

JAN-S-210

15 MAY 1945

JOIN ARMY-NAVY SPECIFICATION SODIUM OXALATE (Technical Grade)

Army Number
50-11-95A

Navy Number
51S54

This specification was approved by the War Department and the Navy Department for use of procurement services of the Army and the Navy, and supersedes the following specification:

U. S. Army
50-11-95
19 Nov. 1940

Navy Department

A. APPLICABLE SPECIFICATIONS

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

UNITED STATES ARMY SPECIFICATIONS

- 50-0-1—General Specification for Ammunition except Small Arms Ammunition.¹
- 100-2 —Standard Specification for Marking Shipments by Contractors.

NAVY DEPARTMENT SPECIFICATION

General Specifications for Inspection of Material.²

FEDERAL SPECIFICATION

RR-S-366—Sieves; Standard, Testing.

B. GRADE AND CLASSES

B-1. This specification covers one grade of sodium oxalate, furnished in the following classes as specified in the contract or order (see par. H-1):

- Class a.
- Class b.
- Class c.

C. MATERIAL AND WORKMANSHIP

C-1. See section E.

D. GENERAL REQUIREMENTS

D-1. See section E.

E. DETAIL REQUIREMENTS

- E-1. *Moisture*.—Maximum, 0.50 percent.
- E-2. *Oxalate purity*.—Minimum, 99.0 percent.
- E-3. *Insoluble matter*.—Maximum, 0.50 percent.
- E-4. *Sodium acid oxalate*.—Maximum, 1.50 percent.

¹ Applicable only to Army purchases.

² Applicable only to Navy purchases.

E-5. Granulation.—Sodium oxalate shall conform to the following granulation requirements using U. S. Standard sieves in accordance with Federal Specification RR-S-388.

	Class a	Class b	Class c
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Through 420 micron (No. 40) sieve (min.).....	99	99.9	99.9
Through 250 micron (No. 60) sieve (min.).....			
Through 149 micron (No. 100) sieve (min.).....	90		99.9

F. METHODS OF SAMPLING, INSPECTION, AND TESTS

F-1. Size of lots.—A lot shall not exceed 10,000 pounds.

F-2. Sampling.—A minimum of 10 percent of the containers in the lot shall be selected in such a manner as to be representative of the lot. When lots comprise less than 100 containers, either 10 containers or all containers in the lot shall be selected. Using a thief or scoop, remove from different parts of each selected container sufficient material to give a primary sample of approximately $\frac{1}{2}$ pound. Mix the sample thoroughly and place a 4-ounce portion in a bottle so labeled that the container from which the sample was taken can be easily identified. The remainder of each sample shall weigh approximately 4 ounces. Mix these thoroughly and quarter until a composite sample of approximately $\frac{1}{2}$ pound is obtained. Place the composite sample in a rubber-stoppered bottle and label so as to show the name of the material, manufacturer, plant, contract or order number, and number of pounds in the lot and lot number. All acceptance tests shall be made on the composite sample representative of the lot. The primary samples shall be held by the Government inspector for possible future examination should the composite sample fail to meet the requirements.

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

F-4. Tests.—The following tests shall be made at a Government laboratory unless otherwise specified in the contract or order.

F-4a. Moisture.—Transfer a portion of approximately 5 gm. of the sample to a glass weighing bottle and weigh accurately. Dry the sample for 1 hour at 105° C., cool in a desiccator, and weigh. Calculate the loss in weight as percentage of moisture in the sample.

F-4b. Oxalate purity.—Transfer a weighed portion of 0.30 gm. of the sample to a 600-ml. beaker and add 250 ml. of 9 percent sulfuric acid which has been previously boiled for 10 to 15 minutes and then cooled to 27°±3° C. Stir the mixture until the oxalate has dissolved. Add 39 to 40 ml. of 0.1 N potassium permanganate solution at a rate of 25 to 35 ml. per minute while stirring slowly. Allow the solution to stand until the pink color is dispelled. If the pink color persists for several minutes, too much permanganate has been added. In this case discard the determination and start another, adding a few ml. less of permanganate solution. After the pink color is dispelled, heat the solution to 55° to 60° C., and complete the titration by adding standard permanganate until a faint pink color persists for 30 seconds. Add the last 0.5 to 1 ml. dropwise, taking particular care to allow each drop to become decolorized before the next is introduced. Determine the excess of permanganate required to impart the pink coloration to the sample so-

lution by titrating a blank consisting of the same volume of the specially treated dilute sulfuric acid solution at 55° to 60° C, to a pink coloration matching that of the titrated solution of the sample. Calculate the percentage of sodium oxalate in the sample on a moisture-free basis as follows:

$$\text{Percent sodium oxalate} = \frac{6.7 VN}{W}$$

where:

V = corrected volume of permanganate solution used in the titration

N = normality of permanganate solution

W = weight of the dry sample.

F-4c. *Insoluble matter.*—Dissolve a weighed portion of approximately 10 gm. of the sample in 400 ml. of distilled water at room temperature. Catch the insoluble matter on a tared filtering crucible and wash with approximately 100 ml. of distilled water at the same temperature. Heat the crucible and residue for 1 hour at 105° C., cool in a desiccator, and weigh. Calculate the increase in weight as percentage of insoluble matter in the sample.

F-4d. *Sodium acid oxalate.*—Dissolve a weighed portion of approximately 10 gm. of the sample in approximately 350 ml. of hot, recently boiled distilled water. Titrate the hot solution with 0.1 N sodium hydroxide solution, using phenolphthalein as the indicator. Calculate the acidity to percentage of sodium acid oxalate in the sample.

$$\text{Percent of sodium acid oxalate} = \frac{11.2 VN}{W}$$

where:

V = ml. of sodium hydroxide solution used

N = normality of sodium hydroxide solution

W = weight of sample.

F-4e. *Granulation.*—Place an accurately weighed portion of approximately 100 gm. of sample on the specified nest of sieves properly superimposed and assembled with a bottom pan. Place a metal washer on each of the sieves, cover and shake for 10 minutes by hand or 5 minutes by means of a mechanical shaker geared to produce 300 ± 15 gyrations and 150 ± 10 taps of the striker per minute. Weigh the portions retained or passed by the various sieves and calculate the results to a percentage basis as required.

F-5. *Retests.*—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 at his own expense. The manufacturer may then remove or replace defective portions of the lot represented by the primary samples which fail to meet the requirements, and submit the lot for acceptance, provided that the markings on the container are such that complete removal or replacement of defective portions of the lot can be made to the satisfaction of the Government inspector.

G. PACKAGING, PACKING, AND MARKING FOR SHIPMENT

G-1. *Packing.*—Unless otherwise specified, sodium oxalate shall be delivered in containers which shall be lined with strong moisture-proof paper in such a manner that there shall be no joints at the bottom or sides of the container, and otherwise constructed so as to insure acceptance by common or other carriers for safe transportation at the lowest rate to the point of delivery. Packing in bags is not acceptable.

G-2. Marking.—Unless otherwise specified, each container shall be plainly marked with the following information completed:

MATERIAL -----
CLASS -----
SPECIFICATION NO. -----
STOCK NO. -----
QUANTITY -----
CONTRACTOR -----
MANUFACTURER -----
CONTRACT NO. -----
GROSS WEIGHT -----
DATE OF MANUFACTURE -----
LOT NO. -----

In addition to the foregoing, shipments for the Army shall be marked in accordance with the requirements of United States Army Specification 100-2; for the Navy, in accordance with the requirements of the latest issue of the Navy Shipment Marking Handbook.

H. NOTES

H-1. Requests, requisitions, schedules, and contracts or orders should contain the title of the specification, the number and date, and the class of sodium oxalate required. (See par. B-1.)

H-2. Use.—Sodium oxalate covered by this specification is intended for use as an ingredient of pyrotechnic compositions.

H-3. Copies of Navy Shipment Marking Handbook may be obtained upon application to the Bureau of Supplies and Accounts, Navy Department, Washington 25, D. C.

H-4. Copies of Joint Army-Navy specifications and Federal specifications (required for Army purchases) and United States 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. Agencies within the War Department will obtain copies of Joint Army-Navy, United States Army, and Federal specifications through established War Department channels. Both the title and identifying symbol number should be stipulated when requesting copies of specifications.

H-5. Copies of Joint Army-Navy specifications and Federal specifications (required for Navy purchases) and Navy Department specifications 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, Naval Supply Depot, Bayonne, N. J. Both the title and identifying symbol number should be stipulated when requesting copies of specifications.

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.

Navy: OS

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