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SUPERSEDING
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FEDERAL SPECIFICATION

DISINFECTANT-DETERGENT, GENERAL PURPOSE (PINE OIL)

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

1. SCOPE

1.1 This specification covers pine oil disinfectant-detergents for general janitorial use in deodorizing and disinfecting (see 6.1).

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

Federal Standard:

Federal Test Method Standard No. 536/6701 - Cleaning Efficiency.

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards and Commercial Item Descriptions. The Index, which includes cumulative bimonthly 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, other Federal specifications, and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston; New York; Washington, DC; Philadelphia: Atlanta: Chicago; Kansas City, MO; Fort Worth; Houston; Denver; San Francisco, Los Angeles; and Seattle, WA.

(Federal Government activities may obtain copies of Federal specifications, standards, and commercial item descriptions, and the Index of Federal Specifications, Standards and Commercial Item Descriptions from established distribution points in their agencies.)

Military Standard:

MIL-STD-105 - Sampling, Procedures and Tables for Inspection by Attributes.

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

Laws and Regulations:

40 CFR 161-180 - Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act.

(The Code of Federal Regulations (CFR) and the Federal Register (FR) are for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. When indicated, reprints of certain regulations may be obtained from the Federal agency responsible for issuance thereof.)

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 invitation for bids or request for proposal shall apply.

American Society for Testing and Materials (ASTM) Standards:

D 56 - Flash Point by Tag Closed Tester.
D 460 - Soap and Soap Products, Sampling and Chemical Analysis of.
D 802 - Pine Oil, Sampling and Testing.
E 70 - pH of Aqueous Solution with the Glass Electrode.

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

National Motor Freight Traffic Association, Inc., Agent:

National Motor Freight Classification.

(Applicationf or copies should be addressed to the American Trucking Associations, Inc., Traffice department, 1616 P Street, N.W., Washington, DC 20036.)

Uniform Classification committee, Agent:

Uniform Freight Classification.

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

3. REQUIREMENTS

3.1 Finished product. The finished product shall be a pine oil disinfectant-detergent meeting the chemical and physical requirements of table 1.

TABLE 1. Chemical and physical requirements.

Characteristic	Requirement Min.	Max.
Of the finished product:		
Pine oil (percent by weight)	60.0	-
Anhydrous soda soap (percent by weight)	10.0	-
Viscosity (centipoise, at 15.6 deg. C)	-	100
pH	10.0	-
Flash point (tag closed cup)	76 deg. C	-
Of the pine oil component:		
Specific gravity	0.925	0.945
Terpene alcohols (percent by weight)	80.0	-

3.2 EPA registration. The product shall be registered by the Environmental Protection Agency as a disinfectant which is effective at the use-dilution specified on the label against salmonella choleraesuis (ATTC No. 10708).

3.3 Labeling. The product shall be labeled in accordance with the Regulations for the Enforcement of the Federal Insecticide, Fungicide and Rodenticide Act.

3.4 Cleaning efficiency. The use-dilution of the disinfectant-detergent prepared in 150 ppm hard water shall have a cleaning efficiency comparison index (cleaning efficiency of use-dilution/cleaning efficiency of .25 percent solution of standard detergent) of not less than 0.8, when tested as specified in 4.3.8.

3.5 Rinsability. When tested as specified in 4.3.10, the use-dilution prepared in 150 ppm hard water shall not leave more film or residue than the hard water alone.

3.6 Odor. The odor of the product shall be characteristic of pine oil. The odor shall not be rancid.

3.7 Sediment and suspended material. The disinfectant-detergent shall contain no sediment or suspended particulate matter.

3.8 Net contents. The net contents of the containers of disinfectant-detergent shall be not less than that specified in the contract.

3.9 Emulsion stability. When tested as specified in 4.3.9, the use-dilution of the disinfectant-detergent prepared in distilled water and in 500 ppm hard water shall be a stable emulsion with no separation of free oils.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein.

4.2 Quality conformance inspection.

4.2.1 Examination of preparation for delivery. An examination shall be made to determine compliance with the requirements of section 5. The sample unit shall be one shipping container fully prepared for delivery. Sampling and acceptance shall be in accordance with MIL-STD-105, inspection level S-2, AQL of 4.0 percent defective.

4.2.2 Examination of the finished product. The disinfectant-detergent shall be examined for compliance with the requirements in 3.2, 3.3, 3.6, 3.7 and 3.8. The sample unit shall be one container of disinfectant-detergent. Sampling and acceptance shall be in conformance with MIL-STD-105, inspection level S-3, AQL of 4.0 percent defective.

4.2.3 Testing of the disinfectant-detergent. The disinfectant-detergent shall be tested as specified in 4.3 for conformance with the requirements of 3.1, 3.4, 3.5 and 3.9. The sample unit shall be one quart of disinfectant-detergent. Sampling and acceptance shall be in accordance with MIL-STD-105, inspection level S-1, AQL of 4.0 percent defective. Forward a copy of the label along with the samples to the testing facility.

4.3 Test methods.

4.3.1 Percent of pine oil. Weight to the nearest 0.5g, 100 +/- 5g of the disinfectant-detergent into a tared 400-ml beaker. Transfer to a 500-ml separatory funnel (I) using distilled water and add 100 ml of distilled water. Add 1:1 HCL solution until mixture is neutral to litmus paper and then add 5 ml extra. Add 100 ml ether, shake well, allow to separate, and draw off the aqueous layer into another 500-ml separatory funnel (II). Add 50 ml of ether to the aqueous layer in funnel (II), shake well, and draw off the aqueous layer into a third 500-ml separatory funnel (III). Add 50 ml of ether to the aqueous layer in funnel (III), shake well, separate, and discard aqueous layer. Add ether layers in funnels (II) and (III) to ether in funnel (I) and wash with 100-ml portions of distilled water until the wash water is neutral to litmus. Transfer the ether solution to a 500-ml round bottom flask and heat on a steam bath to drive off the ether. Connect the flask to a condenser and steam generator. Steam distill the pine oil from the flask, collecting the oil in a 250-ml graduated separatory funnel. Water, in the distillate, is drained as required, leaving oil in the funnel. Steam distill until the oil volume remains constant.

Calculations:

$$\text{Pine oil percent} = \frac{\text{ml of recovered oil} \times \text{SG} \times 100}{\text{wt. of sample}}$$

SG = specific gravity of pine oil. If the actual specific gravity is not determined, use 0.94 for SG.

4.3.2 Percent of soap. Determine the percent of anhydrous soda soap in the disinfectant-detergent as specified in ASTM D 460, sections 21 and 22.

4.3.3 pH. Determine the pH of the disinfectant-detergent as specified in ASTM E 70.

4.3.4 Viscosity. Fill a 250-ml beaker with the disinfectant-detergent. Determine the viscosity with a Brookfield viscometer and number 1 spindle at 50 rpm for Model RV viscometers for 30 rpm for Model LV viscometers.

4.3.5 Flash point. Determine the flash point of the disinfectant-detergent as specified in ASTM D 56.

4.3.6 Specific gravity. Determine the specific gravity of the pine oil extracted in 4.3.1 as specified in ASTM D 802, section 5.

4.3.7 Terpene alcohol content of pine oil. Determine the percent of terpene alcohol in the pine oil extracted in 4.3.1 as specified in ASTM D 802, section 10.

4.3.8 Cleaning Efficiency. Prepare the use-dilution specified on the label using 150 ppm hard water (0.166 g anhydrous CaC1 per liter) for dilution. Determine the cleaning efficiency comparison index of this dilution as specified in Federal Test Method Standard No. 536 - Method 6701 - Cleaning Efficiency.

4.3.9 Emulsion stability. Prepare, in separate stoppered 100-ml graduated cylinders, 100 ml of the use-dilution in distilled water and 100 ml of the use-dilution in 500 ppm hard water (0.422 g anhydrous CAC1 and 0.295 g $MgSO_4.7H_2O$ per liter). Stopper the cylinders and invert each 8 times. Allow to stand at room temperature for 24 hours. The emulsion shall have not more than 3 percent of an easily dispersible cream and no free oil shall be visible either on the surface or at the interface.

4.3.10 Rinsability. Place 100 ml of the use-dilution in 150 ppm hard water (0.166 g anhydrous CaC1 per liter) in a clean 250-ml Erlenmeyer flask; stopper; shake vigorously for 10 seconds; and pour the solution out. Rinse the flask with 3 100-ml portions of 150 ppm hard water. Rinse a second Erlenmeyer flask with 3 100-ml portions of 150 ppm hard water. Invert both flasks and allow to dry at room temperature. There shall be no more residue or residual film in the flask washed with the disinfectant-detergent than in the flask rinsed with 150 ppm hard water alone.

5. PREPARATION FOR DELIVERY

5.1 Packaging. The disinfectant-detergent, in the quantity specified, shall be packaged in accordance with normal commercial practice. The complete package shall be designed to prevent damage of the item during shipment, handling and storage.

5.2 Packing. The disinfectant-detergent shall be packed in shipping containers to assure delivery at destination, to provide for redistribution by the initial receiving activity, and shall be acceptable by common carrier under National Motor Freight Classification and Uniform Freight Classification.

5.3 Marking. Marking shall be as specified in the contract or order.

6. NOTES

6.1 Intended use. The pine oil disinfectant-detergent covered by this specification is intended to be used at use-dilution specified on the label for cleaning, deodorizing, and disinfecting urinals, bathrooms, shower stalls, floor walls, animal quarters, etc. It is effective primarily against gram-negative bacteria. This product should not be used as a disinfectant for hospital, medical, veterinary and related purposes where effectiveness against Staphlococci as required.

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

(a) Title, number, and date of this specification.
(b) Net contents per container required (see 3.8).
(c) Marking required (see 5.3).

6.3 Bid evaluation. Bids shall be evaluated on the basis of price per gallon of use-dilution solution obtainable. This is calculated as follows:

price per gallon of use-dilution solution	=	Bid price per container of product	x	ounces of product needed to make one gallon of use-dilution solution

ounces of produce per customer

Bidders shall state one their bid the amount of product (in ounces) required to make one gallon of use-dilution solution as stated on the label. Where more than one use-dilution is stated on the label, the use-dilution with the largest quantity of product per gallon of use-dilution solution shall be used in determining the cost.

Preparing Activity:
GSA-FSS

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 and other documents referenced herein.