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 SUPERSEDING
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MILITARY SPECIFICATION

SODIUM OXALATE, TECHNICAL (METRIC)

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

1. SCOPE

1.1 Scope. This specification covers the minimum requirements for three classes of sodium oxalate.

1.2 Classification. The sodium oxalate shall be of the following classes, as specified (see 6.2):

Class 1	See table II
Class 2	See table II
Class 3	See table II

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Standards. The following standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

STANDARDS

Federal

FED-STD-313 Material Safety Data Sheets, Preparation and Submission of

Military

MIL-STD-129 Marking for Shipment and Storage

MIL-STD-1218 ACS Chemicals

(Copies of standards required by manufacturers in connection with specific acquisition functions should be obtained from the contracting officer).

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of the documents not listed in the DODISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

(Application for copies should be addressed to American Trucking Associations, Attn: Traffic Department, 1616 P Street, Washington, D.C. 20036.)

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer, Naval Ordnance Station, Standardization Division (524), Indian Head, Maryland 20640-5000, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 6810

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

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UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification

(Application for copies should be addressed to the Uniform Classification Committee, Room 1107, 222 South Riverside Plaza, Chicago, Illinois 60606.)

American Society for Testing and Materials

E 11

Cloth Sieves for Testing Purposes

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia Pa. 19103.)

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of Precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Material. The material shall meet the requirements specified in table I.

TABLE I. Material requirements.

Property	Percent	
	Min	Max
Oxalate purity	99.0	-
Moisture content	-	0.50
Sodium acid oxalate	-	1.50
Insolubles	-	0.50

3.2 Granulation. The three classes shall conform to the granulation requirements specified in table II.

TABLE II. Granulation by class.

ASTM E 11 sieve	Minimum percent through sieve		
	Class 1	Class 2	Class 3
425 micron (No. 40)	99	-	-
250 micron (No. 60)	-	99.9	-
150 micron (No. 100)	90	-	99.9

3.3 Material safety data sheets. A Material Safety Data Sheet (MSDS) shall be prepared and submitted in accordance with FED-STD-313. Questions pertinent to the effect of the sodium oxalate on the health of personnel when used for its intended purpose shall be referred by the acquiring activity to the appropriate medical service who will act as advisor to the acquiring activity (see 4.4 and 6.2).

3.4 Workmanship. The material shall be uniform in quality and free from foreign materials that could adversely affect its use.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order (see 6.2.1), the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order (see 6.2.1), the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by 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.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.2 Quality conformance inspection. The material shall undergo the tests specified in 4.3. When specified in the contract (see 6.2), the contractor shall prepare a report giving the results obtained for all inspections and tests performed and a certified statement that the lot meets all the requirements of this specification. Unless otherwise specified, all chemicals shall be ACS grade in accordance with MIL-STD-1218. Distilled water shall be used. Where applicable, blank determinations shall be run and corrections applied where significant.

4.2.1 Lot size. A lot shall not exceed 4.54 metric tons.

4.2.2 Sampling. A minimum of 10 percent of the containers in a lot shall be selected so as to be representative of the lot. When less than 100 containers comprise a lot, either 10 containers or all the containers in the lot shall be sampled. Using a thief or scoop, remove sufficient material to give a primary sample of approximately 250 grams (g) from different parts of each container. Mix the sample thoroughly and place a 125 g portion in a bottle labeled so the container from which the sample was taken can be identified. The remainder of each sample shall weigh approximately 125 g. Mix these thoroughly and quarter until a composite sample of about 250 g 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, number of kilograms in the lot and the lot number. All acceptance tests shall be made on the composite sample. The primary samples shall be held for possible future examinations should the composite sample fail to meet requirements.

4.3 Test methods.

4.3.1 Oxalate purity. Transfer 0.300 g of the sample to a 600-milliliter (ml) beaker and add 200 ml of 9 percent sulfuric acid which has been previously boiled for 10 to 15 minutes and then cooled to $27^{\circ} \pm 3^{\circ}\text{C}$. Stir the mixture until the oxalate has dissolved. Add 39 to 40 ml of 0.1N potassium permanganate solution, over a period of 1 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 was added. In this case, discard the determination and start another. Add a few ml less of permanganate solution. After the pink color disappears, heat the solution to 55° to 60°C and complete the titration by adding the standardized permanganate until a faint pink color persists for 30 seconds. Add the last 0.5 to 1 ml dropwise, taking care to allow each drop to become decolorized before the next is introduced. Determine the excess of permanganate required to impart pink coloration to the sample solution by titrating a blank consisting of the same volume of the specially treated dilute sulfuric acid solution at 55° to 60°C , to a finish 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:

$$\text{Percent sodium oxalate} = \frac{6.7 (V)N}{W}$$

where:

V = corrected volume of permanganate solution used in the titration, ml

N = normality of permanganate solution

W = weight of the dry sample, g

4.3.2 Moisture. Transfer approximately 5 grams of the sample to a weighing bottle and weigh accurately. Dry the sample for 1 hour at 105°C, cool in a dessicator and weigh.

$$\text{Percent moisture} = \frac{A - B}{W} \times 100$$

where:

A = weight of the weighing bottle plus sample before heating, g

B = weight of bottle plus sample after heating, g

W = weight of sample, g

4.3.3 Sodium acid oxalate. Dissolve a weighed portion of approximately 10 g of the sample in 350 ml of hot recently boiled distilled water. Titrate the hot solution with 0.1N sodium hydroxide solution, using phenolphthalein as the indicator. Calculate the acidity as percentage of sodium acid oxalate as follows:

$$\text{Percent sodium acid oxalate} = \frac{11.2 (V)N}{W}$$

where:

V = ml of sodium hydroxide solution used, ml

N = normality of sodium hydroxide

W = weight of sample, g

4.3.4 Insoluble matter. Dissolve a weighed portion of approximately 10 g of the sample in 400 ml of distilled water at room temperature. Filter the solution using a tared filtering crucible and wash the residue with 100 ml of distilled water. Heat the crucible and residue for 1 hour at 105°C, cool in a dessicator and weigh.

$$\text{Percent insoluble matter} = \frac{C - D}{W} \times 100$$

where:

C = weight of crucible and residue, g

D = weight of crucible, g

W = weight of sample, g

4.3.5 Granulation. Place an accurately weighed portion of approximately 100 g 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 on a percentage basis as required.

4.4 Submission of material safety data sheets. The contractor shall furnish to the contracting activity the toxicological data and formulation required to evaluate the safety of the material for the proposed use through the submission of the Material Safety Data Sheets detailed in FED-STD-313 (see 3.3 and 6.2).

5. PACKAGING

5.1 Packaging. Unless otherwise specified, the material shall be packaged in accordance with the manufacturer's best accepted commercial practice.

5.2 Packing. Unless otherwise specified, sodium oxalate shall be delivered in containers lined with strong moistureproof paper. There shall be no joints at the bottom or sides of the container. Containers shall comply with National Motor Freight Classification Rules and the Uniform Freight Classification Rules or regulations of other carriers applicable to the mode of transportation.

5.3 Marking. Unless otherwise specified, each container shall be plainly marked with the following information completed:

Material	Manufacturer
Class	Contract number
Specification number	Gross weight
Stock number	Date of manufacture
Quantity	Lot number
Contractor	

In addition, unit packages and shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. Sodium oxalate covered by this specification is intended for use as an ingredient in pyrotechnic compositions.

6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number and date of this specification
- b. Quantity desired
- c. Class (see 1.2)
- d. Responsibility for inspection, if other than as specified (see 4.1)
- e. If certificate is required (see 4.2)
- f. Address for forwarding the Material Safety Data Sheet (see 4.4)
- g. Any special packaging, packing, or marking (see 5.1, 5.2, or 5.3).

6.2.2 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (CDRL), incorporated into the contract. When the provisions of DoD FAR Supplement, Part 27, Sub-Part 27.410-6 (DD Form 1423) are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification are cited in the following paragraphs.

Paragraph no.	Data requirement title	Applicable DID no.
4.2	Certification Data/Report	UDI-A-23264

(Data item descriptions related to this specification, and identified in this section will be approved and listed as such in DoD 5000.19L., Vol.II, AMSDL. Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Forms Center or as directed by the contracting officer.)

Custodians:
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Navy - AS

Preparing activity:
Navy - OS
(Project no. 6810-B520)

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