

[METRIC]
A-A-59133
3 November 1997
SUPERSEDING
P-C-437B
4 AUGUST 1978

COMMERCIAL ITEM DESCRIPTION

CLEANING COMPOUND, HIGH PRESSURE (STEAM) CLEANER

The General Services Administration has authorized the use of this commercial item description by all federal agencies.

1. **SCOPE.** This commercial item description (CID) covers alkaline steam cleaning compounds for use in steam cleaning machines for cleaning ferrous and nonferrous surfaces of equipment.

2. **CLASSIFICATION.** The cleaning compounds shall be of the following types. The type to be furnished shall be as specified (see 7.3).

Type 1: Compounds containing phosphates.

Type 2: Compounds containing no phosphates.

3. SALIENT CHARACTERISTICS.

3.1 Performance requirements. The steam cleaning compound shall be equal to or superior in effectiveness to the comparison formula of Tables I and II. This shall be demonstrated by meeting the performance requirements of Table III when tested as specified therein.

3.2 Stock solutions.

3.2.1 Hard water stock solution. A 684 mg per liter (40 grains per gallon) hard water solution is prepared by dissolving 0.8090 grams of American Chemical Society (ACS) grade calcium acetate monohydrate and 0.5546 grams of ACS grade magnesium sulfate heptahydrate per liter of freshly bolded distilled water.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data which may improve this document should be sent by letter to: Defense Supply Center Richmond (DSCR), ATTN: DSCR-VBD, 8000 Jefferson Davis Highway, Richmond, VA 3297-5610.

AMSC N/A

FSC 6850

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A-A-59133

Table I. Composition of type 1 comparison compound.

Component	Percent by Weight
Sodium metasilicate, pentahydrate	35.0
Sodium phosphate, monobasic monohydrate	10.5
Sodium tripolyphosphate	52.5
Nonionic surface-active agent, MIL-D-16791, Type 1	2.0

Table II. Composition of type 2 comparison compound.

Component	Percent by Weight
Sodium metasilicate, anhydrous	54.2
Citric acid, monohydrate	23.6
Sodium citrate, dihydrate	20.2
Nonionic surface-active agent, MIL-D-16791, Type 1 with cloud point 54°C ± 3°C	2.0

Table III. Performance requirements.

Performance Requirement	Limits	Test Paragraph
Water softening or stability	paragraph 3.3.1	paragraph 3.3.2
Cleaning efficiency	paragraph 3.4.1	paragraph 3.4.5
Solubility	≤0.25%	paragraph 3.5
pH Value (0.50 % solution, Type 1 or 0.30 % solution, Type 2)	11.4 ≤ pH ≤ 10.5	paragraph 3.6.2
Corrosion	paragraph 3.7.1	paragraph 3.7.5
Surface tension (0.25 % solution, Type 1 or 0.15 % solution, Type 2)	42 dynes/centimeter	paragraph 3.8
Dust forming properties	Change in color	paragraph 3.9

Table III. Performance requirements. (Cont.)

Performance Requirement	Limits	Test Paragraph
Penetration	≥ 30.0	paragraph 3.10
Segregation	2%	paragraph 3.11
Fineness	100 % pass 3.35 mm sieve (U.S. No. 6 sieve) $\leq 3.0\%$ pass 150 μm sieve (U.S. No. 100 sieve)	paragraph 3.12
Rinsing	No white film	paragraph 3.13
Phosphates (Type 2 only)	None	paragraph 3.14
Caking in storage	100% pass 3.35 mm sieve (U.S. No. 6 sieve)	paragraph 3.15
Caking as received	None	paragraph 3.16
Carbonates or bicarbonates	no effervescence	paragraph 3.17
Fatty acid, soap, rosin, starch	None	paragraph 3.18
Free sodium hydroxide	paragraph 3.19.1	paragraph 3.19.2
Biodegradability	$\geq 90\%$	paragraph 3.20

3.2.2 Cleaning compound stock solution. Weigh 10 grams of the Type 1 cleaning compound, or 6 grams of Type 2 cleaning compound, and transfer to a 2-liter volumetric flask. Add 500 ml of hot distilled water and agitate to dissolve the cleaning compound. Cool to room temperature and dilute to volume with distilled water.

3.2.3 Comparison compound stock solution. Weigh 10 grams of the Table I composition cleaning compound, or 6 grams of Table II composition cleaning compound, and transfer to a 2-liter volumetric flask. Add 500 ml of hot distilled water and agitate to dissolve the cleaning compound. Cool to room temperature and dilute to volume with distilled water.

A-A-59133

3.2.4 Ammonium molybdate solution (Johnson's formula). Mix 55 gm of $(\text{NH}_4)_6\text{Mo}_7\text{O}_{24} \cdot 4\text{H}_2\text{O}$ and 50 gm of NH_4NO_3 with 10 ml of 15N NH_4OH and 20 ml of water. Stir and dilute to about 700 ml with water. Heat with stirring for 30 minutes until all salts have dissolved. Dilute to 1 liter with water, let stand overnight and filter, but do not wash the residue.

3.3 Water softening or stability.

3.3.1 Performance requirements. When tested as specified in paragraph 3.3.2, at a temperature of 126.5°C - 129.5°C, a 0.25 percent solution of Type 1, or a 0.15 percent solution of Type 2, steam cleaning compound in water of 20 grains hardness shall give no evidence of precipitation or curd formation; nor shall there be an opalescence greater than that produced in a solution of the comparison compound of the same type as specified in Table I or Table II (as applicable) when the two compounds are tested simultaneously.

3.3.2 Test procedure. To a test tube, (200 mm long by 25 mm outside diameter), containing 20 ml of the cleaning compound solution (paragraph 3.2.2), add 20 ml of hard water stock solution (paragraph 3.2.1), and mix well. Immerse in the solution, a test panel of 1020, 20-gage, cold-rolled steel, 7.5 cm x 1.25 cm (3 inches x 1/2 inch) in size, which has been polished with coarse emery cloth and cleaned with acetone. Place the test tube in a laboratory steam sterilizer at 126.5°C - 129.5°C (steam pressure of 14.8 -16.9 kPascals (21-24 pounds per square inch)), for 1 hour. Remove from the sterilizer. Cool to room temperature, and examine for precipitation. Use an electrophotometer to measure opalescence in terms of optical density. Tests shall be run in quadruplicate. The same test shall be run in quadruplicate using the comparison compound solution, (paragraph 3.2.3), of the same type. The opalescence shall not be greater than that given by the statistical upper limit. The statistical upper limit at the 0.05 level may be obtained with the following formula:

$$\text{Statistical upper limit} = X + 0.72W$$

where X = average of 4 determinations with the comparison compound

W = difference between the maximum and minimum values in the four determinations with the comparison compound.

3.4 Cleaning efficiency.

3.4.1 Performance requirement. The cleaning compound shall be equal to or superior to the standard comparison steam cleaning compound of the same type in ability to remove a standard soil when tested as specified in 3.4.5.

3.4.2 Preparation of test panels. Test panels of 1020, 20-gage, cold-rolled steel shall be prepared 6.5 x 6.5 cm (2 1/2 x 2 1/2 inches) in size. Each test panel shall have a hole 6 mm (1/4 inch) in diameter placed 3 mm (1/8 inch) from one corner. Sharp edges shall be smoothed with coarse emery cloth. The panels shall then be degreased in ACS grade acetone. Both faces of each panel shall be polished with the same abrasive, stroking in one direction only. Clean in a hot alkaline

solution until free from water-break. Rinse in water, then dip in absolute ethyl alcohol, and dry with paper toweling.

3.4.3 Preparation of soiled panels. The soiling material shall be 1065 grade mineral oil conforming to Society of American Engineers SAE-J1966. The cleaned panels, prepared as described in 3.4.2, shall be suspended on a “S” hook and dipped, one at a time, into a 400 ml beaker of the oil maintained at a temperature of $25 \pm 1^\circ\text{C}$. They shall be removed and allowed to drain at the same temperature for 30 minutes. The remaining drop of oil in the lower corner of each panel shall be removed with absorbent cotton.

3.4.4 Preparation of cleaning solutions. In a 2-liter beaker, place 1,600 ml of 0.5 percent distilled water solution of the Type 1 compound or 0.3 percent solution of the Type 2 compound, (see 3.2.2). Bring solution to a boil and keep at this temperature throughout the test. Maintain solution level throughout test by addition of distilled water as required.

3.4.5 Test procedure. Immerse the soiled test panels, prepared as specified in 3.4.2, in the cleaning solution and in the comparison solution by means of an iron or copper hook, one end of which passes through the 6 mm (1/4 inch) hole and the other end over a glass rod placed across the top of the 2-liter beaker. At the end of 2 1/2 minutes and 5 minute intervals, respectively, the test panel is moved forward and backward, 3 times in each direction, and then up and down, 3 times in each direction; total agitation shall require not more than 6 seconds. At the end of 5 minutes immersion, the panel is removed from the cleaning solution and given 2 six second rinses in distilled water (no agitation); there shall be a four second drain between rinses. The rinsing solutions shall consist of two 1-liter beakers, each containing 800 ml of distilled water at $25^\circ\text{C} \pm 1^\circ\text{C}$. The panel is then dried in a 50°C oven for 20 minutes, cooled and weighed. The panel is thoroughly washed with acetone, rinsed in absolute ethyl alcohol, dried with paper toweling and reweighed. The difference in weight is the amount of residual soil. Tests shall be run in quadruplicate. The residual soil of any test compound determination shall be not greater than that given by the statistical upper limit. The statistical upper limit at the 0.05 level may be obtained with the following formula:

$$\text{Statistical upper limit} = X + 0.72W$$

where X = average of 4 determinations with the comparison compound

W = difference between the maximum and minimum values in the four determinations with the comparison compound.

3.5 Solubility. Weigh 10 grams of the compound and add to 100 ml of distilled water at $25^\circ\text{C} \pm 1^\circ\text{C}$ in a 250 ml beaker. Stir until compound is thoroughly dissolved. Let stand 10 minutes. Filter through a tared Gooch crucible with an asbestos mat. Wash with distilled water until washing gives no alkaline reaction to phenolphthalein. Dry at 105°C for 3 hours, cool and weigh. Gain in weight of crucible and contents is insoluble matter.

A-A-59133

3.6 pH value.

3.6.1 Apparatus. The test shall be made with a pH meter having a sensitivity and readability of at least 0.05 pH. A sealed type, alkali-resistant, glass electrode shall be used with a calomel reference electrode. The meter shall be standardized against a pH 10 buffer solution immediately before making a test.

3.6.2 Test procedure. Prepare a 100 ml of 0.5 percent distilled water solution of the Type 1 compound or 0.3 percent solution of the Type 2 compound, (see paragraph 3.2.2). Determine the pH at a temperature of $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. No correction shall be made for sodium ion concentration.

3.7 Corrosion test.

3.7.1 Performance requirements. Boiling 0.25 percent and 1.2 percent solutions of the cleaning compound shall cause no loss in weight of aluminum or aluminum alloy test specimens in excess of that indicated in Table IV, when tested as specified in 3.7.5. There shall be no visible staining, discoloration, etching, or pitting of the test specimens.

Table IV. Loss in weight permitted in corrosion test.

Type	Percent Solution	Al-1100	Al-2024
1	0.25	1.2 mg	0.8 mg
	1.2	0.8 mg	0.5 mg
2	0.15	1.2 mg	0.8 mg
	1.2	0.8 mg	0.5 mg

3.7.2 Preparation of test panels. Test panels of 1100 aluminum shall be cut 7.6 cm by 1.9 cm (3 inches by 3/4 inch) in size from approximately 0.9 mm (0.034 inch) thick sheet aluminum conforming to QQ-A-250/1, H14 or H24 temper. Test panels of 2024-T3 aluminum shall be cut 7.6 cm by 1.9 cm (3 inches by 3/4 inch) in size from approximately 0.6 mm (0.025 inch) thick sheet aluminum conforming to QQ-A-250/4. Sharp edges shall be smoothed with No. 150 alundum (Al_2O_3) polishing paper. Polish both faces with the same abrasive, stroking in one direction only. The 1100 aluminum panels should be lightly polished, to avoid smearing of the surface, with approximately 19 mg of metal removed in polishing.

3.7.3 Cleaning of panels. Panels shall be cleaned with ACS grade acetone using a swab of absorbent cotton. They shall then be wiped with paper toweling, dipped in absolute ethyl alcohol, and again wiped with paper toweling.

3.7.4 Preparation of test solutions. Weigh 2.5 grams of the Type 1 cleaning compound or 1.5 grams of the Type 2 cleaning compound into a 1 liter volumetric flask. Add 500 ml of hot distilled water and agitate to dissolve the cleaning compound. Cool to room temperature and dilute to volume with distilled water. Prepare another solution of the same type and in the same manner using 12.0 grams of the compound.

3.7.5 Test procedure. Each cleaned test panel shall be weighed to 0.0001 gram and immersed completely in 200 ml of the boiling solution of the compound in a 250 ml beaker. The solution is kept at a boil throughout the test, the solution level being maintained by additions of distilled water as required. After 60 minutes, the test panel shall be removed from the boiling solution, rinsed under flowing tap water (cold), rinsed in distilled water ($25^{\circ}\text{C} \pm 1^{\circ}\text{C}$), dipped in absolute alcohol, wiped dry with paper toweling, and reweighed. The presence of corrosion products shall be noted. Test shall be run in duplicate on each aluminum material in each solution.

3.8 Surface tension. Using 100 ml of the 0.25 percent distilled water solution of the Type 1 compound or 100 ml of the 0.15 percent solution of the Type 2 compound, as prepared in paragraph 3.7.4, determine the surface tension at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ using an interfacial tensiometer. Harkins-Jordan (J. Am. Chem. S. 52: 1930, p. 1751) correction factors shall be applied.

3.9 Dust forming properties. The inside walls of a 250 ml glass-stoppered graduate shall be rendered completely free of any grease and moisture. A 25 gram sample of the cleaner shall then be placed on the bottom of the clean graduate. The graduate shall then be stoppered, inverted and immediately returned to its original position. After any suspended dust has been allowed to settle for 5 seconds, the stopper of the graduate shall be removed. A moistened piece of red litmus paper shall be suspended in the graduate without touching the walls so that the lower end of the litmus paper strip coincides with the 210 ml mark at the upper end of the graduate. After 60 seconds, the litmus paper shall be removed and examined for any color change. Excessive dusting is indicated by any change in the litmus paper from red to blue.

3.10 Penetration. Place 100 grams of the compound in a flat bottom, straight side, Pyrex glass, crystallizing dish, 40 mm high by 80 mm diameter. Place sufficient lead shot into a 250 ml low form beaker so that the combined weight of the beaker and shot equals 800 grams. Place the weighted 250 ml beaker on top of the 100 grams of compound. Place the assembly in a dessicator containing a saturated solution of potassium sulfate (K_2SO_4). Place the dessicator in an oven maintained at $43^{\circ}\text{C} - 46^{\circ}\text{C}$ for 24 hours. Remove the assembly from the oven and dessicator; remove weighted 250 ml beaker from compound, and allow the crystallizing dish containing the compound to cool at room temperature for 2 hours. Determine penetration at three points on the surface, each at least 12 mm from the side of the crystallizing dish, using the penetrometer and grease-penetrometer cone prescribed in American Society for Testing and Materials (ASTM) D217, with a 5 second hold, 250 grams total weight of the cone and attachments, and the temperature of the compound at $25^{\circ} \pm 1^{\circ}\text{C}$. Run test in duplicate.

3.11 Segregation. Samples taken from different portions of the container shall be analyzed for one constituent of the compound, (such as silicates using ASTM D800).

3.12 Fineness. A 3.35 mm (U.S. No. 6) and a $150\ \mu\text{m}$ (U.S. No. 100) sieve, conforming to ASTM E11, shall be used in a sieve shaking apparatus. Transfer a 100 ± 0.1 gm sample, without previously drying, to the 3.35 mm (U.S. No. 6) sieve. Allow the shaking apparatus to run

A-A-59133

10 minutes. Examine the 3.35 mm (U.S. No. 6) screen for any retained cleaning compound and weigh the portion passing the 150 μm (U.S. No. 100) sieve. Calculate the percentage. If a sieving machine is not available, use the hand sieving procedure of ASTM D502.

3.13 Rinsing. Test panels of 2024-T3 aluminum shall be cut 6.5 x 6.5 cm (2 1/2 x 2 1/2 inches) in size from approximately 0.6 mm (0.025 inch) thick aluminum sheet. They shall be polished and cleaned as specified in paragraphs 3.7.2 and 3.7.3. Duplicate panels shall be tested. Prepare a 1.0 percent solution using 10 grams of cleaning compound. Immerse a panel for 5 minutes in 400 ml of the boiling solution contained in a 600 ml beaker. Remove the panel, suspend at an angle of 45 degrees until dry, then suspend the panel in about 1 liter of distilled water at $70^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 3 minutes, withdrawing the panel slowly once each minute. Repeat the last step with a fresh sample of distilled water at 70°C . Remove the panel, and let dry at an angle of 45 degrees as before. When dry, examine the panel for residue. Then place a drop of absolute ethyl alcohol on the panel, allow to evaporate, and re-examine for white residue.

3.14 Phosphate (Type 2 composition only). Place 1 gm of the test compound into a 250 ml beaker and ignite over a gas flame. Titrate and dissolve the residue in 50 ml of water. Neutralize with HNO_3 , add 10 ml of concentrated HNO_3 in excess, and filter into a second 250 ml beaker. Boil 30 minutes with beaker covered; remove cover and evaporate to dryness. Dissolve residue in 60 ml of water and add 15 ml of concentrated HNO_3 with stirring. Filter and add 6 gm NH_4NO_3 to the filtrate. Filter again if there is any undissolved material. Heat the filtrate to near 80°C but no higher. To 10 ml of the filtrate, add 25 ml of the ammonium molybdate solution (paragraph 3.2.4) and stir thoroughly. A yellow precipitate indicates the presence of phosphates.

3.15 Caking in storage. The steam cleaning compound, 57 kg (125 pounds) net weight in a 61 liter (16 gallon) steel drum fitted with a steel cover with an airtight gasket attached, shall be stored in an unheated warehouse at Defense Supply Center Richmond, Richmond, Virginia for twelve months. The drum shall then be opened and the contents examined for free flowing and granular characteristics. If there is visual evidence of caking or lumping, transfer a single lump of the caked material obtained from the bottom third of the drum, and having a weight between 90 and 110 grams, to a 3.35 mm (U.S. No. 6) sieve conforming to ASTM E11. The sieve shall be placed on a sieve shaking apparatus and screened for 5 minutes. Examine the screen for 100 percent passage of material. Lumping of material that is broken up by the sieving operation, to permit 100 percent passage through the 3.35 mm (U.S. No. 6) screen, will not be cause for failure of this test.

3.16 Caking as received. An as-received container of the steam cleaning compound shall be emptied and the contents examined for lumping or agglomerating of material. Visual evidence of either shall be cause for rejection of the compound.

3.17 Carbonates or bicarbonates. Six normal (6N) hydrochloric acid shall be added drop-wise to a five percent (5 grams of compound per 100 ml of solution) distilled water solution of the compound and examined for effervescence.

3.18 Fatty acid, soap, rosin, starch.

3.18.1 Fatty acid, soap, rosin. Place 10 gm of the compound in a 100 ml tall form beaker. Add 30 ml of absolute ethyl alcohol. Place on a steam plate and stir for five minutes. Filter through dry, double, No. 41 Whatman papers. Evaporate filtrate to dryness. Dissolve residue in 20 ml distilled water. To half the solution, add 5 ml of 1.0 N acetic acid. To the other half, add 5 ml of 1.0 N calcium chloride solution. Formation of precipitates in both solutions indicates the presence of soap, rosin or fatty acid.

3.18.2 Starch. Place one drop of an iodine solution on a freshly exposed surface of the sample. A violet color indicates the presence of starch.

3.19 Free sodium hydroxide.

3.19.1 Performance requirement. When tested as specified in paragraph 3.19.2, not more than 0.2 ml of 0.1 N hydrochloric acid shall be required to discharge any pink coloration.

3.19.2 Test procedure. Place 10 gm of compound in a 100 ml tall form beaker. Add 30 ml petroleum ether, (boiling range 35-60°C), and stir 3 minutes with a glass rod. Decant off petroleum ether. Place on steam bath for five minutes to drive off hazardous gases, then dry in a vented oven for fifteen minutes at 105°C. Add 30 ml absolute ethyl alcohol and stir 2 minutes. Decant off alcohol through dry, triple, No. 41 Whatman filter paper. Transfer 15 ml of the filtrate to a 125 ml flask and add several drops phenolphthalein indicator solution. If pink coloration results, titrate with 0.1 N hydrochloric acid.

3.20 Biodegradability.

3.20.1 Anionic synthetic detergents. When the detergent is an Alkyl Benzene Sulfonate (ABS) or a Linear Alkylate Sulfonate (LAS), the biodegradability shall be determined in accordance with Test Procedures and Standards - ABS and LAS, Scientific and Technical Report No. 3 of the Soap and Detergent Association.

3.20.2 Nonionic and other synthetic detergents. Until a standard test method for determining the biodegradability of a nonionic detergent is agreed upon by industry, and is acceptable to the government, the supplier shall determine the biodegradability in accordance with one of the current methods of the Soap and Detergent Association.

4. REGULATORY REQUIREMENTS.

4.1 Labeling, packaging and marking. Item shall be labeled, packed and marked in accordance with Title 49 Code of Federal Regulations (CFR) Parts 100 to 199.

4.2 Recovered materials. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulations.

A-A-59133

5. QUALITY ASSURANCE PROVISIONS.

5.1 Product conformance. The product provided shall meet the salient characteristics of this CID, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial market. The government reserves the right to require proof of such conformance.

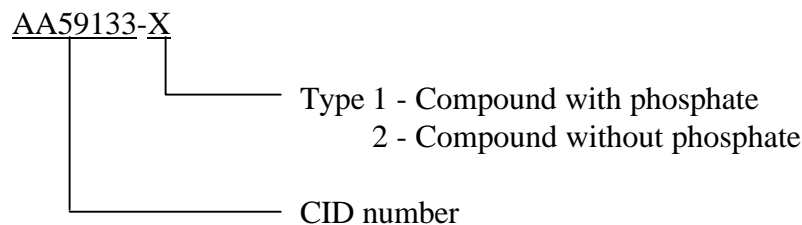
5.2 Market acceptability. The item offered must have been sold to the government or commercial market.

6. PACKAGING. Preservation, packing, labeling, and marking shall be as specified in the contract or order.

7. NOTES. This section contains information of a general or explanatory nature which is helpful, but is not mandatory.

7.1 Part Identification Number (PIN). The following part identification numbering procedure is for government purposes and does not constitute a requirement for the contractor.

This example describes a part numbering system for CID A-A-59133.



7.2 Source of documents.

7.2.1 The Code of Federal Regulations may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-0001.

7.2.2 The Soap and Detergent Association publications may be obtained from the Soap and Detergent Association, 475 Park Avenue South, New York, NY 10016.

7.2.3 American Society for Testing and Materials (ASTM) Standards are available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

7.2.4 American Chemical Society (ACS) specifications may be obtain from the American Chemical Society, 1155 Sixteenth Street, N.W., Washington, DC 20036.

7.2.5 Society of Automotive Engineers (SAE) specifications are available from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

7.3 Ordering data. Acquisition documents must specify the following:

- a. Title, name, and date of this CID.
- b. Type (see section 2).
- c. Unit quantity required.
- d. Packaging requirements (see section 6).

7.4 National stock numbers (NSNs). The following NSNs correspond to this CID. This list may not be indicative of all possible NSNs associated with this document.

6850-00-256-0157
 6850-00-965-2087
 6850-00-965-2329
 6850-00-965-2330

7.5 Sources of supply. The following products are known to meet the requirements of this CID. Competition is not to be limited to the suppliers on this list.

<u>Company</u>	<u>Product</u>	
	<u>Type 1</u>	<u>Type 2</u>
B&B Chemical Co. P.O. Box 660776 Miami, FL 33266-0776 (305) 888-5247	Steam White-R	P-1000
Cal-Tek Industries 693 Hi Tech Parkway Oakdale, CA 95361 (213) 268-5137	Cal No. 2751	
Crest Industrial Chemicals P.O. Box 42242 Houston, TX 77242 (713) 780-1828	PAC-4	
Octagon Process Inc. 725 River Road Edgewater, NJ 07020-1192 (201) 945-9400	Octagon 451	

A-A-59133

Turco
2700 Temple Avenue
Long Beach, CA 90806
(310) 981-8300

Steam X-3B

West Chemical Products
(West Penetone Corporation)
74 Hudson Avenue
Tenafly, NJ 07670
(201) 567-3000

Penpower 150H

MILITARY INTERESTS:

Custodians

Army - MR
Navy - SH
Air Force - 68

Preparing Activity

DLA - GS
(Project No: 6850-1180)

Reviewers

Army - AR, AS
Navy - MC, OS, YD1