military Specification MIL-S-51132 or see 6.3.

3.2 Physical and chemical characteristics .-The Lead Azide shall have the following chemical and physical characteristics when tested as specified herein.

3.2.1 Color. -The color shall be white to buff, when tested as specified in 4.3.1.

3.2.2 Form

3.2.2.1 Aggregates. -The aggregates shall contain no well defined translucent crystals when examined microscopically (see 4.3.2).

3.2.2.2 Particles. -The particles shall be opaque, free flowing powder and irregular in size and shape when tested as specified in 4.3.2.

3.3 Chemical tests

3.3.1 Purity. -The purity shall be 98.5 percent minimum (min.), when-tested as specified in 4.3.3.

3.3.2 PH.-The lead azide shall have a pH of 7.5 max., and 5.0 min., when tested as specified in 4.3.4.

3.3.3 Matter insoluble in nitric acid.-The insoluble matter of the lead azide in nitric acid shall be 0.05 percent max. and none shall be retained on a U.S. Standard Sieve 230, when tested as specified in 4.3.5.

3.3.4 Lead carboxymethyl cellulose.-The carboxymethyl cellulose when determined as the lead salt shall be 0.60 percent min., and 1.20 percent max., when tested as specified in 4.3.6.

3.3.5 Bulk density. -The bulk density shall be 1.1 gram (gm.) per milliliter (ml.) min. when tested as specified in 4.3.7.

3.4 Workmanship.-The lead azide shall be free from grease, wood slivers or chips, rubber or plastic particles, or any other foreign particles. During manufacture, care must be exercised to assure that the precipitation kettles are cleaned before manufacture of each new batch. The solution of sodium carboxymethyl cellulose must be filtered prior to use in such a manner to preclude the presence of fibrous material. The lead acetate solution must be filtered until clear (i.e., no suspension of lead carbonate) and must be stored in such a manner to preclude the formation of lead carbonate due to atmospheric carbon dioxide contamination.

4. QUALITY ASSURANCE PROVISIONS

4.1 General quality assurance provisions. -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. Inspection records of the examinations and tests shall be kept complete and available to the Government as specified in the contract or order. 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. Reference shall be made to Standard MIL-STD-109 in order to define terms used herein. Inspections shall be performed in accordance with this specification and other specifications referenced in any of the contractual documents.

4.1.1 Contractor quality assurance system.-If the contractor desires to utilize a quality assurance system which is at variance with the quality assurance provisions of 4.2 and 4.3 and other documents referenced herein, he shall submit a written description of the system to the contracting officer for approval prior to initiation of production. It shall include

a description covering controls for lot formation and identification, inspections to be performed, inspection stations, sampling procedures, methods of inspection (measuring and testing equipment) and provisions for control and disposition of non-conforming material. The written description will be considered acceptable when, as a minimum, it provides the quality assurance required by the provisions of 4.2 and 4.3 and the other documents referenced herein. The contractor shall not be restricted to the inspection station or the method of inspection listed in this specification provided that an equivalent control is included in the approved quality assurance procedures. In cases of dispute as to whether certain procedures of the contractor's system provide equal assurance, the comparable procedure of this specification shall apply. The contractor shall notify the Government of, and obtain approval for, any change to the written procedure that affects the degree of assurance required by this specification or other documents referenced herein.

4.1.2 Submission of product.-At the time the completed lot of product is submitted to the Government for acceptance, the contractor shall supply the following information accompanied by a certificate which attests that the information provided is correct and applicable to the product being submitted:

a. A statement that the lot complies with all quality assurance provisions of the approved current written description of the system.
b. Quantity of product inspected.
c. Results obtained for all inspections performed.
d. Specification number and date, together with an identification and date of changes.
Certificates of analysis of all material procured directly by the contractor including a statement that NaCMC has been used.
f. Quantity of product in the lot.
g. Date submitted.

The certificate shall be signed by a responsible agent of the certifying organization. The initial certificate submitted shall be substantiated by evidence of the agent's authority to bind his principal. Substantiation of the agent's authority will not be required with subsequent certificates unless, during the course of the contract, this authority is vested in another agent of the certifying organization.

4.1.3 First article inspection

4.1.3.1 Submission.-The contractor shall submit a first article quantity as designated by the Contracting Officer for evaluation in accordance with the provisions of 4.1.3.2 (see 6.2). The first article sample shall consist of 250 grams of material.

The sample submitted shall have been produced by the contractor (or furnished by a supplier) using the same production processes, procedures, and equipment as will be used in fulfilling the contract. All materials, including packaging and packing, shall be obtained from the same sources of supply as will be used in regular production. The sample shall be accompanied by certificates of conformance. A first article quantity, or portion thereof, as directed by the Contracting Officer, shall also be submitted whenever there is a lapse in production for a period in excess of 90 days, or whenever a change occurs in manufacturing process, material used, drawing, specification or source of supply as to significantly affect product uniformity as determined by the Government. Prior to submission, the contractor shall inspect the sample to the degree necessary to assure that it conforms to the requirements of the contract and submit a record of this inspection with the sample. A sample containing known defects will not be submitted unless specifically authorized by the Contracting Officer.

4.1.3.2 Inspections to be performed.-The sample will be subjected by the Government to any or all of the examinations or tests specified in 4.2 and 4.3 of this specification and any or all requirements of the applicable drawings.

4.1.3.3 Rejection. -If the sample fails to comply with any of the applicable requirements, the first article quantity shall be rejected. The Government reserves the right to terminate its inspection upon any failure of a sample to comply with any of the stated requirements. In the event of rejection, the Government reserves the right to require the contractor to take corrective action and submit a new first article quantity or portion thereof. Until a first article quantity is accepted, the contractor is in no way authorized by the Government to resume regular production unless otherwise directed by the Contracting Officer.

4.2 Inspection provisions

4.2.1 Lot formation. -A lot shall consist of one or more batches of lead azide produced by one manufacturer, under one continuous set of operating conditions, in accordance with the same specification or same specification revision. A batch shall be a maximum of 17 pounds of lead azide that has been subjected to one chemical and/or physical mixing process. Each lot shall be identified with a lot identification number, name of manufacturer, date of manufacture as well as dry weight of lead azide contained therein.

4.2.2 Examination. -Inspection for critical defects shall be 100 percent. Sampling plans and procedures for Major and Minor defects shall be in accordance with MIL-STD-105 except that continuous sampling plans in accordance with Standard MIL-STD-1235 may be used if approved by the procuring activity. Also, at the option of the procuring activity, AQL's and sampling plans may be applied to individual characteristics listed using an AQL of 0.65 percent for each Minor defect and an AQL of 0.40 percent for each Major defect.

4.2.2.1 Bag, cotton duck prior to closing (see 5.1)

Categories	Defects	Method of Inspection	Code No. (see 6.4)
Critical:			
1.	Lead azide insufficiently wet	Visual	01001
Major:	AQL 0.40 percent		
101.	Cloth cap pierced, torn or improperly positioned	Visual	01002
Minor:	AQL 0.65 percent		
201.	Evidence of poor workmanship (see 3.4)	Visual	01003

4.2.2.2 Bag, cotton duck (see 5.1)

Categories	Defects	Method of Inspection	Code No.
Critical:	None defined		
Major:	AQL 0.40 Percent		
101.	Bag pierced or torn	Visual	02001
102.	Bag improperly closed	Visual	02002
Minor:	None defined		

4.2.2.3 Bag, waterproof prior to closing (see 5.1)

Categories	Defects	Method of Inspection	Code No.
Critical:	None defined		
Major:	AQL 0.40 Percent		
101.	Cotton duck bag missing	Visual	03001
Minor:	None defined		

4.2.2.4 Bag, waterproof (5.1)

Categories	Defects	Method of Inspection	Code No.
Critical:			
1.	Bag pierced or torn	Visual	04001
2.	Bag improperly closed	Visual	04002
Major:	None defined		
Minor:	None defined		

4.2.2.5 Container, prior to closing (see 5.1)

Categories	Defects	Method of Inspection	Code No.
Critical:	None defined		
Major:	AQL 0.65 Percent		
101.	Jute liner torn	Visual	05001
102.	Sawdust insufficiently saturated	Visual	05002
103.	Filled waterproof bag improperly surrounded by sawdust	Visual	05003
104.	Container pierced, cut or damaged	Visual	05004
Minor:	None defined		

4.2.2.6 Closed container (see 5.2)

Categories	Defects	Method of Inspection	Code No.
Critical:			
1.	Marking misleading or unidentifiable	Visual	06001
Major:	AQL 0.40 Percent		
101.	Container improperly closed or sealed	Visual-Manual	06002
Minor:	AQL 1.00 Percent		
201.	DOD symbol misleading or unidentifiable	Visual	06003
202.	Bare spot or exterior other than slight scratches (applicable metal containers)	Visual	06004

4.2.3 Testing (NOTE: To safely dispose of waste lead azide, add all azide residues or contamination into 50 times its weight of 15 percent eerie ammonium nitrate.)

4.2.3.1 Sampling. -The tests depicted in 4.3 shall be performed on a compsite sample obtained by removing equal quantities of lead azide from each batch of lead azide in the lot and mixing.

4.2.3.1.1 Preparation of the sample.-An equal portion of lead azide shall be removed from each bag in the lot by means of horn spoon to form a sample of approximately 100 grams (dry weight). (NOTE: Samples may be taken from the agitated vessel before the lead azide is transferred from the vessel to the shipping bag). The sample shall be blended on a smooth surface by mixing with a horn spatula. Water shall be added in case the sample appears dry. The sample shall be spread out and divided into squares approximately 1/2 inch on a side, by means of the spatula, small portions shall be taken from each square to make a retained sample of approximately 50 grams (dry weight). These portions, thoroughly wetted, shall be transferred to a smooth-necked bottle, tightly stoppered with a rubber stopper, and the stopper secured with adhesive tape. This retained sample bottle shall be so labeled that the bag from each lot from which the material was taken can be easily identified. The retained sample shall be held for possible future examination (6 months minimum). The remaining portion of the sample shall be used for testing. This sample, thoroughly wetted, shall be transferred to a smooth-necked bottle tightly stoppered with a rubber stopper and the stopper secured with adhesive tape. The bottle shall be labeled to show the name of the material, manufacturer, plant, contract or order number, bag number, lot number and number of pounds in the lot. The tests specified in 4.3 shall be performed on this sample. If the sample fails to comply with the requirements specified herein, the lot shall be rejected.

4.3 Test methods and procedures. -The following tests shall be performed.

4.3.1 Color, Major defect, Defect Code No. 07001.-Observe the color of the lead azide by visual examination.

4.3.2 Form, Major defect, Defect Code No. 08001.-Spread a thin layer of the sample on a glass slide and allow to dry at room temperature. Examine this material under a microscope using a magnification of approximately 150.

4.3.3 Purity, Major defect, Defect Code No. 09001.-(N0TE: Caution must be exercised. Evolution of hydrazoic acid which is toxic but odorless occurs. Therefore, operations where the lead azide is dissolved in an acid should be performed in a fume hood.)

4.3.3.1 Standard method

4.3.3.1.1 Apparatus. -Assemble the apparatus as shown on Figure 1. Insert the burette, containing water saturated with nitrogen, into one hole in the rubber stopper of the reaction flask. Add 90 ml. of 10 percent sodium hydroxide solution saturated with nitrogen, to the 125 ml. carbon dioxide absorption flask. Fill the gas burette and leveling bulb with a 0.1 percent solution of Nacconol, or approved equivalent, saturated with nitrogen. Control the temperature of the system by circulating water by means of a pump, between the water reservoir which serves as a jacket for the reaction flask and the glass jacket of the gas burette. (NOTE: An equivalent type of apparatus and method may be used (see 6.5).

4.3.3.1.2 Determination. -Air dry part of the sample in a Buchner funnel and then heat in an oven maintained at 65 degrees Centigrade (degrees C.) to constant weight, but not more than 25 hours. (NOTE: An alcohol wash may be used to aid drying). Transfer an accurately weighed portion of approximately 1.7 gm. of the dried sample to a glass vial shown on Figure 1. Add 3 ml. of water to the sample and place the vial containing the sample plus the water erect in the reaction flask containing 75 ml. of 15 percent ceric ammonium nitrate solution saturated with nitrogen. Connect the reaction flask to the apparatus (to insure that the reaction and absorption flasks are connected to the apparatus without air leaks, apply a coat of molten paraffin wax to all rubber-to-glass joints of these assemblies) without disturbing the position of the vial. Open stopcocks 1 and 2 to the atmosphere by adjusting them as shown by position A on figure 1. Adjust the water level in the gas burette to zero with the aid of the leveling bulb. Allow the system to come to a temperature equilibrium by waiting 10 minutes after connecting the reaction flask. Read the temperature of the thermometer in the water jacket to 0.1 degree C. Turn stopcocks 1 and 2 to position B and shake the reaction flask so that the vial inside of it is upset and assumes a horizontal position at the bottom of the reaction flask. As the gas is evolved from the reaction mixture, lower the leveling bulb so that the liquid level in the leveling bulb is slightly below that in the gas burrette. Gently agitate the reaction flask occasionally, to aid in completing the decomposition of the lead azide. When all the lead azide has decomposed, as indicated by the fact that gas bubbles are no longer forming in the mixture in the reaction flask, fill the flask with a measured volume of water from the water burette. Allow the temperature of the system to adjust itself to within 0.1 degree C. of its temperature at the beginning of the determination and then measure the volume of gas in the gas burette at the existing atmospheric pressure. Determine the atmospheric pressure to the nearest 0.1 mm. of mercury with the aid of a mercurial barometer having a brass scale. Correct the observed reading to O degrees C. Calculate the percent lead

azide as follows:

$$\text{Percent lead azide} = \frac{0.1558\ (A-B)\ (C-D)}{(273 \text{ plus or minus } t)w}$$

where:
A = ml. of gas measured in gas burette
B = ml. of water added to reaction flask
C = atmospheric pressure in mm. of mercury
D = vapor pressure of water in mm. of mercury at temperature t
W = weight of dry sample in gins.
t = temperature of water in the jacket surrounding gas burette in degrees C.

4.3.3.2 Distillation titration method (alternative to the standard method.)

4.3.3.2.1 Apparatus (see Figure 2).-The apparatus consists of a heating mantle, a 125 ml. round bottom distilling flask, a three-way side arm adapter, a 50 ml. burette fitted with a number 5 size rubber stopper, water cooled condenser, adapter, and a 125 ml. Erlenmeyer flask. Standard taper ground glass joints are used to connect the distilling flask, side-arm adapter, condenser and adapter. The three way side-arm adapter has a female joint at its upper end to which the burette is fitted with the Number 5 rubber stopper. A thin film of silicone grease may be applied to all of the ground glass joints.

4.3.3.2.2 Solutions

a. Ceric ammonium nitrate, 0.1 Normal (N). This solution is made up 2N with respect to perchloric acid.
b. Sodium Oxalate, 0.1N. The NBS oxidmetric standard is used.
c. Perchloric acid, 3N.

4.3.3.2.3 Procedure.-Air dry a portion of the sample as described in 4.3.3.1.2. Transfer an accurately weighed portion of from two to three mini-equivalents (0.2911 to 0.4366 gins.) of the dried sample to a small porcelain (or glass) crucible or boat. Cover the sample with water. To prevent foaming add a small amount of Down Corning Anti-Foam AF Emulsion, or equivalent, to the reaction flask before the introduction of the sample. Place the sample in the distilling flask, using rubber tipped forceps. Connect the ground glass joints of the apparatus. Connect the burette to the three way side-arm adapter by means of the Number 5 rubber stopper. Transfer an accurately measured volume of about 40 to 50 ml. of 0.1N eerie ammonium nitrate to the Erlenmeyer flask in a postion so that the adapter from the condenser extends below the surface of the eerie ammonium nitrate. Fill the burette with 3N perchloric acid. Caution shall be exercised when adding perchloric acid to the distilling flask. Check to assure that all glass joints are sealed,

open stop cock of burette and add 50 ml. of 3N perchloric acid. Distill the mixture in the distilling flask for approximately 12 minutes. Disconnect the adapter and rinse thoroughly with distilled water. Collect the rinse water in the receiver flask. Add one drop of 0.025N 5-Nitro-1, 10 phenanthroline (nitro ferroin) to the receiver flask and titrate the excess cerate with standard 0.1N sodium oxalate to the nitro ferroin end point (denote by a color change from red to pale greenish blue). Make a blank determination on the reagents and apply correction if necessary. Standardize the eerie ammonium nitrate solution with sodium oxalate. This standardization can be made by titrating 40.0 ml. of the cerate solution with the standard oxalate solution. Calculate the percent lead azide as follows:

$$\text{Percent lead azide} = \frac{N\ (B-A)\ 14.56}{W}$$

where:

A = volume of sodium oxalate
N = normality of sodium oxalate, ml.
B = volume of sodium oxalate used in blank determination, ml.
w = weight of sample, gm

4.3.4 pH, Major Defect, Defect Code No. 10001.-Determine the pH of a 10 gram specimen of lead azide in accordance with Method 103.1 of Military Standard MIL-STD-650.

4.3.5 Matter insoluble in nitric acid, Major defect, Defect Code No. 11001.-Mix the sample thoroughly, air-dry a portion on a Buchner funnel and transfer approximately 5 gins. of the damp material to a tared 150 ml. beaker. Heat the beaker and contents *in* an oven maintained at 65°C. to constant weight but not more than 25 hours, cool in a desiccator, and weigh. Add 100 ml. of dilute nitric acid (1:4) to the beaker, and warm beaker with contents on a hot water bath. Allow any insoluble matter present to settle and decant supernatant liquid through a tared, filtering crucible, catching the filtrate in a clean filtering flask. Repeat the previous operation (adding 100 ml. of dilute nitric acid, warming on hot bath and filtering) two additional times. Transfer quantitatively the residue in the beaker to the tared filtering crucible with the aid of distilled water. Remove tared, filtering crucible from filtering flask and attach to another filtering flask. Wash contents of crucible with five 20 ml. portions of five percent sodium hydroxide, allowing each portion of the sodium hydroxide to remain in contact with the residue for 1 minute. Wash crucible and contents with three 20 ml. portions of cold distilled water. Aspirate for five minutes. Dry the crucible and contents in an oven maintained at 105° plus or minus 5°C. for 1 hour, cool in a desiccator and weigh. Calculate the gain

in weight of the crucible to percent insoluble in nitric acid. (NOTE: Caution must be exercised. In this test the lead azide is dissolved in dilute nitric acid, a process which gives rise to the evolution of hydrazoic acid gas which is toxic but oderless. Therefore, this operation should be done in a fume hood.). Transfer contents of crucible into a U.S. Standard Sieve 230 and visually observe if any particles are retained on this sieve.

4.3.6 Lead carboxymethyl cellulose, Major defect, Defect Code No. 12001.-Transfer 2.00 gins. of a dried sample of the lead azide to a 250 ml. beaker. Add 75 ml. of glacial acetic acid to the beaker and place beaker with contents on the steam bath, covered with a watch glass, for 30 minutes. Filter hot through a tared sintered glass crucible. Use an additional 50 ml. of hot glacial acetic acid to rinse beaker and crucible. Treat residue in crucible with three 20 ml. portions of cold 10 percent lead acetate solution and applying gently suction. Wash thoroughly with hot distilled water, dry at 105 plus or minus 5°C. for 1 hour, cool in a desiccator and weigh. Calculate the percentage of lead carboxymethyl cellulose as follows:

$$\text{Percent lead carboxymethyl cellulose} = \frac{(A-B) \times 100}{C}$$

where:
A = weight of crucible plus residue
B = weight of crucible
C = dry weight of sample

CAUTION: In this test is an evolution of hydrazoic acid gas which is very toxic. The determination should be performed in a fume hood.

4.3.7 Bulk density, Major Defect, Defect Code No. 13001

4.3.7.1 Preparation of specimen

4.3.7.1.1 Applicable to dry lead azide.-Transfer a portion of approximately 4 gins, to a drying dish. Place the dish and contents into oven, maintained at 65 degrees C. plus or minus 5°C for 1 hour and then cool in a desiccator to room temperature.

4.3.7.1.2 Applicable to wet lead azide.-Transfer a portion of approximately 4 gm to a 50 ml beaker. Decant off the excess water and add 20 to 30 ml. of 95 percent ethyl alcohol. Gently swirl the beaker and contents for a few minutes and then decant off the alcohol. Repeat the procedure of adding alcohol, swirling and decanting once more. Then add 20 to 30 ml. of anhydrous ethyl and swirl the beaker and contents for a few minutes. Allow the lead azide to settle and decant the ether off. Air dry the sample until no ether odor is detected. Place the beaker and contents in a steam oven, maintained at 65 degrees plus or minus 5 degrees C., for 1 hour, and then cool in a desiccator to room temperature.

4.3.7.2 Aluminum charge plate.-The aluminum charge plate shall be 3 inches long, 2 inches wide with a single cavity near the center which has a volume of about 0.1467 ml. The cavity shall be a frustrum with a top diameter of 0.230 inch, a bottom diameter of 0.177 inch and a height of 0.278 inch. Determine the volume of the cavity by dividing the mercury used to fill the cavity by the denisty of mercury at the working temperature.

4.3.7.3 Procedure.-CAUTION: Perform this test behind a properly barricaded and grounded area and limit the quantity of lead azide in the area to that which is only going to be tested. Place the aluminum charge plate on a piece of glazed paper and fill the cavity with lead azide by means of a plastic dipper. Level off the excess lead azide, with the aid of a cardboard spatula, so that it is even with the surface of the plate. Take care that the excess azide remains on the plate thereby allowing none of the sample to fall onto the piece of glazed paper. Lift the plate from the glazed paper, which effects a transferal of the lead azide to the glazed paper. Transfer this specimen to a tared weighing pan. Repeat the above procedure until five charges are collected in the weighing pan. Weigh the pan and determine the bulk density by the following formula:

$$\text{Bulk density, gm./ml.} = \frac{A}{B}$$

where:

A = weight of the 5 charges
B = five times the volume of the charge plate cavity

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging - Level C.- Discharge the wet washed azide from the kettle into a duck cloth bag (4 ounces or heavier) or into a diaper cloth approximately 30 inches square.

(NOTE: This discharge from the kettle to the cloth may be accomplished by sluicing the lead azide from the tilted kettle with a low pressure water stream). If a diaper cloth is used, form the cloth into a bag by gathering the edges of the cloth. Bind securely the top of this bag using heavy cotton cord. Connect an identification tag (made from polyethylene or rubber) to this cord (see 5.3). Each bag shall contain not more than 17 pounds (dry weight) of lead azide. Place up to three diaper bags into a 24 inch by 24 inch eight ounce cotton duck bag. Securely tie the mouths of these duck bags with heavy cotton cord. The material used (diaper cloth and duck cloth) shall not be impregnated with resinous materials. CAUTION: The lead azide shall be wet with a solution of denatured alcohol and water containing not less than 50 percent of ethyl alcohol. (NOTE: 2D-1 alcohol may be used.)

5.2 Packing - Level C.-Containers complying with Specification 5 and 5B (metal barrels or drums), 17 H (metal drums, single trip) or 10B (wooden barrels or kegs) of Regulation for Transportation of Explosives and Other Dangerous Articles, etc. , shall be used for packing the bags described in 5.1. The packing shall be accomplished as follows:

Line the drum or barrel with a cloth drum lining made of Osnaburg or Jute material. Place several inches of clean sawdust in the bottom of the liner. Place two 8-mil polyethylene bags, one inside the other, standing upright on this bed of sawdust in the Osnaburg liner. Place the cotton duck bags within the double polyethylene bags inside the drum. No more than 153 pounds (dry weight) of lead azide shall be placed in any single drum. Fill the polyethylene bags completely with a solution of denatured alcohol/water (NOTE: SD-1 alcohol may be used) to obtain a resultant liquid that contains at least 50 percent alcohol. Seal the polyethylene bags by securely wrapping with plastic electrical tape. Fill the free space in the drum between the cloth liner and polyethylene bags with not less than 3 inches of well-packed sawdust saturated with 50/50 mixture of alcohol and water. Sew the outer bag to prevent escape of sawdust. Close and seal the drum or barrel.

5.3 Marking. -Marking to insure safe handling shall conform to Interstate Commerce Commission Regulations for Transportation of Explosives, and other Dangerous Articles, etc. In addition to any special marking required by the procuring activity, shipments shall be marked in accordance with Standard MIL-STD-129. Each bag shall be marked with batch identification numbers, name of manufacturer, date of manufacture and weight of dry lead azide (special purpose) contained therein.

6. NOTES

6.1 Intended use.-The material covered by this specification is intended for use in Aerial Mines.

6.2 Ordering data. -Procurement documents should specify the title, number and date of this Specification, and provisions for submission of first article samples.

6.3 A grade of sodium carboxymethyl cellulose previously used for acceptable lead azide RD1333 may be substituted for the material described in MIL-S-51132.

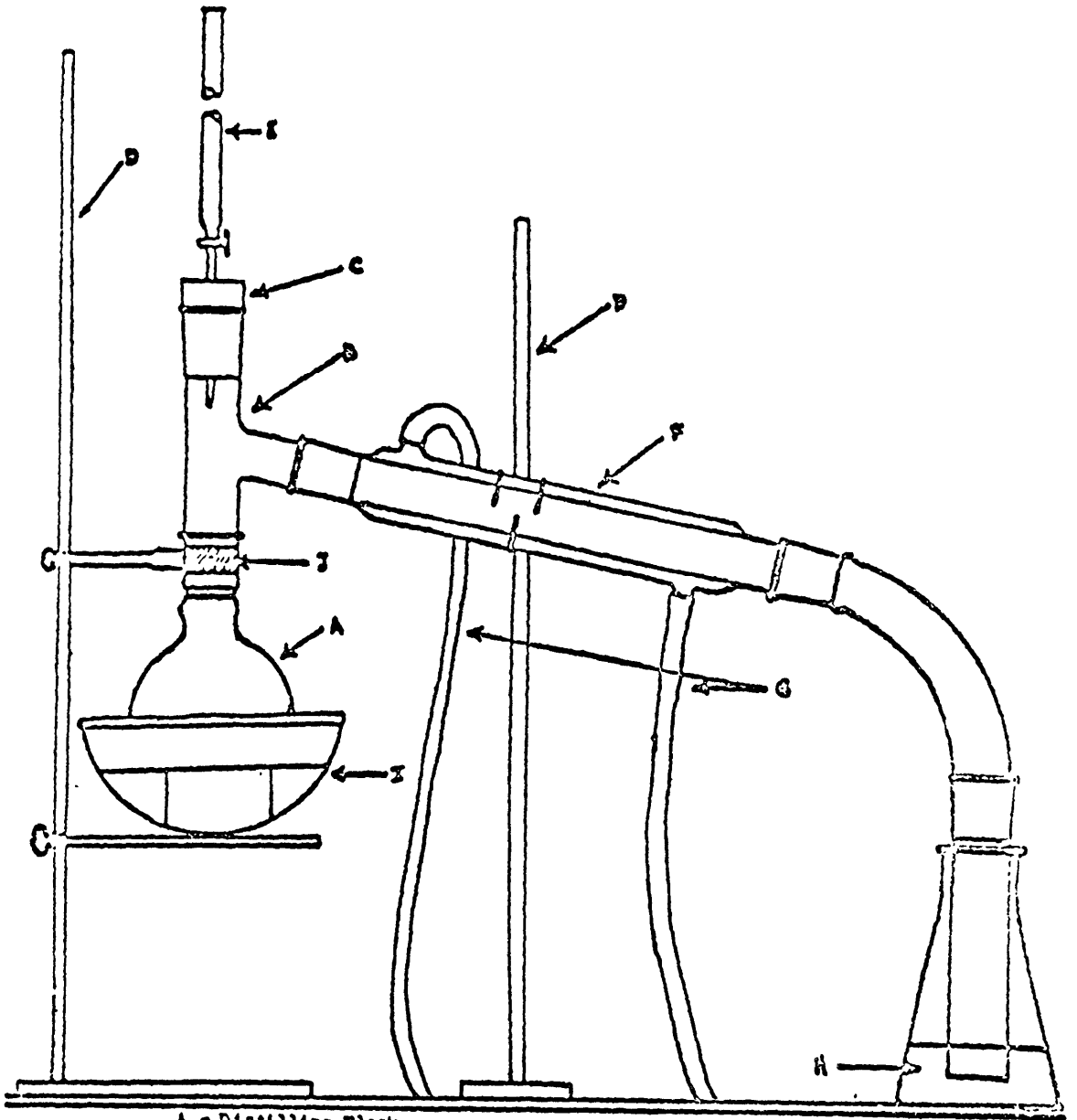
6.4 Inspection code numbers. -The five digit code numbers assigned to the inspection herein are to facilitate future data collection and analysis by the Government.

6.5 The description of apparatus and method submitted by Olin Industries, East Alton, Illinois on 7 October 1965, is an approved equivalent.

Custodian:
Army-MU

Preparing activity:
Army-MU

Project Number: 1345-A-243



A = Distilling Flask
B = Side-Armed Adapter
C = Rubber Stopper (#5)
E = Clamp Stands
F = Burette
F = Condenser
G = Rubber Tubing
H = Ceric Ammonium Nitrate
I = Heating Mantle
J = Clamp

FIGURE 2

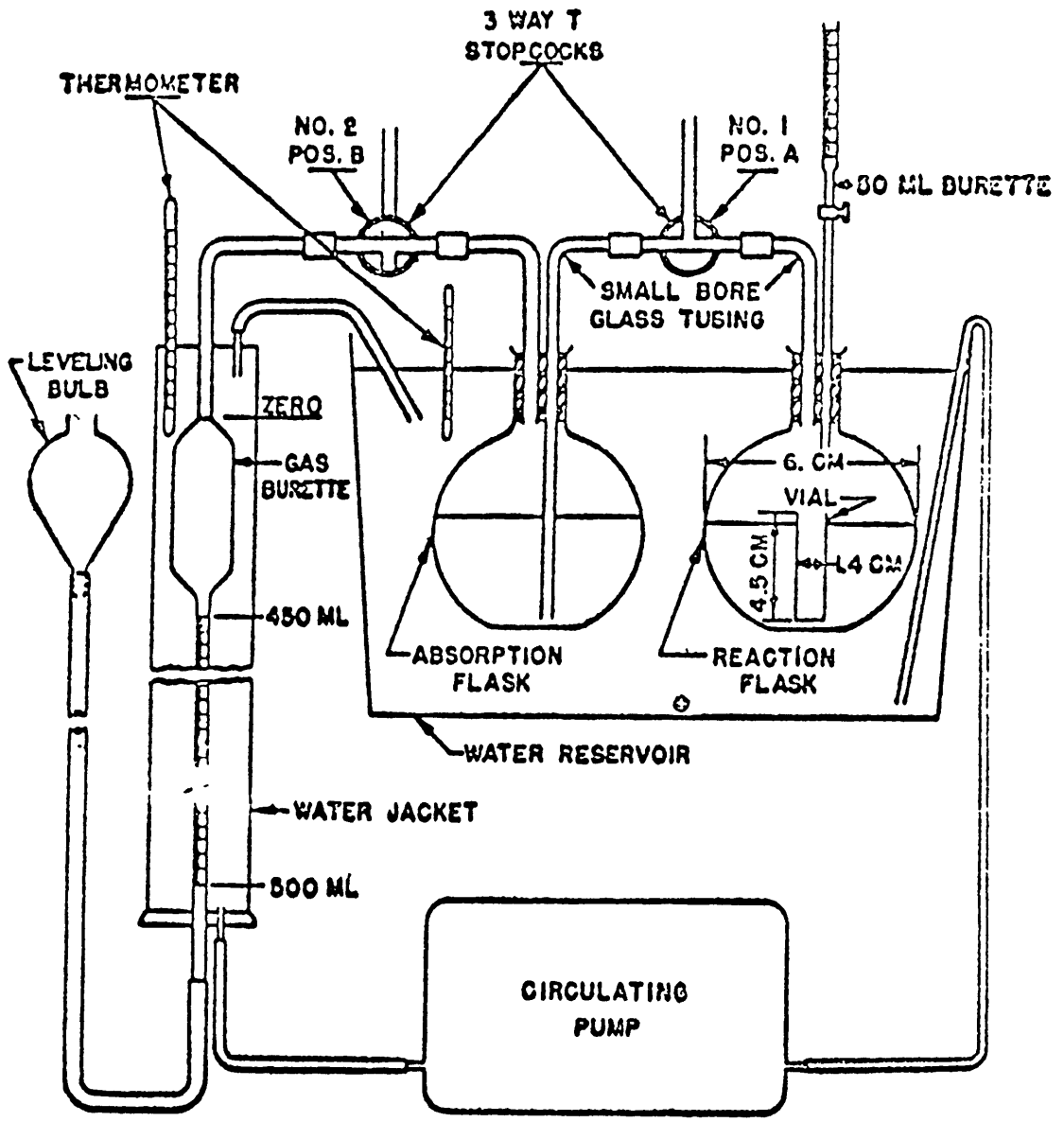


FIGURE 1.—*Equipment assembly.*

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 119-R004

INSTRUCTIONS

This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity.

SPECIFICATION

ORGANIZATION	CITY AND STATE

CONTRACT NO.	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT
		$

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO IF "YES", IN WHAT WAY?

4. REMARKS *(Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)*

SUBMITTED BY *(Printed or typed name and activity)*	DATE

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