TT-P-595A
April 13, 1972
SUPERSEDING
Fed. Spec. TT-P-595
April 24, 1967 and
MIL-M-13295
January 21, 1969

FEDERAL SPECIFICATION

PRESERVATIVE COATING, CANVAS

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, two classes, and 4 colors of preservative coatings for the retreatment of textile fabrics, tentage, tarpaulins and equipage (see 6.1). These coatings are suitable for use where air pollution regulations are in force.

1.2 Classification. The preservative coatings covered by this specification shall be of the following types and classes as specified (see 6.2).

Type I - Mildew, water, weather and fire resistant, pigmented.
  Class 1 - Paste
  2 - Liquid
Type II - Mildew and water resistant, non-pigmented.
  Class 1 - Paste
  2 - Liquid

1.2.1 Color. Type I, preservative coating shall be of the following colors, as specified (see 6.2):

White	Haze gray
Deck gray	Olive drab

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 Specification:

CCC-C-419 - Cloth, Cotton, Duck, Unbleached, Plied-Yards (Army and Numbered).
PPP-B-636 - Boxes, Shipping, Fiberboard.
PPP-C-96 - Cans, Metal, 28 Gage and Lighter.
PPP-D-729 - Drums: Metal, 55-gallon (For Shipment of Noncorrosive Material).
PPP-P-704 - Pails, Metal (Shipping, Steel, 1 Through 12-gallon).

Federal Standards:

Federal Test Method Std. No. 191 - Textile Test Methods.
Federal Standard No. 595A - Colors.
Federal Standard No. 123 - Marking for Domestic Shipment (Civil Agencies).
Federal 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, DC 20402.

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

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

Military Specifications:

MIL-C-342 - Cloth, Wind Resistant, Poplin, Cotton.
MIL-E-699 - Enamel, Deck, Gray, Exterior.
MIL-E-15130 - Enamel, Ship, Exterior, Alkyd, Haze Gray, No. 27, Formula No. 5H.

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 and Containerized Unit Loads, on 40 inch x 48 inch 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.

Munsell Book of Colors

Munsell Neutral Value Scale (1 to 9)

(Application for copies should be addressed to the Munsell Color Company, Inc., 2441 North Calvert Street, Baltimore, MD 21218).

American Society for Testing and Materials (ASTM) Standard:

D 56 - Method of Test for Flash Point by Tag Closed Tester.

(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, Incorporated, Agent:

National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Association Inc., Tariff Order Section, 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.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. REQUIREMENTS

3.1 Standard color sample. Type I preservative coating shall match the standard sample for the shade specified (see 6.3).

3.2 Type I preservative coating.

3.2.1 Formula approval. The material used in the composition of the preservative coating shall include pigments, water-repellents, binders, fungicides, compounds to impart fire resistance, and solvents. The use of compounds containing mercury in any form is prohibited.

Formulations shall not exhibit toxicity with the intended use. Toxicity clearance will be approved by the U.S. Army Natick Laboratories with the appropriate medical service acting as advisor. Only those formulations subsequently approved will be considered acceptable for the related procurement.

3.2.1.1 Solvents. The solvent and solvent content shall conform to the provisions of Rule 66, Los Angeles Air Pollution Control District; Regulation 3 of San Francisco Bay Area Pollution Control District and any other state or local air pollution regulations which may be applicable.

3.2.2 Consistency and drying time.

3.2.2.1 Class 1. The preservative coating shall be a smooth uniformly dispersed paste capable of being mixed with an equal volume of solvent to produce a consistency (body) for application to textiles by brushing or spraying. The compound when applied to the fabric shall dry to the touch in not more than 30 minutes when tested as specified in 4.3.4.

3.2.2.2 Class 2 (packaged in aerosol can). The preservative coating shall be a uniformly dispersed liquid packaged in a metal aerosol can. The can shall contain 24 ounces by weight of the preservative coating. The liquid when applied to the fabric shall dry to the touch in not more than 30 minutes when tested as specified in 4.3.4.

3.2.3 Color. The preservative coating when applied to unbleached cotton duck as specified in 4.4.1 shall match the following colors when compared as specified in 4.3.4 (see 6.3).

Color	Standard
White	Not darker than color no. 37360 of Fed. Std. No. 595.
Deck gray	Formula 29 of MIL-F-[illegible].
Haze gray	Formula 50 of MIL-E-15126.
Olive drab 7	Standard sample.

3.2.4 Nonvolatile matter (class 1 only). The preservative coating shall contain 60 ± 2 percent of nonvolatile matter when tested as specified in 4.3.4.

3.2.5 Flash point (class 1 only). The preservative coating shall have a minimum flash point of 80°F. when tested as specified in 4.3.4.

3.2.6 Storage stability (class 1 only). The preservative coating shall show no caking or skinning when tested as specified in 4.3.4.

3.2.7 Performance. The 12.29 ounce grey duck conforming to type III of CCC-C-419 when treated with the preservative coating as specified in 4.3.4 shall conform to the characteristics in the sub-paragraphs herein.

3.2.7.1 Breaking strength of unweathered duck. The breaking strength of the cotton duck treated with the preservative coating, and before accelerated weathering, shall be not less than that of the untreated cotton duck when tested as specified in 4.3.4.

3.2.7.2 Breaking strength of weathered duck. The breaking strength of the treated cotton duck, after 100 hours of accelerated weathering as specified in 4.3.4, shall be not less than 60 percent of that of the unweathered cotton duck when tested as specified in 4.3.4.

3.2.7.3 Water resistance. Treated cotton duck shall show no more than 50 milliliters leakage when tested as specified in 4.3.4.

3.2.7.4 Flame resistance. The cotton duck, treated on one side as specified in 4.4.1 and on the other side with one half the amount specified in 4.4.1, shall, when tested in accordance with 4.3.4, have an average time of flaming of not more than 2 seconds after the burner flame is withdrawn and an average length of char not to exceed 3.5 inches. The cloth shall conform to the same fire resistance requirements after the accelerated weathering period as specified in 4.3.4, and also after being exposed to water leaching when tested as specified in 4.3.4.

3.2.7.5 Flexibility. When tested in accordance with 4.3.4, the treated duck shall show an initial bending moment of no more than 0.013 inch-pounds, a bending moment of no more than 0.032 inch-pounds after heating to 200°-205°F., and a bending moment of no more than 0.032 inch-pounds at a temperature of 0° ± 5°F.

3.2.7.6 Crocking. Cotton duck treated with the preservative coating as specified in 4.4.1 and allowed to dry for 24 hours shall show fastness to crocking of No. 3 or better on the Munsell Scale when tested as specified in 4.3.4.

3.2.7.7 Mildew inhibitor content. When tested as specified in 4.3.4, the preservative coating shall impart mildew resistance to cotton duck by the deposition in the cloth of a fungicide which is currently approved for use by the procuring activity. Unless otherwise specified by the procuring agency, the fungicide shall be either "a" or "b" for all colors except white in the specified concentration. When white color is specified, only the "c" inhibitor shall be used.

(a) Copper-8-quinolinolate applied so as to deposit a minimum of 0.18 percent copper as metal from copper-8-quinolinolate to a maximum of 0.27 percent copper as metal from copper-8-quinolinolate.

(b) Copper naphthenate combined with copper-8-quinolinolate applied so as to deposit a minimum of 0.35 percent total copper with a minimum of 0.05 percent copper as metal from copper-8-quinolinolate to a maximum of 1.48 percent total copper with a maximum of 0.18 percent copper as metal from copper-8-quinolinolate.

(c) 2,2' - methylene-bis (4-chlorophenol) applied so as to deposit a minimum of 1 percent to a maximum of 2 percent of this inhibitor.

3.3 Type II preservative coating.

3.3.1 Composition. The material used in the composition of the mildew-resistant preservative coating shall include water repellents, a fungicide, and solvents (see 3.2.1.1).

3.3.2 Nonvolatile matter (class 1 only). Unless otherwise specified, the preservativelcoating shall contain 45 ± 2 percent by weight of nonvolatile materials when tested as specified in 4.3.4.

3.3.3 Flash point. The preservative coating as supplied shall have a minimum flash point of 90°F. when tested as specified in 4.3.4.

3.3.4 Consistency and solubility. The preservative coating shall be a liquid or uniform paste and shall be completely soluble in the solvent (see 3.2.1.1) when tested as specified in 4.3.4.

3.3.5 Performance. Cotton twill test cloth treated with the mildew resistant compound as specified in 4.5.1.2 shall have the following characteristics:

3.3.5.1 Mildew inhibitor content. When tested as specified in 4.3.4, the type II preservative coating shall impart mildew resistance to cotton twill cloth by the deposition of a fungicide which is currently approved for use by the procuring activity. Unless otherwise specified, the fungicide shall be one of the following in the specified concentration:

Inhibitor (a): 2,2' - methylene-bis (4-chlorophenol) applied so as to deposit a minimum of 1 percent to a maximum of 2 percent of this inhibitor.

Inhibitor (b): Copper-8-quinolinolate applied so as to deposit a minimum of 0.18 percent copper, as metal to a maximum of 0.36 percent copper, as metal.

3.3.5.2 Water resistance. The treated cotton twill cloth, when tested as specified in 4.3.4 shall show an initial spray rating of not less than 80, 80, 80, and not less than 70, 70, 70, after subjecting the fabric to wet mechanical action.

3.4 Directions for use (class 1 only).

3.4.1 Type 1. Each container of preservative coating shall be durably and legibly marked (see 5.4.3) with the following directions for use:

DIRECTIONS

One part by volume of this concentrated preservative coating shall be thoroughly mixed with an equal volume of a petroleum solvent. Approximately one gallon of the diluted preservative coating is sufficient to cover 10 square yards of fabric surface. Apply to dry fabric with a stiff brush or spray gun using a coarse spray followed by brushing with a solvent, complying with Rule 66, if necessary. Use only out-of-doors or in well ventilated place. Allow to dry thoroughly before folding or storing.

CAUTION: FLAMMABLE

Keep away from open flame and lighted cigarettes. Do not treat items to be used in prolonged contact with the skin, or equipment to be used for food or drinking water containers. Wash well after handling. Keep compound off skin.

3.4.2 Type II. Each container of preservative coating shall be durably and legibly marked (see 5.4.3) with the following directions for use:

DIRECTIONS

Equipage to be treated should be clean and dry. One part, by volume, of the concentrate should be mixed with 16 parts, by volume, of a solvent complying with Rule 66. The preservative coating may be applied by spraying, brushing or immersion of the material into the solution. With a spray or brush application, apply 1 gallon of diluted material to 8 square yards of fabric. When immersion method is used, the equipage shall be placed in a dry cleaning wheel and a sufficient amount of the diluted compound shall be placed in the wheel to completely saturate the material. The wash wheel shall be operated for 3 to 5 minutes. After this period, the equipage shall be extracted lightly and thoroughly dried. With each batch of material to be treated, use fresh solution.

CAUTION: FLAMMABLE

Keep away from open flame and lighted cigarettes. Do not treat items to be used in prolonged contact with the skin, or equipment to be used for food or drinking water containers. Wash well after handling. Keep compound off skin.

If a dry cleaning wheel is not available the diluted solution shall be placed in a suitable container. Dip equipage in solution, wetting thoroughly. Remove, wring lightly or drain and shake. Use only out-of-doors or in a well ventilated place. Allow to dry thoroughly before folding or storing.

3.5 Leakage in aerosol cans.

3.5.1 Static. Evidence of bubbles from any part of the spray unit shall be cause for rejection when tested in accordance with 4.3.4.

3.5.2 Valve operation. Any leaks detected shall be cause for rejection, when tested in accordance with 4.3.4.

3.6 Workmanship. The preservative coatings shall be clean and uniform in appearance.

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 that supplies and services conform to the prescribed requirements.

4.1.1 Certificate of compliance. Where certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification.

4.1.2 Inspection of components and materials. In accordance with 4.1 above, components and materials shall be inspected and tested in accordance with all the requirements of referenced

specifications, drawings, and standards unless otherwise excluded, amended, modified or qualified in this specification or applicable purchase document. In addition, the supplier shall furnish a certificate of compliance with each shipment or lot stating that the solvent complies with the requirement in 3.2.1.1.

4.2 Sampling. Sampling for inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated hereinafter.

4.3 Inspection of the end item.

4.3.1 Examination of the end item. The end item shall be examined for the defects in the applicable subparagraphs at the inspection levels and acceptable quality levels (AQL's) set forth in 4.3.3. The lot size shall be expressed in units of filled unit containers of the specified capacity for the examinations in 4.3.1.1 and 4.3.1.2 and in units of shipping containers for the examination in 4.3.2.1 and in units of pallets for the examination in 4.3.2.2.

4.3.1.1 Examination of unit container. The sample unit for this examination shall be one filled container.

Examine	Defect
Construction	Not type container specified.
	Not coated with protective coating or color enamel (as applicable) as specified in contract.
	Any evidence of leakage.
	Any break or dent in body of container.
	Any unsound seam.
Markings	Missing, incomplete, incorrect, not in accordance with contract requirements.
	Does not contain labeling information specified in 3.4.
Workmanship of contents	Not clean; not uniform.

4.3.1.2 Examination of filled container for net contents. The sample unit for this examination shall be one filled unit container. The lot shall be unacceptable if the average net contents per container for all sample units examined is less than specified or indicated.

4.3.2 Examination of preparation for delivery requirements.

4.3.2.1 Examination for packaging, packing, and marking. An examination shall be made to determine that the packaging, packing and marking complies with the section 5 requirements. Defects shall be scored in accordance with the list below. The sample unit for this examination shall be one shipping container fully prepared for delivery except that it shall not be palletized and need not be closed. Shipping containers fully prepared for delivery that have not been palletized shall be examined for defects of closure. The lot size shall be the number of shipping containers in the end item inspection lot.

Examine	Defect
Marking (exterior and interior)	Omitted; incorrect; illegible; of improper size, location, sequence or method of application.
Materials	Any component missing.
	Any component damaged.
Workmanship	Inadequate application of components, such as incomplete closure of container flaps, improper taping, loose strapping, or inadequate stapling.
	Bulged or distorted container.
Content	Number of unit packages per interior package and shipping container is less than specified.

4.3.2.2 Examination for palletization. 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 inspection 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.

Examination for palletization (continued)

Examine	Defect
Weight	Exceeds maximum load limits.
Marking	Omitted; incorrect; illegible; of improper size, location, sequence of method of application.

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

Examination paragraph	Inspection level	AQL
4.3.1.1	I	2.5
4.3.1.2	S-2	N.A.
4.3.2.1	S-2	2.5
4.3.2.2	S-1	6.5

4.3.4 Testing of the end item. The method of test specified in Fed. Test Method Std. No. 191 whenever applicable and as listed in table I shall be followed. The sample unit for testing shall be a one gallon composite obtained by combining equal portions from samples at random throughout the lot in the frequency listed below. The composite shall be placed in a clean, dry, glass container sealed and marked for testing. Care shall be exercised to prevent contamination or alternation of the mildew resistant compound during the sampling, compositing, storage and testing. All test reports shall contain the individual values utilized in expressing the final results. The lot shall be unacceptable if the composite fails to meet any test requirements specified.

Lot size (gallons)	Frequency
800 or less	2
801 up to and including 22,000	3
22,001 or more	5

TABLE I. Instructions for testing of the end item

Characteristics	Requirement paragraph	Test method	Requirements applicable to comp. sample	Number of determinations per unit	Results reported as: Pass or fail	Results reported as: Numerically to nearest
Type I						
Drying time 30 minutes	3.2.2	4.4.1	X	1	X	
Color	3.2.3	4.4.2	X	1	X	
Nonvolatile matter	3.2.4	4.4.3	X	Average of 2		Percent
Flash point	3.2.5	4.4.4	X	1		1.0°F.
Storage stability	3.2.6	4.4.5	X	1	X	
Breaking strength of unweathered duck	3.2.7.1	5100 4.5.1.1	X	Average of 5		1.0 pound
Breaking strength of weathered duck	3.2.7.2	5804 5100 4.5.1.1	X	Average of 5		1.0 percent
Water resistance	3.2.7.3	5516 4.5.1.1	X	Average of 3		1.1 ml.
Flame resistance:						
Initial						
Char length						
Warp	3.2.7.4	5903	X	4		Average of 4 determinations to nearest 0.1 inch
Filling	3.2.7.4	5903	X	4		Average of 4 determinations to nearest 0.1 inch
Flaming time						
Warp	3.2.7.4	5903	X	4		Each determination and average of 4 determinations to nearest 1/5 second
Filling	3.2.7.4	5903	X	4		Each determination and average of 4 determinations to nearest 1/5 second

TABLE I. Instructions for testing of the end items (Continued)

Characteristics	Requirement Paragraph	Test method	Requirements applicable to comp. sample	Number of determinations per unit	Results reported as: Pass or fail	Results reported as: Numerically to nearest
Type I (Continued)						
After accelerated weathering:						
Char length						
Warp	3.2.7.4	5903 5804 3/	X	4		Average of 4 determinations to nearest 0.1 inch
Filling	3.2.7.4	5903 5804 3/	X	4		Average of 4 determinations to nearest 0.1 inch
Flaming time						
Warp	3.2.7.4	5903 5804 3/	X	4		Each determination and average of 4 determinations to nearest 1/5 second
Filling	3.2.7.4	5903 5804 3/	X	4		Each determination and average of 4 determinations to nearest 1/5 second
After water leaching:						
Char length						
Warp	3.2.7.4	5903 5832 2/	X	4		Average of 4 determinations to nearest 0.1 inch
Filling	3.2.7.4	5903 5832 2/	X	4		Average of 4 determinations to nearest 0.1 inch
Flaming time						
Warp	3.2.7.4	5903 5832 2/	X	4		Each determination and average of 4 determinations to nearest 1/5 second
Filling	3.2.7.4	5903 5832 2/	X	4		Each determination and average of 4 determinations to nearest 1/5 second
Flexibility	3.2.7.5	5202 4.5.1.1	X	Average of 10		.001 inch-pound
Crocking	3.2.7.6	5651 4.5.1.1	X	1	X	
Mildew inhibitor content 1/	3.2.7.7	2050 4.5.1.1	X	Average of 2		0.01 percent
Colors - Deck gray, haze gray, and olive drab						
Mildew inhibitor content (white color)	3.2.7.7	2011	X	Average of 2		0.1 percent
Leakage of aerosol cans						
Static	3.5.1	4.6.1	X	1	X	
Valve operation	3.5.2	4.6.2	X	1	X	
Type II						
Nonvolatile matter	3.3.2	4.4.3	X	Average of 2		percent
Flash point	3.3.3	4.4.4	X	1		1.0°F.
Solubility	3.3.4	4.4.6	X	1	X	
Mildew inhibitor	3.3.5.1					
Inhibitor (a)	3.3.5.1	2011 4.5.1.2	X	Average of 2		0.1 percent
Inhibitor (b)	3.3.5.1	2050 4.5.1.2	X	Average of 2		0.01 percent
Water resistance	3.3.5.2	5526 4.5.1.2	X	3 samples		1.0 ml.
Leakage of aerosol cans						
Static	3.5.1	4.6.1	X	1	X	
Valve operations	3.5.2	4.6.2	X	1	X	

1/ The supplier shall certify that only copper-8-quinolinolate, or copper napthenate, or a combination of the two were used in the concentrations specified.
2/ Leaching period shall be 24 hours.
3/ Remove the filter to conduct the test and 100 hour exposure.

4.4 Test procedures.

4.4.1 Drying time - type I, class 1. The preservative coating shall be reduced with an equal volume of solvent, as specified in 3.2.1.1, thoroughly mixed and then applied to one side of 12.29-ounce grey duck conforming to type III of CCC-C-419 with a brush or coarse spray penetrating the fabric using 1 gallon of reduced material to 10 square yards of the fabric. The treated duck shall be hung vertically and allowed to air-dry in a well ventilated room or chamber, relatively free of dust and not in the direct rays of the sun. The temperature shall be 70° ± 2°F. and the relative humidity 65 ± 2 percent. Determine the degree of drying at the end of 30 minutes. The treated duck shall be allowed to dry for 24 hours before testing.

4.4.1.1 Drying time - type I, class 2 (packaged in aerosol cans). Test for drying time shall be performed as specified in 4.4.1 except that the preservative need not be reduced with a solvent.

4.4.2 Color - type I. The color of the dry impregnated cotton duck prepared as specified in 4.4.1 shall be compared to the color specified. The color comparison shall match the standard sample under natural (north sky) light or artifical daylight having a color temperature of 7500° Kelvin and shall be a good approximation to the standard sample under incandescent lamplight at 2800° Kelvin.

4.4.3 Nonvolatile matter - type I and type II. From a thoroughly mixed sample of the preservative coating at 75° to 78°F., weigh 5 grams into a tared dish. Heat the dish and its contents on a steam or water bath to evaporate most of the solvent. Then place in an oven maintained at 212° to 221°F. for 3 hours, cool in a dessicator and weigh. Reinsert sample in oven, cooling and weighing at 1-hour intervals until a constant weight is obtained. When a constant weight is obtained, compute the percent nonvolatile material as follows:

$$\frac{\text{Grams nonvolatile residue}}{\text{Initial weight (gm) sample}} \times 100$$

(Not applicable to preservative in aerosol cans).

4.4.4 Flash point - type I and type II. The flash point shall be determined in accordance with ASTM D 56. (Not applicable to preservative in aerosol cans.)

4.4.5 Storage stability - type I. A pint sample of the preservative coating after standing for 20 days in a tightly closed one-quart can, shall be examined for caking and skinning. (Not applicable to preservative in aerosol cans.)

4.4.6 Solubility - type II. Dissolve 10 ml. of type II preservative coating in 160 ml. of solvent, as specified in 3.2.1.1, in a 250 ml. beaker at a temperature of 68° - 72°F. Stir with a glass rod for two minutes. The preservative coating shall be completely soluble in the solvent.

4.5 Performance tests. The performance tests in table I for type I and II compounds, unless otherwise specified, shall be performed on specimens in moisture equilibrium under standard conditions with the applicable methods and section 4 of Fed. Test Method Std. No. 191.

4.5.1 Preparation of test specimens.

4.5.1.1 Untreated duck. Specimens of 12.29-ounce grey duck conforming to type III of CCC-C-419 shall be used. Prior to treatment the specimens of duck shall be brought to moisture equilibrium under standard conditions as specified in section 4 of Fed. Test Method Std. No. 191. Specimens shall then be coated as specified in 4.4.1 or 4.4.1.1 as specified.

4.5.1.2 Cotton twill. The cotton twill cloth used for test purposes shall conform to type I, class A - plain finish of MIL-C-342. The cloth shall be initially extracted with two rinses of clean Stoddard solvent, and dried at 160°F., for a period of 1 hour.

Caution: Flammable fumes. The preservative coating shall be applied to the twill cloth from a solvent solution using a wringer equipped with solvent resistant rolls, or centrifugal extractor so as to deposit 2.5 percent solids on the fabric. This can be accomplished by determining the wet pick-up of the cloth in the extractor.

Example:

Fabric is weighed and then immersed in the solvent specified in 3.2.1.1 for 1 minute, run through a wringer or extractor and then weighed immediately.

$$\text{Percent wet pickup} = \frac{\text{wet weight} - \text{dry weight} \times 100}{\text{dry weight}}$$

A treating bath shall then be prepared of the preservative coating in solvent according to the following formula:

$$\frac{A \times 10000}{B \times C} = D$$

A = Percent of nonvolatile solids is desired for add-on.
B = Percent nonvolatile solids contained in preservative coating.
C = Percent wet pick-up.
D = Grams preservative coating per 100 grams solvent.

Samples of the fabric of convenient size shall be immersed simultaneously in the treating bath for 1 minute, padded or extracted and then permitted to dry for 1 hour at 160°F.

4.6 Aerosol cans.

4.6.1 Leakage. Fully loaded aerosol containers selected in accordance with PPP-C-96 shall be completely submerged for one minute in water containing a wetting agent. The solution shall be maintained at 70° ± 2°F. after which it shall be observed for a period of five minutes.

4.6.2 Valve operation. An aerosol container shall be manually operated without evidencing excessive finger pressure. The valve shall be the self-closing type and shall close immediately upon release. The valve shall be successively operated 30 times as prescribed herein. The preservative shall be propelled in wet spray or stream and shall be collected in a beaker for tests specified in 4.3.4. After the valve has been activated 30 times, the container shall be examined for leakage by submersion for 5 minutes in water treated and maintained as specified in 4.6.1.

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. Preservative coating shall be furnished in 24-ounce, 1-gallon, 5-gallon, or 55-gallon quantities as specified (see 6.2).

5.1.1.1 Twenty-four ounce quantity. Twenty-four ounces of preservative coating shall be packaged in a 24-ounce capacity pressurized can conforming to type IX, class optional of PPP-C-96. Twelve filled 24-ounce cans of preservative coating of one description only shall be interior packaged in a snug-fitting fiberboard box conforming to style RSC, type CF, variety SW, class domestic, grade 200 of PPP-B-636. Each box shall be securely closed with tape in accordance with the appendix of the box specification.

5.1.1.2 One-gallon quantity. One-gallon of preservative coating shall be packaged in a 1-gallon capacity round can conforming to type V, class 2 of PPP-C-96. Each can shall be protected on the exterior with a nonmetallic coating in accordance with plan B as specified in PPP-C-96. Each can shall be securely closed.

5.1.1.3 Five-gallon quantity. Five-gallons of preservative coating shall be packaged in a 5-gallon capacity pail conforming to type II, class 3 of PPP-P-704. The color shall be in accordance with number 24064 of Fed. Std. No. 595. The pail shall be galvanized and be attached to the ears of clips which shall be welded to the body of the pail. Each pail shall be securely closed in accordance with the applicable requirements specified in the appendix of PPP-P-704. A metal tag embossed with the federal stock number of the contents of the pail shall be securely wired to a lug.

5.1.1.4 Fifty-five-gallon quantity. Fifty-five gallons of preservative coating shall be packaged in a 55-gallon capacity drum conforming to type III or IV of PPP-D-729. Each drum shall be securely closed in accordance with the applicable requirements specified in PPP-D-729.

5.1.2 Level B (civil agencies). Preservative coating shall be packaged in accordance with the applicable requirements specified in 5.1.1, except plan A (commercial) exterior coating shall apply for 1-gallon cans (see 6.2).

5.1.3 Level C. Preservative coating shall be packaged to afford adequate protection against deterioration or physcial 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.

5.2.1.1 Twenty-four ounce quantity. Twenty-four 24-ounce cans of preservative coating of one description only, packaged as specified in 5.1.1.1, shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC, grade V2s of PPP-B-636. Each shipping container shall be closed, waterproofed, and reinforced in accordance with the appendix of the container specification.

5.2.1.2 One-gallon quantity. Four one-gallon cans of preservative coating of one description only, packaged as specified in 5.1.1.2, shall be packed in accordance with the applicable level A requirements specified in the appendix of PPP-C-96. The fiberboard container shall conform to grade V2s of PPP-B-636.

5.2.1.3 Five-gallon and fifty-five-gallon quantities. Five-gallon and fifty-five-gallon quantities of preservative coating, packaged as specified in 5.1.1.3 and 5.1.1.4, respectively, shall not require overpacking.

5.2.2 Level B.

5.2.2.1 Twenty-four ounce quantity. Twenty-four 24-ounce cans of preservative coating of one description only, packaged as specified in 5.1.1.1, shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC, type CF, variety SW or SF, class domestic, grade 275 of PPP-B-636. Each shipping container shall be closed in accordance with method II as specified in the appendix of the container specification

5.2.2.2 One-gallon quantity. Four one-gallon cans of preservative coating of one description only, packaged as specified in 5.1.1.2, shall be packed in accordance with the applicable level B requirements specified in the appendix of PPP-C-96.

5.2.2.2.1 When specified (see 6.2), the fiberboard shipping container in 5.2.2.1 and 5.2.2.2 (when applicable) shall be a grade V3c, V3s, or V4s fiberboard box fabricated in accordance with PPP-B-636 and closed in accordance with the appendix of the container specification.

5.2.2.3 Five-gallon and fifty-five-gallon quantities. Five gallon and fifty-five gallon quantitites of preservative coating, packaged as specified in 5.1.1.3 and 5.1.1.4, respectively, shall not require overpacking.

5.2.3 Level C. Preservative coating, 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 (military requirements). Unless other specified (see 6.2), preservative coating of one description only, packed as specified in 5.2, shall be palletized in accordance with load type I or IV, as applicable. Storage aid 6 shall apply for load type IV. Each prepared load shall be bonded with primary and secondary straps in accordance with bonding means K and L. Pallet patterns for load type I shall be in accordance with the appendix of MIL-STD-147. Interlocking of load type I shall be effected by reversing the pattern of each course. If the load type I containers are of a size which do not conform to any of the pallet patterns specified in MIL-STD-147, the pallet pattern used shall first be approved by the contracting officer.

5.4 Marking.

5.4.1 Civil agencies. In addition to any special marking required by the contract or order, interior packages (when applicable) and shipping containers shall be marked in accordance with Fed. Std. No. 123.

5.4.2 Military requirements. In addition to any special marking required by the contract or order, interior packages (when applicable), shipping containers, and palletized unit loads shall be marked in accordance with MIL-STD-129.

5.4.3 Special marking. Each unit container for class 1 coating (only) shall be conspicuously and legibly marked with the directions for use (see 3.4).

6. NOTES

6.1 Intended use. The mildew resistant textile compounds covered by this specification are intended for field treatment use as follows:

Type I - Retreating of tentage and tarpaulins.
Type II - Retreating of equipage, lightweight tentage or fabric.

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, class and color required (see 1.2).
(c) Selection of applicable levels of packaging and packing (see 5.1 and 5.2).
(d) Selection of the packaged quantity of preservative desired (see 5.1.1).
(e) When level B packaging is required for civil agencies (see 5.1.2).
(f) When palletization is not required for military requirements (see 5.3).
(g) When weather resistant grade fiberboard shipping containers are required for level B packing of 24 ounce and one gallon quantities (see 5.2.2.2.1).

6.3 Standard color samples (see 3.1 and 3.2.3).

6.3.1 For access to standard color "OD-7", address the procuring office issuing the invitation for bids.

6.3.2 Color chips for deck gray (formula No. 20) and haze gray (formula No. 5H) identified as 26008 and 26270 respectively, in Fed. Std. No. 595 may be obtained upon application to the Specification Activity, Printed Materials Supply Division, Bldg. 197 Naval Weapons Plant, Washington, DC 20407.

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