

O-S-598B
August 18, 1975

SUPERSEDING
Fed. Spec. O-S-598a
July 31, 1968

FEDERAL SPECIFICATION

SODIUM HYDROXIDE, TECHNICAL

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers four types of technical grade sodium hydroxide.

1.2 Classification.

1.2.1 Types. Sodium hydroxide shall be of the following types as specified (see 6.2):

Type I - Flake.
Type II - Lump.
Type III - Powder.
Type IV - Bead.

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:

Federal Specifications:

NN-P-71 - Pallets, Material Handling, Wood, Stringer Construction,
2-Way and 4-Way (Partial)
TT-E-485 - Enamel, Semigloss, Rust-Inhibiting.
PPP-B-585 - Boxes, Wood, Wirebound.
PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner.
PPP-B-636 - Boxes, Shipping, Fiberboard.
PPP-C-96 - Can, Metal, 20 Gage and Lighter.

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Federal Standards:

- Fed. Std. No. 123 - Marking for Domestic Shipment (Civil Agencies).
- Fed. Std. No. 595 - Colors.

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO, For Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specification and Standards from established distribution points in their agencies.)

Military Standards:

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-147 - Palletized Unit Loads for 40" by 48" Pallets.

(Copies of Military Specifications and Standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

Code of Federal Regulations:

- 49 CFR 171 to 179 - Department of Transportation Rules and Regulations for the Transportation of Explosives and Other Dangerous Articles.

(The Department of Transportation regulations are a part of the Code of Federal Regulations available from the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402. Orders for the above publication should cite "49 CFR 171 to 179.")

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2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

American Society for Testing and Materials (ASTM) Standard:

D501-67 - Sampling and Chemical Analysis of Alkaline Detergents.

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

Manufacturing Chemists Association:

Chemical Safety Data Sheet SD-9 - Caustic Soda.

(Application for copies should be addressed to the Manufacturing Chemists Association, 1925 Connecticut Avenue, N.W., Washington, DC 20009.)

3. REQUIREMENTS

3.1 Form. Sodium hydroxide shall be flakes, lumps, powder, or beads in accordance with the type of material specified (see 6.2).

3.2 Chemical characteristics. Sodium hydroxide shall conform to the chemical characteristics of table I when tested as specified in 4.2.4.

TABLE I. Chemical characteristics

Characteristics	Percent by weight
Assay (as NaOH), minimum	96.0
Carbonate (as Na ₂ CO ₃), maximum	2.0
Total alkalinity (as Na ₂ O), minimum	75.0

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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 in the contract or order, the supplier may use his own or any other facilities suitable for the performance or 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 specified requirements.

4.2 Quality conformance inspection.

4.2.1 Lotting. A lot shall consist of the sodium hydroxide produced by one manufacturer, at one plant, from the same materials, and under essentially the same manufacturing conditions provided the operation is continuous. In the even the process is a batch operation, such batch shall constitute a lot (see 6.3).

4.2.2 Sampling.

4.2.2.1 For examination of preparation for delivery. Sampling shall be conducted in accordance with MIL-STD-105, inspection level S-2 using an AQL of 4.0 percent defective.

4.2.2.2 For test. Sampling for test shall be conducted in accordance with table II. A representative specimen of approximately 100 grams shall be removed from each sample container and placed in a suitable clean, dry container labeled to identify the lot and container form which it was taken. Sampling should be conducted in an environment of no more than 50 percent relative humidity and exposure to the atmosphere should be minimized in order to prevent absorption of carbonate.

TABLE II. Sampling for test

Number of unit containers in batch or lot	Number of sample unit containers.
2 to 25	2
26 to 150	3
151 to 1,200	5
1,201 to 7,000	8
7,001 to 20,000	10
Over 20,000	20

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4.2.3 Inspection procedure.

4.2.3.1 For examination of preparation for delivery. The sample unit shall be one filled unit, intermediate, or shipping container, as applicable, ready for shipment. Sample unit, intermediate, and shipping containers shall be examined for the following defects:

- (a) Contents per container not as specified
- (b) Container not as specified
- (c) Container closure not as specified
- (d) Container damaged for leaking
- (e) Container closure loose, damaged, or deformed
- (f) Marking incorrect, missing, or illegible
- (g) Palletization not as specified (when required)

4.2.3.2 For test. Each sample specimen taken in 4.2.2.2 shall be tested as specified in 4.2.4. Failure of any test by any specimen shall be cause for rejection of the lot represented.

4.2.4 Tests. Assay (as NaOH), carbonate (as Na₂CO₃), and total alkalinity (as Na₂O) shall be determined in accordance with the applicable portions of the test for Caustic Soda in ASTM D501-67.

5. PREPARATION FOR DELIVERY

5.1 Packaging. Sodium hydroxide shall be packaged level, A, B, or C as specified (see 6.2).

5.1.1 Level A. Thirteen (+0.1 or -0) ounces or 5 pounds (+1.0 or -0 ounce) of sodium hydroxide as specified (see 6.2) shall be packaged in a steel can conforming to type V, class 2, plan B with side stripping of PPP-C-96.

5.1.1.1 Intermediate packaging.

(a) Thirteen-ounce cans. Twelve 13-ounce cans of sodium hydroxide, packaged as specified in 5.1.1, shall be intermediately packaged upright in a three can by four can pattern in a snug-fitting box conforming to style RSC, type CF, class weather-resistant, variety SW, grade W5c of PPP-B-636. The box shall be closed in accordance with the closure requirements for class weather-resistant boxes by taping as specified in the appendix to PPP-B-636.

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(b) Five-pounds cans. Six 5-pound cans of sodium hydroxide, packaged as specified in 5.1.1, shall be intermediately packaged upright in a two can by three can pattern in a snug-fitting box conforming to style RSC, grade W5c of PPP-B-636. The box shall be closed as specified in 5.1.1.1(a).

5.1.2 Level B. Thirteen (+0.1 or -0) ounces or 5 pounds (+1.0 or -0 ounce) of sodium hydroxide as specified (see 6.2) shall be packaged in a steel can conforming to type V, class 1 or 2, plan A of PPP-C-96.

5.1.2.1 Intermediate packaging, 5-pound cans. Six 5-pound cans of sodium hydroxide, packaged as specified in 5.1.2, shall be intermediately packaged as specified in 5.1.1.1(b) except that the box shall conform to style RSC, type CF, class domestic, variety SW, grade 175 of PPP-B-636.

5.1.3 Level C. Like quantities of sodium hydroxide as specified (see 6.2) shall be packaged together to provide adequate protection against contamination, deterioration, and damage from the supply source to the first receiving activity for immediate use.

5.2 Packing. Sodium hydroxide shall be packed level A, B, or C as specified (see 6.2).

5.2.1 Level A.

5.2.1.1 Thirteen-ounce cans. Four intermediate packages, prepared as specified in 5.1.1.1(a), shall be packed for shipment in a nailed wood box conforming to class 2, style 4-1/2, for a type 2 load of PPP-B-621. Boxes with inside containers shall be packed with filling holes up.

5.2.1.2 Five-pound cans. Two intermediate packages, prepared as specified in 5.1.1.1(b), shall be packed for shipment as specified in 5.2.1.1.

5.2.1.3 One hundred- and 400-pound quantities. Sodium hydroxide shall be packed in 100 (+1 or -0) or 400 (+4 or -0) pound quantities in drums conforming to Department of Transportation (DOT) Specification 37A having a minimum nominal thickness of 24 gauge. Exterior coating shall be olive drab enamel conforming to TT-E-485 and color 24078 of Fed. Std. No. 595.

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5.2.2 Level B.

5.2.2.1 Thirteen-ounce cans. Twenty-four 13-ounce cans shall be packed in a box conforming to class domestic of PPP-B-636. The box shall be closed in accordance with method II of the appendix to PPP-B-636.

5.2.2.2 Five-pound cans. Packing shall be as specified in 5.2.1 except that the box shall conform to class 1, style 2, for type 2 load of PPP-B-585 and intermediate packaging shall be as specified in 5.1.2.1. The box shall be assembled, closed, strapped in accordance with the requirements specified in the appendix to PPP-B-585.

5.2.2.3 One hundred- and 400-pound quantities. Sodium hydroxide shall be packed in 100 (+1 or -0) or 400 (+4 or -0) pound quantities in drums conforming to DOT Specification 37A. The drums shall have the appropriate wall thickness for the quantity contained.

5.2.3 Level C. Sodium hydroxide shall be packed to insure carrier acceptance and safe delivery to the first domestic destination. Containers shall be in compliance with DOT regulations and carrier regulations applicable to the mode of transportation.

5.3 Marking. In addition to the precautionary marking specified in 5.3.1, unit, intermediate, and shipping containers shall be marked in accordance with MIL-STD-129 for military activities or in accordance with Fed. Std. No. 123 for civil agencies.

5.3.1 Precautionary marking. Interior packages, exterior shipping containers, and drums shall be marked in accordance with DOT requirements. Labels for 13-ounce containers shall conform to the Federal Hazardous Substances Act. Labels shall be in bold type, shall be securely affixed to the container, and shall contain the precautionary information specified in the Manufacturing Chemists Association Chemical Safety Data Sheet SD-9.

5.4 Palletization. When specified in the contract or order, shipping containers of 5.2 shall be palletized in accordance with the applicable requirements of MIL-STD-147 utilizing the softwood pallet conforming to type IV of NN-P-71 (see 6.2).

6. NOTES

6.1 Intended use. Sodium hydroxide is intended for use in various cleaning, washing, and scouring processes, with or without soap, as conditions demand, and where a strongly alkaline material is desired.

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6.2 Ordering data. Purchases should select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Type of sodium hydroxide required (see 1.2.1).
- (c) Level of packaging and packing required (see 5.1 and 5.2).
- (d) Unit quantity required (see 5.1.1, 5.1.3, 5.2.1.3 and 5.2.2.3).
- (e) Palletization, if required (see 5.4).

6.3 Batch. A batch is defined as that quantity of material which has been manufactured by some unit chemical process or subjected to some physical mixing operation intended to make the final product substantially uniform.

6.4 Significant places. For the purpose of determining conformance with this specification, an observed or calculated value shall be rounded off "to the nearest unit" in the last right-hand place of figures used in expressing the limiting value, in accordance with the rounding-off method of the Recommended Practice for Indicating Which Places of Figures Are To Be Considered Significant in Specified Limiting Values (ASTM E29).

MILITARY INTERESTS:

Custodians:

Army - EA
Navy - SH
Air Force - 68

Review activities:

Army - MD
Navy - AS
DSA - GS

User activities:

Army - SM
Navy - OS

Civil Agency Coordinating Activities:

GPO
GSA - FSS
VA - DMS

Preparing activity:

Army - EA

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies of documents referenced herein. Price 30 cents each.

INCH-POUND

NOTICE
OF VALIDATION

O-S-598B
NOTICE 1
23 September 1988

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O-S-598B, date August 18, 1975, has been reviewed and determined to be valid for use in acquisition.

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Navy - SH
Air Force - 68

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User activity:

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Preparing activity:

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AMSC N/A

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