

METRIC

A-A-59133A
9 November 2004
SUPERSEDING
A-A-59133
3 November 1997

COMMERCIAL ITEM DESCRIPTION

CLEANING COMPOUND, HIGH PRESSURE (STEAM) CLEANER

The General Services Administration has authorized the use of this commercial item description for 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 classified by the following types. The type to be furnished shall be as specified (see 7.3(b)).

- Type I - Compounds containing phosphates
- Type II - 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 milligram (mg)-per-liter (L) (40 grains-per-gallon) hard water solution is prepared by dissolving 0.8090 grams of American Chemical Society (ACS) grade calcium acetate monohydrate ($\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$) and 0.5546 grams of ACS grade magnesium sulfate heptahydrate ($\text{Ca}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot \text{H}_2\text{O}$) per liter of freshly boiled distilled water.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: STDZNMGT@dla.mil or Defense Supply Center Richmond (DSCR), ATTN: DSCR-VEB, 8000 Jefferson Davis Highway, Richmond, VA 23297-5616.

AMSC N/A

FSC 6850

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

A-A-59133A

TABLE I. Composition of type I comparison compound.

Component	Percent by weight
Sodium metasilicate, pentahydrate ($\text{Na}_2\text{SiO}_3 \cdot 5\text{H}_2\text{O}$)	35.0
Sodium phosphate, monobasic monohydrate ($\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$)	10.5
Sodium tripolyphosphate ($\text{Na}_5\text{P}_3\text{O}_{10}$)	52.5
Nonionic surface-active agent, MIL-D-16791, type 1	2.0

TABLE II. Composition of type II comparison compound.

Component	Percent by weight
Sodium metasilicate, anhydrous (Na_2SiO_3)	54.2
Citric acid, monohydrate ($\text{C}_6\text{H}_8\text{O}_7 \cdot \text{H}_2\text{O}$)	23.6
Citric acid, dihydrate ($\text{C}_6\text{H}_8\text{O}_7 \cdot 2\text{H}_2\text{O}$)	20.2
Nonionic surface-active agent, MIL-D-16791, type 1 with cloud point $54\text{ }^\circ\text{C} \pm 3\text{ }^\circ\text{C}$	2.0

TABLE III. Performance requirements.

Performance requirement	Limits	Test paragraph
Water softening or stability	Paragraph 3.3.1	3.3.2
Cleaning efficiency	Paragraph 3.4.1	3.4.5
Solubility	$\leq 0.25\%$	3.5
pH value (0.50% solution, type I or 0.30% solution, type II)	$10.5 \leq \text{pH} \leq 11.4$	3.6.2
Corrosion	Paragraph 3.7.1	3.7.5
Surface tension (0.25% solution, type I or 0.15% solution, type II)	42 dynes/centimeter	3.8
Dust forming properties	Change in color	3.9
Penetration	≥ 30.0	3.10
Segregation	2%	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)	3.12
Rinsing	No white film	3.13
Phosphates (type II only)	None	3.14
Caking in storage	100% pass 3.35 mm sieve (U.S. No. 6 sieve)	3.15
Caking as received	None	3.16
Carbonates or bicarbonates	No effervescence	3.17
Fatty acid, soap, rosin, starch	None	3.18
Free sodium hydroxide	Paragraph 3.19.1	3.19.2
Biodegradability	$\geq 90\%$	3.20

3.2.2 Cleaning compound stock solution. Weigh 10 grams of the type I cleaning compound or 6 grams of type II cleaning compound and transfer to a 2-L volumetric flask. Add 500 milliliters (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-L 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.

3.2.4 Ammonium molybdate solution (Johnson's formula). Mix 55 grams of ammonium molybdate $((\text{NH}_4)_6\text{Mo}_7\text{O}_{24}\cdot 4\text{H}_2\text{O})$ and 50 grams of ammonium nitrate (NH_4NO_3) with 10 mL of 15 normal (N) ammonium hydroxide (NH_4OH) and 20 mL of water. Stir and dilute to about 700 mL with water. Heat while stirring for 30 minutes until all salts have dissolved. Dilute to 1 L 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 to 129.5 °C, a 0.25 percent solution of type I or a 0.15 percent solution of type II 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. Add 20 mL of hard water stock solution (see 3.2.1) to a test tube (200 mm long X 25 mm outside diameter) containing 20 mL of the cleaning compound solution (see 3.2.2) and mix well. Immerse in the solution a test panel of 1020 20-gage cold-rolled steel, 7.5 centimeters (cm) X 1.25 cm (3 inches X 1/2 inch) in size that has been polished with coarse emery cloth and cleaned with acetone. Place the test tube in a laboratory steam sterilizer at 126.5 °C to 129.5 °C (steam pressure of 14.8 to 16.9 kPascals (21 to 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 (see 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 four determinations with the comparison compound.

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

A-A-59133A

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 inches 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 Automotive Engineers SAE-J1966, "Oil, Lubricating, Aircraft Piston Engine (Non-dispersant Mineral Oil)" (DoD adopted). The cleaned panels, prepared as described in 3.4.2, shall be suspended on an "S" hook and dipped, one at a time, into a 400-mL beaker of the oil maintained at a temperature of 25 °C ± 1 °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-L beaker, place 1,600 mL of 0.5 percent distilled water solution of the type I compound or 0.3 percent solution of the type II compound (see 3.2.2). Bring solution to a boil and keep at this temperature throughout the test. Maintain solution level throughout the 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-L beaker. At the end of 2-1/2 minutes and 5 minute intervals, respectively, move the test panel 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, remove the panel from the cleaning solution and give two six-second rinses in distilled water (no agitation) with a four second drain between rinses. The rinsing solutions shall consist of two 1-L beakers, each containing 800 mL of distilled water at 25 °C ± 1 °C. Dry the panel in a 50 °C oven for 20 minutes, cool, and weigh. Thoroughly wash the panel with acetone, rinse in absolute ethyl alcohol, dry with paper toweling, and reweigh. 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 four 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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ 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 $105\text{ }^{\circ}\text{C}$ for 3 hours, cool and weigh. Gain in weight of crucible and contents is insoluble matter.

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 100 mL of 0.5 percent distilled water solution of the type I compound or 0.3 percent solution of the type II compound (see 3.2.2). Determine the pH at a temperature of $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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	A1-1100	A1-2024
I	0.25	1.2 mg	0.8 mg
I	1.2	0.8 mg	0.5 mg
II	0.15	1.2 mg	0.8 mg
II	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 X 1.9 cm (3 inches X 3/4 inch) in size from approximately 0.9-mm (0.034-inch) thick sheet aluminum conforming to SAE-AMS-QQ-A-250/1, "Aluminum, 1100, Plate and Sheet" (DoD adopted), H14 or H24 temper. Test panels of 2024-T3 aluminum shall be cut 7.6 cm X 1.9 cm (3 inches X 3/4 inch) in size from approximately 0.6-mm (0.025-inch) thick sheet aluminum conforming to SAE-AMS-QQ-A-250/4, "Aluminum Alloy 2024, Plate and Sheet" (DoD adopted). 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 with approximately 19 mg of metal removed in polishing to avoid smearing of the surface.

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.

A-A-59133A

3.7.4 Preparation of test solutions. Weigh 2.5 grams of the type I cleaning compound or 1.5 grams of the type II cleaning compound into a 1-L 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. Keep the solution at a boil throughout the test, maintaining the solution level by additions of distilled water as required. After 60 minutes, remove the test panel from the boiling solution, rinse under flowing tap water (cold), rinse in distilled water ($25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$), dip in absolute alcohol, wipe dry with paper toweling, and reweigh. The presence of corrosion products shall be noted. Tests 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 I compound or 100 mL of the 0.15 percent solution of the type II compound as prepared in paragraph 3.7.4, determine the surface tension at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ using an interfacial tensiometer. Harkins-Jordan (J. Am. Chem. Soc., 52: 1930, p. 1751) correction factors shall be applied.

3.9 Dust forming properties. The inside walls of a 250-mL glass-stoppered graduated cylinder 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 graduated cylinder. The graduated cylinder 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 graduated cylinder shall be removed. A moistened piece of red litmus paper shall be suspended in the graduated cylinder 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 graduated cylinder. 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 sided Pyrex glass crystallizing dish, 40 mm high by 80 mm in 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 $43\text{ }^{\circ}\text{C}$ to $46\text{ }^{\circ}\text{C}$ 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 ASTM International (ASTM) D 217, "Standard Test Methods for Cone Penetration of Lubricating Grease" (DoD adopted), with a 5-second hold, 250 grams total weight of the cone and attachments, and the temperature of the compound at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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 D 800, "Standard Test Methods of Chemical Analysis of Industrial Metal Cleaning Compositions" (DoD adopted).

3.12 Fineness. A 3.35-mm (U.S. No. 6) and a 150- μ m (U.S. No. 100) sieve conforming to ASTM E 11, "Standard Specification for Wire Cloth and Sieves for Testing Purposes" (DoD adopted), shall be used in a sieve shaking apparatus. Transfer a 100 ± 0.1 gram sample, without previously drying, to the 3.35-mm (U.S. No. 6) sieve. Allow the shaking apparatus to run 10 minutes. Examine the 3.35-mm (U.S. No. 6) screen for any retained cleaning compound and weigh the portion passing the 150- μ m (U.S. No. 100) sieve. Calculate the percentage. If a sieving machine is not available, use the hand sieving procedure of ASTM D 502, "Standard Test Method for Particle Size of Soaps and Other Detergents".

3.13 Rinsing. Test panels of 2024-T3 aluminum shall be cut 6.5 cm X 6.5 cm (2-1/2 inches X 2-1/2 inches) in size from approximately 0.6-mm (0.025-inch) thick aluminum sheet. The test panels shall be polished and cleaned as specified in paragraph 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 L of distilled water at $70 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$ for 3 minutes, withdrawing the panel slowly once each minute. Repeat the last step with a fresh sample of distilled water at $70 \text{ }^\circ\text{C}$. 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 II composition only). Place 1 gram 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 while stirring. Filter and add 6 grams NH_4NO_3 to the filtrate. Filter again if there is any undissolved material. Heat the filtrate to near $80 \text{ }^\circ\text{C}$ but no higher. Add 25 mL of the ammonium molybdate solution (see 3.2.4) to 10 mL of the filtrate 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-L (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, 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 having a weight between 90 and 110 grams to a 3.35-mm (U.S. No. 6) sieve conforming to ASTM E 11. 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.

A-A-59133A

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. 6 N 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 grams 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 5 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 grams of compound in a 100-mL tall form beaker. Add 30 mL petroleum ether (boiling range 35 °C to 60 °C) and stir 3 minutes with a glass rod. Decant off petroleum ether. Place on steam bath for 5 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 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 Regulation (FAR).

5. PRODUCT CONFORMANCE PROVISIONS

5.1 Product conformance. The products 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 marketplace. The government reserves the right to require proof of such conformance.

5.2 Market acceptability. The product offered must have been previously sold either to the government or on the commercial market.

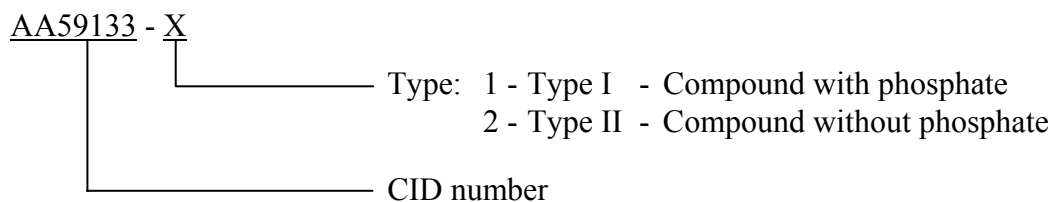
6. PACKAGING

6.1 Preservation, packing, labeling, and marking. Unless otherwise specified (see 7.3 (c)), the preservation, packing, labeling, and marking shall be in accordance with 49 CFR 100-199, Subtitle B, Chapter I, "Research and Special Programs Administration, Department of Transportation".

6.2 Unit of issue and quantity required. The unit of issue and quantity required shall be as specified (see 7.3(d)).

7. NOTES

7.1 Part or identification number (PIN). The following PIN procedure is for government purposes and does not constitute a requirement for the contractor.



7.2 Sources of documents.

7.2.1 CFR and FAR. Copies of CFR and FAR may be obtained from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. Electronic copies of CFR documents may be obtained from <http://www.access.gpo.gov/>. Electronic copies of FAR documents may be obtained from <http://www.arnet.gov/far/>.

A-A-59133A

7.2.2 Military specifications and standards. Copies of military specifications and standards may be obtained from Standardization Documents Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094. Electronic copies of military specifications and standards may be obtained from <http://assist.daps.dla.mil/>.

7.2.3 ASTM standards. Copies of ASTM standards may be obtained from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959. Electronic copies of ASTM standards may be obtained from <http://www.astm.org/>.

7.2.4 SAE standards. Copies of SAE standards may be obtained from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001. Electronic copies of SAE standards may be obtained from <http://www.sae.org/>.

7.2.5 ACS specifications. Copies of ACS specifications may be obtained from the American Chemical Society, 1155 Sixteenth Street, N.W., Washington, DC 20036.

7.3 Ordering data. The contract or order should specify the following information:

- a. CID document number, revision, and CID PIN.
- b. Type (see 2).
- c. Preservation, packing, labeling, and marking, if different (see 6.1).
- d. Unit of issue and quantity required (see 6.2).

7.4 Subject term (key word) listing.

alkaline
ferrous
nonferrous
phosphates

MILITARY INTERESTS:

Custodians:

Army - MR

Navy - SH

Air Force - 68

Review Activities:

Army - AR

Navy - AS, MC, OS

CIVIL AGENCY
COORDINATING ACTIVITY:

GSA - FSS

Preparing Activity:

DLA - GS3

(Project 6850-1487)