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SUPERSEDING
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FEDERAL SPECIFICATION

WATER REPELLENT COMPOUND, TEXTILE FINISH

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 two types of textile finish, water-repellent compounds (see 6.1).

1.2 Classification.-

1.2.1 Types.- Textile finish water-repellent compounds covered by this specification shall be of the following types, as specified (see 6.2):

Type I - Aqueous application
Type II - Solvent application

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 Specifications:

L-P-378	-	Plastic Sheet And Strip Thin Gauge, Polyolefin.
O-T-236	-	Tetrachloroethylene (Perchloroethylene); Technical Grade.
P-D-680	-	Dry Cleaning Solvent.
P-S-683	-	Sour; Laundry, (Fluoridated).
PPP-P-704	-	Pails, Metal: (Shipping Steel, 1 through 12 Gallon).

Federal Standards:

Fed. Std. No. 123 - Marking for Domestic Shipment (Civil Agencies).
Fed. Test Method Std. No. 191 - Textile Test Methods.

FSC 8030

Fed. Test Method Std. No. 536 - Soap and Soap-Products (Including Synthetic Detergents); Sampling and Testing.
Fed. Test Method Std. No. 791 - Lubricants, Liquid Fuels and Related Products; Methods of Testing.

(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, D.C. 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, D.C., Atlanta, Chicago, Kansas City, Mo., Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, Washington.

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

Military Specifications:

MIL-C-43191 - Cloth, Wind Resistant Sateen, Cotton and Nylon.

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" x 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.)

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:

National Motor Freight Traffic Association, Inc., Agent

National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Associations, Inc., Tariff Order Section, 1616 P Street, N.W., Washington, D.C. 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, Illinois 60606.)

3. REQUIREMENTS

3.1 Composition.- The manufacturer is given wide latitude in the selection of materials for the formulation of the compounds except that sodium sulfate (Na_2SO_4) concentration shall not exceed 0.1 percent when tested as specified in 4.2.3 and sodium chloride (NaCl) concentration shall not exceed 0.1 percent when tested as specified in 4.2.3. The manufacturer shall furnish sufficient information to the contracting officer as to formulation so that chemical and physical tests can be conducted.

3.2 Color.- The compounds shall be light in color.

3.3 Form.-

3.3.1 Type I.- Type I compound shall be a stable, fluid, homogeneous wax or resin emulsion of the oil-in-water type and of a consistency such that the compound when cooled to 50° ± 2°F. can be readily poured and dispersed in water which has previously been adjusted to 75° ± 2°F. (see table II).

3.3.2 Type II.- Type II compound shall be a stable, homogeneous dispersion of waxes or resins in a hydrocarbon solvent.

3.3.2.1 Toxicity (type II).- The material shall have no adverse effect on the health of user personnel when used for its intended purpose. Questions pertinent to this effect shall be referred by the procuring activity to the appropriate medical service who will act as advisor to the procuring agency.

3.4 Dispersibility and solubility.-

3.4.1 Type I.- Type I compound shall produce a stable 2 percent dispersion in hard water previously adjusted to pH 5.0 and to pH 8.5 at 50° ± 2°F. and 120° ± 2°F., respectively, determined as specified in 4.2.3.

3.4.2 Type II.- One part of type II compound shall be soluble at 85° ± 2°F. in 9 parts of dry-cleaning solvents, conforming to both P-D-680 (type I) and O-T-236, when tested as specified in 4.2.3.

3.5 Stability (type I only).-

3.5.1 Centrifuging.- The compound when centrifuged as specified in 4.2.3 shall be homogeneous and shall not produce more than 2 ml. of heavy deposit. This heavy deposit shall be readily dispersed by slight agitation.

3.5.2 Extended heating.- For extended heating, the compound shall not separate to such an extent that (after testing as specified in 4.2.3):

a. Clear layer separating at the bottom exceeds 15 percent, and
b. Compound cannot be restored to original condition by slight agitation.

3.5.3 Temperature cycling.- The compound shall remain stable with no evidence of separation when tested as specified in 4.2.3.

3.6 Flash point (type II only).- The flash point of the compound shall be not less than 100°F. when tested as specified in 4.2.3.

3.7 Effect on fabrics.-

3.7.1 Deleterious effects.- Type I and type II compounds shall have no deleterious effects on fabrics, such as an appreciable color change, increased stiffness, greasiness, or an obnoxious odor, after completion of preparation and treatment specified in 4.2.3.

3.7.2 Water repellency.-

3.7.2.1 Type I and type II.- Type I and type II compounds shall comply with the water repellency requirements specified in table I when tested as specified in 4.2.3.

TABLE I.- Water repellency requirements for type I and type II compounds

Treated fabric (condition)	Spray rating (minimum)	Dynamic absorption (maximum)
Initially	90	40
After 2 hours wet mechanical action	70	45

3.8 Marking instructions data (see 5.4.1).-

3.8.1 Type I.-

INSTRUCTIONS FOR USE

Preparation of Clothing

Clothes are washed in the usual manner. Best results can be obtained only if clothes are thoroughly rinsed to remove all soaps, detergents and alkalies before treating with water repellent. Stir compound thoroughly before removing from container.

Application of Compound to Clothing

Treat clothes specified time, extract lightly (shut off extractor as soon as it reaches top speed), and dry (in a tumbler if possible).

Method of application	Gallons of water 1/	Amount of compound to add	Time required
30 in. by 30 in. laundry wash wheel (60 lbs. dry clothes)	20 gallons approx. (2 in. level)	3 pints	Run in wheel 10 minutes
42 in. by 84 in. laundry wash wheel (350 lbs. dry clothes)	150 gallons approx. (4 in. level)	2-1/4 gallons	Run in wheel 10 minutes

Method of application	Gallons of water 1/	Amount of compound to add	Time required
Tank or vat manual dipping	18 gallons	2 gallons	Dip up and down for 3 to 5 min.

NOTE: Amounts to use in other sizes of machines, wash wheels, tanks or vats are in same proportion.

1/ Includes water required to wet out the clothes.

Specification Nomenclature

Type-I

Date of Pack

Do not use after 6 months from Date of Pack

Name of Manufacturer

Contract Number

Lot Number

Net Contents

3.8.2 Type II.-

INSTRUCTIONS FOR USE

Preparation of Clothing

Clothes are dry-cleaned in usual manner (best results can be obtained only if clothes are thoroughly rinsed with clean solvent to remove all soap and detergents), extracted, and dried. Make sure compound is dissolved before putting the dry clothes into treating solution.

Application of Compound to Clothing

Treat clothes specified time, extract lightly (shut off extractor as soon as it reaches top speed), and dry (in a tumbler is possible).

Method of application	Amount of compound to add per 10 gallons solvent (see par 3.4.2)	Time required for application
Dry cleaner wash wheel	1 gallon	Run in wheel 5 minutes
Tank or vat (manual dipping)	1 gallon	Dip up and down 3 to 5 minutes

NOTE: Small or larger amounts are made up in same proportion.

Specification Nomenclature

Type-II

Date of Pack

Name of Manufacturer

Address of Manufacturer

Contract Number

Lot Number

Net Contents

3.9 Marking for air pollution control.- If the water repellent compound contains organic solvent as an additive, the following shall also appear on each container: "When applicable, limit the amount of daily organic solvent discharged into the atmosphere or reduce emissions as provided in Rule 66, Los Angeles Air Pollution District or other air pollution regulations."

3.10 Workmanship.- The finished compound shall be clean, uniform, and shall conform to the levels of quality established herein. The occurrence of defects

e exercising caution to avoid prolonged adequate ventilation and wo

shall not exceed the number permitted under the acceptable quality levels (AQL's) specified in section 4 for all examinations and tests of materials, components and end items, as applicable.

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, the supplier may utilize his own facilities or any commercial laboratory acceptable to 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.

4.2 Inspection.- Sampling for inspection shall be performed in accordance with MIL-STD-105, except as otherwise indicated hereinafter. For purposes of sampling, all of the containers of water repellent compound of the same type offered for delivery at one time shall be considered a lot for the purpose of inspection.

4.2.1 Inspection of materials and components.- In accordance with 4.1, the supplier is responsible for insuring that materials and components used in the end item were manufactured, tested and inspected in accordance with the requirements of referenced subsidiary specifications and standards to the extent specified, or, if none, in accordance with this specification. In the event of conflict, this specification shall govern.

4.2.2 Examination of the end item.- The end item shall be examined in accordance with the classification of defects at the inspection levels and acceptable quality levels (AQLs) set forth in 4.2.2.4. Random samples shall be taken from each lot of the end item of the same type for examination of the finished water repellent compound and filled containers for net contents. The lot size for purposes of determining the sample size in accordance with MIL-STD-105 shall be expressed in units of 5-gallon pails of the specified type for the examinations in 4.2.2.1, 4.2.2.2, and 4.2.2.3. The sample unit for each examination shall be one filled 5-gallon pail.

4.2.2.1 Examination of preparation for delivery requirements.- An examination shall be made to determine that the packaging, packing, and marking comply with the section 5 requirements. Defects shall be scored in accordance with the list below. Defects of closure listed below shall

be examined on shipping containers fully prepared for delivery. The lot size shall be the number of shipping containers in the end item inspection lot.

Examine	Defect
Marking	Omitted, incorrect; illegible; of improper size, location, sequence or method of application.
Materials	Any component missing or damaged.
Workmanship	Inadequate application of components, such as: Metal pail not as specified; pail coating and polyethylene lining (when applicable) missing or not as specified; lug cover improperly closed. Pail bulged or distorted.
Content	Pail filled with less than 5-gallons of the water repellent compound.

4.2.2.2 Examination for palletization when applicable.- An examination shall be made to determine that the palletization complies with the section 5 requirements. Defects shall be scored in accordance with the list below. The sample unit shall be one palletized unit load fully prepared for delivery. The lot size shall be the number of palletized unit loads in the end item inspectio lot.

Examine	Defect
Finished dimension	Length, width, or height exceeds specified maximum requirement.
Palletization	Not as specified. Pallet pattern not as specified. Interlocking of loads not as specified. Load not bonded with required straps as specified.
Weight	Exceeds maximum load limits.
Marking	Omitted; incorrect; illegible; of improper size, location, sequence or method of application.

4.2.2.3 Examination of the finished compound.-

Examine	Defect
Form	Not type specified in the contract
Color	Not light color.
Workmanship	Not clean. Non-homogeneous, unstable, sedimented. Evidence of foreign matter.

4.2.2.4 Inspection levels and AQL's.- The inspection levels for determining the sample size and acceptable quality levels (AQL's) expressed in defects per 100 units shall be as follows:

Examination paragraph	Inspection level	AQL
4.2.2.1	S-1	2.5
4.2.2.2	S-1	6.5
4.2.2.3	S-3	2.5

4.2.3 Testing of the end item.- The end item shall be tested for the characteristics specified in table II. The lot size for purposes of determining the sample size shall be expressed in units of 5 gallon pails. The sample unit shall be 1 quart placed in a clean large mouth glass container. The inspection level shall be S-1. The acceptable quality level (AQL) shall be expressed as 4.0 defects per 100 units. All requirements are applicable to the sample unit. No failures shall be permitted in any performance test for lot acceptance.

TABLE II.- End item testing

Characteristic	Reference to requirements paragraph	Test method	Resul Pass or
Type I and type II			
Sodium sulfate (Na_2SO_4) content	3.1	4.3.6	
Sodium Chloride (NaCl) content	3.1	4.3.5	
Type I compound:			
Consistency	3.3.1	4.3.1	X
Dispersibility:			
At pH 5.0:			
At 50°F.	3.4.1	4.3.2	X
At 120°F.	3.4.1	4.3.2	X
At pH 8.5:			
At 50°F.	3.4.1	4.3.2	X
At 120°F.	3.4.1	4.3.2	X
Type I:			
Stability to centrifuging	3.5.1	4.3.4.1	
Stability to extended heating	3.5.2	4.3.4.2	X
Stability to temperature cycling	3.5.3	4.3.4.3	X

TABLE II.- End item testing (cont'd)

Characteristic	Reference to requirements paragraph	Test method	Resul Pass or
Type II compound:			
Solubility in dry cleaning fluid at 85°F.	3.4.2	4.3.3	X
Flash point	3.6	4.3.8	
Performance tests:			
Type I and Type II			
Spray rating:			
Initially	Table I	4.3.5.5.1.1	
After 2 hours wet mechanical action	Table I	4.3.5.5.1.3 4.3.5.5.1.1	
Dynamic absorption:			
Initially	Table I	4.3.5.5.1.2	
After 2 hours wet mechanical action	Table I	4.3.5.5.1.3 4.3.5.5.1.2	
Deleterious affects of compound on fabrics	3.7.1	4.3.5.2 4.3.5.3	X

NOTE: Fabric specified in 4.3.5.1 for use in the tests for type I and type II compou treated as specified in 4.3.5.2 or 4.3.5.3 (as applicable).

4.2.3.1 Unless otherwise specified, upon successful completion of chemical and physical tests conducted on the end item compound, the unused portion from all sample units shall be composited and performance tests conducted upon this composite sample. Under this procedure any specified acceptable quality levels (AQL's) previously established for performance testing shall be inapplicable. The number of determinations per sample unit (unit of treated cloth) shall be as indicated in the applicable test method.

4.2.3.2 Unless otherwise specified, upon failure of the end item compound to meet any chemical or physical characteristic, the unused portion of sample unit shall be tested for all performance characteristics. Specified acceptable quantity levels (AQL's) shall then be applicable.

4.3 Tests.-

4.3.1 Consistency (type I).- 50 grams of sample shall be conditioned at 50° ± 2°F. for 24 hours. Pour conditioned material into 500 ml. of water which has been previously adjusted to 75° ± 2°F. and disperse by stirring.

4.3.2 Dispersibility (type I).- Disperse two separate 2-g. samples of the compound in separate 98-ml. portions of 20-grain hard water previously adjusted to pH 5.0 with fluoride type laundry sour conforming to P-S-683. The two portions of water shall be previously adjusted to 50° ± 2°F. and 120° ± 2°F., respectively, and the dispersions maintained at those temperatures for 30 minutes. Observe for stability of dispersion. Repeat the above procedure with 20-grain hard water specified in 4.3.2.1 adjusted to pH 8.5 with sodium hydroxide (c.p. grade).

4.3.2.1 20-grain hard water.- Dissolve 0.404 g. calcium chloride dihydrate ($CaCl_2.2H_2O$) and 0.1361 g. magnesium chloride hexahydrate ($MgCl_2.6H_2O$) in 800 ml. distilled water, then dilute to 1 liter.

4.3.3 Solubility (type II).- Warm 90 ml of drycleaning solvent conforming to P-D-680 (type I) to 85 ± 2°F in a 250 ml Erlenmeyer flask, and add 10 ml of the compound. Swirl the flask for several minutes. The compound shall completely dissolve in the solvent. Repeat this test using perchloroethylene conforming to O-T-236 in place of the P-D-680 solvent.

4.3.4 Stability (type I only).-

4.3.4.1 Centrifuging.- Fill a 100-ml. graduated cone-shaped or pear-shaped centrifuge tube with the compound and warm contents to 100° ± 2°F. Centrifuge for 15 minutes at 250 to 350 revolutions per minute.

Observe separated heavy deposit, and any separation which cannot be restored to a homogeneous condition by slight agitation.

4.3.4.2 Extended heating.- Fill a graduated 100-ml. glass-stoppered cylinder with compound and allow to stand undisturbed for 72 hours at 160° ± 2°F. Observe for (a) percentage of clear layer at the bottom and (b) any separation which cannot be restored to a homogeneous condition by slight agitation.

4.3.4.3 Temperature cycling.- Place 100-ml. samples of the compound in two separate 100-ml. graduated cylinders, each fitted with a two-hole stopper, a thermometer (0° to 160°F. range), in one hole and a capillary tube in the other hole. Temperature cycle (thermometer readings) the separate samples as follows:

a. 30 minutes at 0° ± 2°F., room temperature until melted, 30 minutes at 160° ± 2°F. and cooled to room temperature.

b. 30 minutes at 160° ± 2°F., cooled to room temperature, 30 minutes at 0° ± 2°F., and warmed to room temperature. In each case observe for separation after temperature cycling.

4.3.5 Effect on fabrics (type I and type II).-

4.3.5.1 Fabric. The fabric used for test purposes shall be cotton nylon cloth conforming to MIL-C-43191, except that the cloth shall not be water resistant (see 6.4). All performance tests shall be based on the use of this cloth.

4.3.5.2 Application of type I compound to fabric.- A 2-yard piece of untreated test fabric shall be cut on a 45° bias into a minimum of 20, 8- by 8-inch swatches. The swatches shall be conditioned for a minimum of 4 hours at 65 ± 2 percent relative humidity and at a temperature of 70° to 80°F. Twenty conditioned swatches shall be weighed to the nearest 0.1 g. and then placed in a tumble jar as used in Dynamic Absorption Test Method 5500 of Fed. Test Method Std. No. 191. Distilled water equal to 3/2 times the conditioned dry weight of the 20 swatches shall be added to the jar (see example). The jar and contents with jar lid in place but not clamped shall then be placed in an oven maintained at 110° ± 2°F. for 30 minutes. 1/ The jar shall be removed from the oven and a dispersion prepared by diluting the water repellent compound (12 per cent of the conditioned dry weight of the 20 swatches) with the remaining half of the distilled water at 110° ± 2°F. shall be added immediately to the contents of the jar. The jar shall be

quickly fastened in the dynamic absorption apparatus and tumbled for 15 minutes. The treated swatches shall be removed from the jar, and divided into 4 sets of 5 swatches each. Five swatches placed on top of each other shall be simultaneously passed one time between squeeze rollers. This procedure should give a wet pick-up of 100 percent plus or minus 5 percent. Weight applied to the squeeze rollers and speed of the squeeze rollers shall be in accordance with the equipment specified in method 5500 of Fed. Test Method Std. No. 191. The swatches shall then be spread out and drie in an air-circulating oven for 60 minutes at 180° ± 2°F. The swatches shall be examined for color change, spots, stiffness, greasiness and odor.

Example calculation (amounts of water and water repellent compound required)

Conditioned dry weight of 20 swatches = 265 g.

Weight of water to wet out swatches = 3/2 (265) = 398 g.

Total weight of water required = 796 g.

Weight of water repellent compound required = 0.12 (265) = 31.8 g.

1/ If jar cannot be readily removed from apparatus the temperature of the water added to the dry swatches shall be increased to compensate for cooling effects of jar and surrounding atmosphere such that the contents of jar shall be 110° ± 2°F. after a 30 minute period.

4.3.5.3 Application of type II compound.- The fabric, prior to treatment with the water repellent compound, shall be cut on a 45° bias into a minimum of twenty 8- by 8-inch swatches. Ten swatches and 2 liters of clean dry cleaning solvent 1/ conforming to P-C-680 shall be placed in a clean dry tumbler jar as described in method 5500 of Fed. Test Method Std. No. 191. The jar shall be rotated for 20 minutes. The swatches shall be extracted, dried at 200° ± 5°F. for 60 minutes, conditioned a minimum of 4 hours at 65 ± 2 percent relative humidity and a temperature of 70°-80°F. Five accurately weighed swatches shall be immersed in dry cleaning solvent with stirring rod agitation for 2-5 minutes, removed and passed one at a time through a household type wringer and then quickly re-weighed. Based on the solvent pick-up, prepare 1000 grams of dry-cleaning solvent solution of the compound which will deposit 5 percent of the compound, as received upon the fabric.

Example: 265 grams of conditioned fabric weight 503.5 grams after immersion in the solvent and passage through the wringer. This equals a 90 percent pick-up. A dry cleaning solvent containing 5.55 percent water repellent

compound is required to deposit 5 percent of the compound. Wet the swatches by immersion in 1000 grams of prepared solvent solution; pass through wringer and dry at 200° ± 5°F. for a minimum of 60 minutes. Examine treated swatches for color change, stiffness, greasiness, and odor.

1/ Provide adequate ventilation during use, do not use near hot surfaces or open flames, and avoid unnecessary skin contact with the solvent.

4.3.5.4 Conditioning of fabric swatches with types I and II compound applied.- The treated swatches shall be conditioned a minimum of 4 hours at 65 ± 2 percent relative humidity and a temperature of 70° to 80°F. prior to testing.

4.3.5.5 Procedures for testing performance of types I and II compounds on fabrics.- A minimum of five treated swatches per set shall be used for each compound in the following tests:

4.3.5.5.1 Water repellency.-

4.3.5.5.1.1 Spray resistance.- Spray resistance shall be determined in accordance with method 5526 of Fed. Test Method Std. No. 191. One set of 5 swatches shall be tested for initial values and one set of 5 swatches for values after 2 hours wet mechanical action.

4.3.5.5.1.2 Dynamic absorption.- Dynamic absorption shall be conducted in accordance with method 5500 of Fed. Test Method Std. No. 191. Two sets of 5 swatches each shall be tested at one time, one set for initial values and one set which has been subjected to 2 hours wet mechanical action.

4.3.5.5.1.3 Wet mechanical action.- Two sets of 5 swatches each shall be run in the tumble jar equipment specified in method 5500 of Fed. Test Method Std. No. 191, one set for spray rating and one set for dynamic absorption. The jar shall be run for 2 hours with 2 sets of swatches in 2 liters of distilled water. Swatches shall be removed from the jar, divided into 2 sets of 5 swatches each, and each set simultaneously passed one time between squeeze rollers. Weight applied to the squeeze rollers and speed of the squeeze rollers shall be in accordance with the equipment specified in method 5500 of Fed. Test Method Std. No. 191. The swatches shall be dried in an air-circulating oven for 60 minutes at 180° ± 2°F. and then conditioned in a minimum of 4 hours at 65 ± 2 percent relative humidity and a temperature of 70° to 80°F., then tested as specified in 4.3.4.5.1.

4.3.6 Chloride content (type I and type II).- Accurately weigh a 10-gram sample of compound in a porcelain crucible. Dry crucible and contents in an oven at 100° to 105°C. for approximately 12 hours. Carefully ignite

residue to ash. Digest the ash with 100 ml. of distilled water. Cover with watch glass. Add phenolphthalein indicator, and if pink color exists then carefully neutralize with 1 N sulfuric acid (H_2SO_4) until just colorless. Filter and wash residue thoroughly. Add 1 ml. of potassium chromate indicator for every 100 ml. of filtrate. (Potassium chromate indicator is prepared by dissolving 5 grams of chloride-free potassium chromate (K_2CrO_4) in 100 ml. of distilled water.) Titrate the sample filtrate with 0.05 N silver nitrate solution, accurately standardized to the first permanent reddish tinge. Continu with paragraph 2.2 of method 501 of Fed. Test Method Std. No. 536, except that the blank shall not contain magnesium nitrate solution but will contain the same volumes of distilled water, sulfuric acid, and indicator as in the sample filtrate.

4.3.7 Sodium sulfate (Na_2SO_4) concentration.- The sodium sulfate (Na_2SO_4) concentration shall be determined in accordance with method 1601.1 of Fed. Test Method Std. No. 536.

4.3.8 Flash point (type II only).- The flash point shall be tested in accordance with method 1102.8 of Fed. Test Method Std. No. 791.

5. PREPARATION FOR DELIVERY

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

5.1.1 Level A.-

5.1.1.1 Type I.- Five gallons of the type I water repellent compound shall be packaged in a 5-gallon capacity metal pail conforming to type II, class 8 of PPP-P-704. The interior of each pail shall be coated with a baked modified epoxy or phenolic coating. Each pail shall also be lined with a polyethylene bag that has a depth great enough to permit the top of the bag to be pulled over the curl of the pail a minimum of 3/4-inch. A polyethylene disc shall also be provided with a diameter 1 1/2-inches greater than the outside top diameter of the pail. The polyethylene bag and disc shall be fabricated of 0.003-inch thick polyethylene film conforming to type II, class 1, grade A, finish 1 of L-P-378.

5.1.1.1.1 Closure procedure.- Each filled pail shall have the top lined with the polyethylene disc specified in 5.1.1.1. The disc shall be centered over the top of the pail. The pail shall then be closed with a lug cover in accordance with the applicable requirements specified in the appendix of PPP-P-704.

5.1.1.2 Type II.- Five gallons of the type II water repellent compound shall be packaged and closed as specified in 5.1.1.1 and 5.1.1.1.1, respectively. The requirement for the polyethylene bag and disc liner shall not apply.

5.1.2 Commercial Type I base compound with curing agent.

5.1.2 Level B (civil agencies).- Water repellent compound shall be packaged in accordance with the applicable requirements specified in 5.1.1 (see 6.2).

5.1.3 Level C.- Water repellent compound shall be packaged to afford adequate protection against deterioration and physical damage during shipment from the supply source to the first receiving activity. The supplier may use his standard practice when it meets these requirements.

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

5.2.1 Level A.- Water repellent compound, packaged as specified in 5.1, shall not require overpacking.

5.2.2 Level B.- Water repellent compound, packaged as specified in 5.1, shall not require overpacking.

5.2.3 Level C.- Water repellent compound, packaged as specified in 5.1, shall be packed in a manner to insure carrier acceptance and safe delivery at destination at the lowest transportation rate for such supplies. Containers shall be in accordance with Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable.

5.3 Palletization.- Unless otherwise specified (see 6.2), water repellent compound of one type only, packed as specified in 5.2, shall be palletized in accordance with load type IV of MIL-STD-147. Each prepared load shall be bonded with primary and secondary straps in accordance with bonding means K and L. Each unit load shall be provided with tray caps in accordance with storage aid 6.

5.4 Marking.-

5.4.1 Labeling.- The instruction data (see 3.8) and marking for air pollution control (see 3.9) shall be durably and legibly marked on the main panel of the body of the container by lithographing, stenciling or printing with a noncorrosive, weather-resistant, waterproof ink which will not smear or rub off during handling. If the instruction data or air pollution control marking cannot be applied due to being too voluminous, the data may be placed on a label made of white paper containing not more than 15 percent unbleached or ground wood pulp and having a smooth finish. Labels shall be securely affixed in place with water resistant label adhesive and shall be waterproofed by coating the entire surface of the label with the same adhesive.

5.4.2 Civil agencies.- In addition to labeling specified in 3.8, 3.9 and 5.4.1 and any special marking required by the contract or order, shipping

containers shall be marked in accordance with Fed. Std. No. 123. The date of pack and the following precautionary marking shall also appear on each shipping container: "KEEP FROM FREEZING."

5.4.3 Military requirements.- In addition to labeling specified in 3.8, 3. and 5.4.1 and any special marking required by the contract or order, shipping containers shall be marked in accordance with MIL-STD-129. The following precautionary marking shall also be shown on each shipping container: "KEEP FROM FREEZING."

6. NOTES

6.1 Intended use.- This compound is intended for use by institutional, commercial, and military laundries and dry cleaning plants in the treatment and retreatment of clothing and equipment items. Normally these compounds will be applied as specified in the instructions. The application may be varied however to meet certain special conditions.

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) Type required (see 1.2).
(c) Selection of applicable levels of packaging and packing (see 5.1 and 5.2).
(d) When palletization is not required (see 5.3).
(e) When level B packaging is required for civil agencies (see 5.1.2).

6.2.1 Unit of purchase.- The unit of purchase is the U.S. gallon at 60°F.

6.3 Type I compound, water repellent, should be procured in quantities for use within a reasonable short time, preferably no longer than 6 months, as long storage is detrimental to compound.

6.4 Test fabric. A standard lot of cotton, nylon, wind resistant sateen cloth, without water repellent treatment which conforms to MIL-C-43191 will be maintained at Defense Clothing and Supply Center, Defense Supply Agency, 2800 South 20th Street, Philadelphia 1, Pennsylvania for performance test purposes of this specification. Yardage of the standard cloth required for these performance tests may be obtained upon application to the Center.

Custodians:

Army - GL
Navy - SA
Air Force - 11

Review activities:

Army - MD, MR, MU
Navy - YD, SH, MC
Air Force - 84

Preparing activity:

Army - GL

Civil Agency Interest:

AGR
COM
GSA
Housing and Urban Development
INT

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