

JAN-D-552

25 MARCH 1948

JOINT ARMY-NAVY SPECIFICATION
DIAZODINITROPHENOL (TABULAR)

This specification was approved by the Departments of the Army, the Navy, and the Air Force for use of procurement services of the respective Departments, and supersedes the following specification:

Navy Department
Bureau of Ordnance
51D25 (Ord)
23 May 1947

A. APPLICABLE SPECIFICATIONS AND OTHER PUBLICATIONS

A-1. Specifications.—The following specifications, of the issue in effect on date of invitation for bids, form a part of this specification:

U. S. ARMY SPECIFICATIONS

100-2—Standard Specification for Marking Shipments by Contractors.¹

50-0-1—General Specification for Ammunition, except Small Arms Ammunition.¹

NAVY DEPARTMENT SPECIFICATION
General Specifications for Inspection of Material.²

FEDERAL SPECIFICATION

RR-S-366—Sieves; Standard, Testing.

A-2. Other publications.—The following publications, of the issue in effect on date of invitation for bids, form a part of this specification:

BUREAU OF SUPPLIES AND ACCOUNTS PUBLICATION

Navy Shipment Marking Handbook.²

INTERSTATE COMMERCE COMMISSION REGULATIONS

Regulations for Transportation of Explosives and other Dangerous Articles, etc.

B. GRADE

B-1. Tabular diazodinitrophenol as covered by this specification shall be of but one grade.

C. MATERIAL AND WORKMANSHIP

C-1. Material.—The material shall be as specified herein.

D. GENERAL REQUIREMENTS

D-1. See section E.

¹ Applicable only to Army purchases.

² Applicable only to Navy purchases.

E. DETAIL REQUIREMENTS

- E-1. *Acidity (as HCl)*.—Maximum, 0.01 percent.
- E-2. *Color*.—Green.
- E-3. *Form*.—Tabular crystals having a maximum length of 0.2 mm.
- E-4. *Granulation*.—100 percent through a No. 100 U. S. Standard sieve. Sieves shall conform to Federal Specification RR-S-366.
- E-5. *Bulk density (dry)*.—Minimum, 0.4 gm. per cubic centimeter.
- E-6. *Sand test requirement*.—Weight of sand crushed, minimum, 33 gm.

F. METHODS OF SAMPLING, INSPECTION, AND TESTS

F-1. *Size of lot*.—A lot shall consist of not more than 300 pounds of diazodinitrophenol (dry weight).

F-2. *Sampling*.—By means of the hand or a horn spoon, sufficient material to form a primary sample of approximately 100 gm. (dry weight) shall be removed from each barrel or drum in the lot. Primary samples shall be made up of equal portions taken from each bag in the barrel or drum. Each primary sample shall be blended on a smooth surface by mixing with a horn spatula. Water shall be added in case the sample appears to be dry. The sample shall be spread out and divided into squares approximately $\frac{1}{2}$ inch on a side by means of the spatula. Small portions shall be taken from each square to make a retained portion of the primary sample of approximately 20 gm. (dry weight). The retained portion of each primary sample shall be placed in a tightly stoppered bottle so labeled that the barrel or drum from which the sample was taken can be easily identified. The remaining portions of the primary samples shall be thoroughly mixed, spread out, marked into squares and small portions taken from each until a composite sample of approximately 50 gm. (dry weight) is obtained. This composite sample shall be placed in a smooth-necked bottle with a tight-fitting stopper and labeled to show the name of the material, manufacturer, plant, contract or order number, lot number and the number of pounds in the lot. All acceptance tests shall be made on the composite sample representative of the lot. The primary samples shall be held for possible future examination should the composite sample fail to meet the requirements of this specification.

F-3. *Inspection*.—

F-3a. *Army*.—Inspection shall be made in accordance with the requirements of U. S. Army Specification 50-0-1 and shall be made at the point of delivery, unless otherwise specified in the contract or order.

F-3b. *Navy*.—Inspection shall be at the point of delivery, unless otherwise specified in the contract or order.

F-4. *Tests*.—The laboratory tests shall be made in accordance with the following paragraphs. For Navy purchases, the tests shall be made at a Government laboratory, unless otherwise specified in the contract or order.

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F-4a. Preparation of dry sample.—Since the sample as received will contain approximately 40 percent water, the following procedure shall be followed to prepare dry material for those tests where it is called for: Place a piece of filter paper, cut to proper size, in a Gooch crucible held in an adapter on a suction flask. Transfer approximately 3 to 5 gm. of the sample to the crucible with a stream of water from a wash bottle. Air dry the sample by means of suction and then transfer the material to a paper tray. Spread the material to a thin layer, thereby breaking up lumps and then heat in a hot air oven at 60° C. for a minimum of 16 hours. Hold the dried sample in a desiccator or in a rubber stoppered bottle until used.

F-4b. Acidity (as HCl).—By means of a hard rubber spatula transfer approximately 4 to 5 gm. of the sample (as received) to a 250-ml. beaker. Add 25 ml. of distilled water to the beaker, and swirl until the mixture becomes homogeneous, then allow the material to settle out. Decant the supernatant liquid through a tared Gooch crucible (designated as A) containing an asbestos mat. Repeat with a second 25 ml. of water. Transfer the filtrate to a 100-ml. beaker and add, with constant stirring, 10 ml. of approximately 0.1 N silver nitrate. If a turbidity results filter through a tared fritted glass crucible of fine porosity. Wash with alcohol, then with ether, and dry 1 hour at 100° C. Cool and weigh. Transfer the diazodinitrophenol from the beaker to the tared Gooch crucible (A). Wash with 3 successive ether washes. Suck until free from ether, then dry for 1 hour at 50° C. Cool and weigh. Calculate the weight of AgCl to percentage of acidity as HCl as follows:

$$\text{Percentage of acidity (as HCl)} = \frac{25.5W}{B}$$

where

W = weight of AgCl

B = dry weight of sample.

F-4c. Color.—The color shall be determined by visual inspection.

F-4d. Form.—Spread a thin layer of the sample over approximately a 0.5 square inch area of the central surface of a 1-inch by 3-inch glass microscope slide, in such a manner that the individual crystals are discernible. Measurement of crystal length shall be made by means of a micrometer eye-piece using a magnification of approximately 40.

F-4e. Granulation.—Place approximately 10 gm. of wet diazodinitrophenol on a No. 100 U. S. Standard sieve and wash through with a jet of water.

F-4f. Bulk density.—

F-4f(1). Apparatus.—Smooth-wall hollow metal cylinder closed at one end. The cylinder shall have an inside diameter of 0.217 inch and a length of 1.650 inches, with a capacity of 1 ml.

F-4f(2). Procedure.—Fill the tared cylinder with dry diazodinitrophenol by pouring the material into the cylinder while it is held in a vertical position. The dry material is to be poured into the cylinder from a piece of glazed paper held at the mouth

of the cylinder. The surplus material is removed from the top of the cylinder with a piece of paper or other suitable safe object. After leveling the material in the cylinder, tap gently with the finger to cause settling, and weigh. Report the final weight minus tare weight (in grams) as the bulk density of the material under test.

F-4g. *Sand test.*—Transfer to each of two empty No. 6 blasting caps 0.400 ± 0.001 gm. of dried diazodinitrophenol. Each blasting cap shall be composed of gilding metal, and be approximately 1.56 inches long by 0.217 inch inside diameter. Insert a reinforcing capsule (ferrule), with outside diameter of approximately 0.217 inch, completely open at the lower end, and with a hole 0.13 ± 0.01 inch diameter at the top end. Apply a pressure of 3,000 pounds per square inch for 3 seconds. Crimp each cap to one end of a piece of miner's fuse 8 or 9 inches long, taking care that the end of the fuse is held firmly against the charge in the cup. Crimp near the cap mouth so as to avoid squeezing the charge. Pour into the cavity of the sand test bomb 80.0 ± 0.1 gm. of Standard Ottawa sand, which passes through a No. 20 U. S. Standard sieve and is retained on a No. 30 U. S. Standard sieve, and level the sand by striking the bomb two or three times. Insert the fuse through the hole in the cover of the bomb, and lower the cap into the bomb cavity so that it is in the center of the cavity and just touching the sand. Pour 120 ± 0.1 gm. more of the sand around the cap and tap bomb as before to level the sand. To avoid possible loss of sand caused by the explosion blowing the burned fuse through the hole in the cover, a piece of rubber tubing about $\frac{1}{8}$ inch long and of such inner diameter that it fits the fuse snugly, is slipped over the fuse and adjusted at a point on the fuse so that the rubber will be against the inner side of the bomb cover when the cap is in position. Fasten the cover securely to the bomb, taking care not to displace the cap in the sand. Light the fuse, and after the explosion has taken place, empty the sand onto a sheet of smooth (glazed) paper taking care to remove any sand which may adhere to the side of the bomb, or to any pieces of the detonator shell or burnt fuse. Empty all the sand on the No. 30 sieve fitted with a pan, and weigh the sand which passes through the sieve after shaking 3 minutes, in a Ro-Tap sieve shaker, or equivalent.

F-5. *Rejection and resubmission.*—If the composite sample representative of the lot fails to pass the inspection tests, the entire lot shall be rejected. However, the manufacturer shall have the option of having an analysis of each primary sample made at no expense to the Government. The manufacturer may then remove or replace defective portions of the lot represented by the primary samples which fail to meet the requirements, and resubmit the lot for acceptance, provided that the markings on the container are such that complete removal or replacement of the defective portions of the lot can be made to the satisfaction of the Government inspector. New samples shall be taken from the entire resubmitted lot and subjected to all of the inspection tests required by this specification. If the resubmitted lot fails to pass the inspection tests, the lot shall be finally rejected.

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G. PACKAGING, PACKING, AND MARKING FOR SHIPMENT

G-1. *Packing.*—Diazodinitrophenol in bulk shall contain when packed, not less than 40 percent of water and in this wet condition shall be packed in accordance with the requirements of Interstate Commerce Commission Regulations for Transportation of Explosives and Other Dangerous Articles, etc.

G-2. *Marking.*—

G-2a. Each barrel, drum, or keg must be plainly marked *INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE*, in accordance with Interstate Commerce Commission Regulations for Transportation of Explosives and Other Dangerous Articles, etc.

G-2b. Unless otherwise specified, each container shall be marked "DIAZODINITROPHENOL (TABULAR)" with quantity contained therein as defined in the contract or order under which the shipment is made, the name of the contractor, month and year of manufacture, and number of contract or order. In addition, shipments for the Army shall be marked in accordance with the requirements of U. S. Army Specification 100-2; for the Navy in accordance with the requirements of the Navy Shipment Marking Handbook.

H. NOTES

H-1. *Use.*—The material covered by this specification is intended for use in loading fuse detonators and the manufacture of priming compositions.

H-2. Requests, requisitions, schedules, and contracts or orders should specify the title of the specification, the number, and the date.

H-3. The material covered by this specification is commonly referred to as dinol, diazol, or D.D.N.P.

H-4. Information as to the availability of Interstate Commerce Commission Regulations for Transportation of Explosives and Other Dangerous Articles, etc. may be obtained from the Interstate Commerce Commission, Washington 25, D. C.

H-5. Copies of Joint Army-Navy specifications and Federal specifications (required for Army and Air Force purchases) and U. S. Army specifications may be obtained, as indicated in the "Index of United States Army, Joint Army-Navy, and Federal Specifications Used by the War Department". Copies of this Index may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Services within the Department of the Army and the Department of the Air Force will obtain copies of Joint Army-Navy and United States Army specifications through established departmental channels. Both the title and identifying symbol number should be stipulated when requesting copies of specifications.

H-6. Copies of Joint Army-Navy specifications and Federal specifications (required for Navy purchases), Navy Department specifications and the Navy Shipment Marking Handbook may be obtained upon application to the Bureau of Supplies and Accounts, Navy Department, Washington 25, D. C., except that Naval activities should make application to the Supply Officer in Command,

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Naval Supply Center, Norfolk 11, Va. Both the title and identifying symbol number should be stipulated when requesting copies of specifications.

H-7. Copies of this Joint Army-Navy specification (required for Army purchases) may be obtained from the Office, Chief of Ordnance, Department of the Army, Washington 25, D. C.

Notice.—When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

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