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MILITARY SPECIFICATION

PRIMER COATING, CELLULOSE-NITRATE MODIFIED ALKYD TYPE, CORROSION-INHIBITING, FAST-DRYING (FOR SPRAY APPLICATION OVER PRETREATMENT COATING)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

* 1.1 Scope. This specification covers the requirements for one grade of corrosion-inhibiting, fast drying spray-type lacquer primer for use only over pretreatment coating conforming to MIL-C-8514. It provides for one composition which is suitable for use under AIR POLLUTION REGULATIONS.

2. APPLICABLE DOCUMENTS

* 2.1 Issues of documents. The following documents of the issue in effect on date of invitations for bids or request for proposal, form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

QQ-A-250/5	-Aluminum Alloy Alclad 2024, Plate and Sheet
TT-B-846	-Butyl Alcohol, Normal (For Use in Organic Coatings)
TT-E-751	-Ethyl Acetate, Technical

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Engineering Specifications and Standards Department (Code 93), Naval Air Engineering Center, Lakehurst, NJ 08733, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FEDERAL (Continued)

TT-M-261	-Methyl Ethyl Ketone, Technical
TT-M-268	-Methyl Isobutyl Ketone (For Use in Organic Coatings)
TT-N-350	-Nitrocellulose, Technical (For Use in Organic Coatings)
TT-S-735	-Standard Test Fluids, Hydrocarbon
TT-T-548	-Toluene, Technical
TT-X-916	-Xylene (For Use in Organic Coatings)
PPP-P-1892	-Paint, Varnish, Lacquer, and Related Materials, Packaging, Packing, and Marking of

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MIL-C-8514	-Coating, Compound, Metal Pretreatment, Resin-Acid
MIL-A-8625	-Anodic Coatings, for Aluminum and Aluminum Alloys
MIL-L-19537	-Lacquer, Acrylic-Nitrocellulose, Gloss, (For Aircraft Use)
MIL-T-19544	-Thinner, Acrylic-Nitrocellulose Lacquer

STANDARDS

FEDERAL

Fed. Test Method Std. No. 141	-Paint, Varnish, Lacquer and Related Materials, Methods of Inspection, Sampling and Testing

MILITARY

MIL-STD-105	-Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	-Marking for Shipment and Storage

(Copies of specifications, standards, drawings and publications required by contractors 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 otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply, except for the specific issue adopted by the Department of Defense as listed in the current Department of Defense Index of Specifications and Standards.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 444	-Zinc Yellow Pigment (Zinc Chromate Yellow), Chemical Analysis of
ASTM D 1200	-Viscosity of Paints, Varnishes, and Lacquers by Ford Viscosity Cup, Test for
ASTM D 1210	-Fineness of Dispersion of Pigment-Vehicle Systems, Test for
ASTM D 1296	-Odor of Volatile Solvents and Diluents, Test for
ASTM D 1307	-Phthalic Anhydride Content of Alkyd Resins and Esters Containing other Dibasic Acids (Spectrophotometric), Test for
ASTM D 1308	-Effect of Household Chemicals on Clear and Pigmented Organic Finishes, Test for
ASTM D 1475	-Density of Paint, Varnish, Lacquer and Related Products
ASTM D 1644	-Nonvolatile Content of Varnishes, Test for
ASTM D 1849	-Package Stability of Paint, Test for
ASTM D 2244	-Color Differences of Opaque Materials, Instrumental Evaluation of
ASTM D 2698	-Pigment Content of Solvent-Type Paints by High Speed Centrifuging, Determination of

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

3. REQUIREMENTS

* 3.1 Material. The ingredients used in the manufacture of this product shall conform to applicable Government specifications except as otherwise specified herein.

3.2 Toxicity. The material shall have no adverse effect on the health of personnel when used for its intended purpose. Questions pertinent to this effect shall be referred by the procuring activity to the appropriate department medical service who will act as an advisor to the procuring agency.

3.3 Composition. The composition shall conform to the percentages by weight, given in Table I except that the volatile portion shall be as specified in 3.4.2.

3.4 Ingredients. All ingredients used in the manufacture of the primer shall be as specified in 3.4.1 through 3.4.3.

3.4.1 Nitrocellulose. The nitrocellulose shall conform to Type II of TT-N-350, except as specified herein.

* 3.4.2 Volatile content. The volatile content shall consist of a non-photochemically reactive solvent. A non-photochemically reactive solvent is any solvent with an average of less than 20 percent of its total volume composed of the chemical compounds classified below or which does not exceed any of the following individual percentage composition limitations, referred to the total volume of solvent:

(a) A combination of hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones having an olefinic or cyclo-olefinic type of unsaturation: 5 percent;

(b) A combination of aromatic compounds with eight or more atoms to the molecule except ethylbenzene: 8 percent;

(c) A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene: 20 percent.

(d) Total (a)+(b)+(c): 20 percent maximum

* 3.4.2.1 Thinner. The thinner to be used with the non-photochemically reactive primer shall be non-photochemically reactive as defined in 3.4.2 and shall be compatible with the primer.

3.5 Physical requirements.

3.5.1 Condition in container. The lacquer primer shall show no skinning, livering, curdling, hard settlement, or caking, and shall be capable of being easily mixed to a smooth homogeneous condition, both in the original full unopened container and when reduced as specified in 4.5 (see 4.6.1).

3.5.2 Accelerated stability. Test samples of package material from a full unopened container shall not exhibit excessive bodying, and shall produce a film showing no seediness or other film irregularities when determined as specified in 4.6.2. The primer shall be equal or superior to the control formula product in all respects after the accelerated stability test.

*TABLE I. Composition - percent by weight.

Material	Minimum	Maximum
Lacquer primer:		
Nonvolatile (total solids)	45	--
Volatile	--	55
Composition (see 3.4.2)		
Analysis of nonvolatile portion, percent of the total nonvolatiles:		
Pigment content (percent by wt of total solids)	--	53
Nonvolatile vehicle solids	47	--
Analysis of pigment content, percent of the total pigment:		
Zinc yellow	50	--
Siliceous extender	--	50
Analysis of nonvolatile vehicle solids, percent of the total nonvolatile vehicle solids:		
RS-1/2-second nitrocellulose 1/	23	27
Alkyd resin	73	77

1/ To adjust to the correct viscosity, it is permitted to substitute with 5- to 6-second nitrocellulose in any quantity.

3.5.3 Storage stability. A full container of lacquer primer, after 1-year storage at laboratory conditions, shall show no skinning, livering, curdling, hard settlement, or caking. The lacquer primer shall be equal or superior to the control formula product, similarly stored, when subjected to all the tests of this specification. The lacquer primer, when reduced with lacquer thinner as specified in 3.5.9 after the above storage shall show viscosity no greater than 30 seconds (see 4.5). The weather resistance test (3.7.5) need not be conducted after storage stability.

* 3.5.4 Weight per gallon. The weight per gallon shall be 9.2 ±1.0 pounds.

3.5.5 Coarse particles and skins. Coarse particles and skins retained on a No. 325 sieve shall not exceed 1.0 percent, calculated on the basis of the total weight of the pigment (see 4.6.1).

3.5.6 Water content. The water content shall not exceed 1.0 percent by weight (see 4.6.1).

3.5.7 Color. When compared with the control formula, the color shall be yellow, characteristic of the zinc-chromate pigment. A slight whitening caused by the siliceous extender is permissible (see 4.6.1).

3.5.8 Viscosity. The viscosity of lacquer primer shall be within the range from 13 to 19 seconds when two volumes of lacquer primer are thinned with three volumes of thinner specified in 3.4.2.1 (see 4.6.1).

3.5.9 Dilution stability. The lacquer primer, when reduced, as specified in 4.5, shall show no curdling, precipitation, or separation of any ingredient (see 4.6.3).

3.5.10 Suspension properties. The lacquer primer thinned for spraying, shall show no more than slight settling and no caking, and shall redisperse to a smooth homogeneous state when tested as specified in 4.6.4.

3.5.11 Fineness of grind. The lacquer primer shall show a minimum grind value of 6 (see 4.6.1).

3.5.12 Odor. The odor of the primer, wet or dry, shall not be obnoxious. An air-dried film shall retain no residual odor 48 hours after application (see 4.6.1).

3.6 Film properties.

3.6.1 Spraying properties. Packaged lacquer primer, reduced as specified in 4.5, and applied by spray, shall be a freely working product and shall exhibit satisfactory spraying characteristics with acceptable leveling qualities (see 4.6.1).

3.6.2 Drying time. The lacquer primer shall air-dry hard in not more than 6 minutes (see 4.6.1)

3.6.3 Surface appearance. The lacquer primer shall dry to a hard, smooth finish, free from grit, seeds, streaks, blisters, or other irregularities of surface, and shall be equal or superior to the standard control product.

3.6.4 Sanding characteristics. The lacquer primer, after a 30-minute air-dry, shall possess satisfactory wet-sanding characteristics when tested as specified in 4.6.6. The material shall not clog the paper nor shall there be any gouging or deep scratches in the lacquer primer.

3.6.5 Coating anchorage. Panels prepared with lacquer topcoat shall show satisfactory intercoat and system anchorage (see 4.6.7).

3.6.6 Flexibility (mandrel test). The lacquer primer film, when tested as specified in 4.6.8, shall withstand bending over a 1/8-inch diameter mandrel without cracking or flaking.

3.6.7 Blushing. A film of lacquer primer, tested as specified in 4.6.9, shall exhibit no streaking, discoloration, or evidence of blushing.

3.7 Resistance properties. The resistance properties of the lacquer primer shall be equal or superior to that of the control formula product.

3.7.1 Lacquer resistance, primer absorption. The system of a film of lacquer primer coat with a test lacquer, shall not show embrittlement, bleeding, blistering, wrinkling, lifting, gloss impairment, or any other surface irregularities greater than shown by the similarly tested control formula lacquer primer (see 4.6.10).

3.7.2 Water resistance. Lacquer primer films, with topcoat, shall show no film irregularities greater than that of the control panel when immersed in distilled water for 24 hours (see 4.6.11).

3.7.3 Anchorage (tape test). A finish system prepared as specified in 4.6.12, shall show no greater degree of removal from the panel than exhibited by a simultaneously tested sample of the control formula lacquer primer.

3.7.4 Hydrocarbon resistance. When tested as specified in 4.6.13, lacquer primer test shall show no blistering or film failure. After removal from the hydrocarbon fluid and air-drying for 24 hours, the primer shall be equal in hardness, toughness, and anchorage to the film of a similarly prepared and tested control formula product. After immersion, coated panels shall exhibit no flaking at the bent area when subjected to the bend test.

3.7.5 Weather resistance (durability). Duplicate panels, with and without topcoats as specified in section 4, shall withstand 12 months exposure in Florida, without showing loss of metal protection properties, checking, cracking, embrittlement, or loss of adhesion (see 4.6.14).

3.8 Workmanship. The component ingredients shall be intimately assembled and processed as required in accordance with the best practice for the manufacture of high-quality lacquer primer.

4. QUALITY ASSURANCE PROVISIONS

* 4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by 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 the prescribed requirements.

4.2 Classification of inspection. The inspection requirements of the primer shall be classified as quality conformance inspections.

4.3 Quality conformance inspection. Quality conformance inspection shall include all examinations and tests of this specification except for weather resistance and storage stability tests as outlined under the inspection procedures 4.3.3 through 4.3.3.4.2.

4.3.1 Lot formation. A lot shall consist of all lacquer primer manufactured at one time from one batch, forming part of one contract or order, and submitted for inspection.

4.3.2 Sampling.

4.3.2.1 Sampling for tests. Quality conformance test samples shall be selected as required by Method 1021 of Fed. Test Method Std. No. 141.

4.3.2.2 Ingredient materials. When requested by proper authority, a sample from each lot of the ingredient materials shall be taken for test purposes.

4.3.2.3 Sampling for visual inspection of filled containers. A random sample of filled containers shall be selected in accordance with MIL-STD-105 and subjected to the examinations specified in 4.3.3.4.2.

4.3.3 Inspection procedure.

4.3.3.1 Quality conformance tests. Test specimens shall be prepared from the samples selected in accordance with 4.3.2.1 and subjected to all the tests of 4.6 except as authorized in 4.3.3.2 and 4.3.3.2.1. Non-conformance of test specimens to a single requirement shall be cause for rejection of the lot represented by the sample.

* 4.3.3.2 Report of tests. The manufacturer shall submit notarized test reports to the Government representative, for each batch showing the results including numerical values when applicable of all tests specified herein except weather resistance and storage stability unless required by the procuring activity. Reports of numerical tests as satisfactory are not acceptable. Each ingredient material shall be identified with the name of its manufacturer and that manufacturer's trade name and formula number. In addition, the management shall certify that a primer of the same formulation and manufactured by the same method has been tested and found to meet the weather resistance and storage stability requirements of this specification (see 6.2).

4.3.3.2.1 Compositional data. In lieu of reporting analytical results on the breakdown of the nonvolatile and volatile composition of the primer the manufacturer may report such results as "calculated" under the condition that he has carefully described by separate report, attached to manufacturer's test reports, the character and detail of his production methods which in his opinion guarantee that any suitable analysis made by the Government will yield acceptable results.

4.3.3.4 Examinations.

4.3.3.4.1 Examination of product. The lacquer primer shall be examined for conformance with the requirements of this specification with respect to material and workmanship.

4.3.3.4.2 Examination of preparation for delivery. The samples selected in accordance with 4.3.2.3 shall be examined for proper filling or weight, markings, packaging and packing. Any package having one or more defects or under required fill shall be rejected. If the number of defective packages exceeds the Acceptable Quality Level of 2.5 percent defective in accordance with Inspection Level S-4 of MIL-STD-105, the lot represented by the sample shall be rejected.

4.4 Additional tests. The Government reserves the right to conduct tests for storage stability and weather resistance or to conduct any or all tests of this specification at any time within 1 year from the date of manufacture of the primer as attested by the date appearing on the container's label. Samples for test shall be taken from previously unopened containers. Should the results be unsatisfactory, the contracting officer will be so informed, and may require the contractor to remove the entire batch and supply conforming material to replace it (see 6.2).

* 4.5 Test conditions. The laboratory testing conditions shall be in accordance with Federal Test Method Standard No. 141 and as described herein. Lacquer primer shall be thinned with thinner conforming to 3.4.2.1.

4.5.1 Test panels. Except as otherwise specified herein, all panels used for test purposes shall be aluminum-clad aluminum alloy conforming to QQ-A-250/5, 0.020 by 3 by 6 inches in size and anodized in accordance with Type I of MIL-A-8625. The panels shall be finished as follows: Spray one coat of wash primer, MIL-C-8514 to a dry film thickness of 0.0002 to 0.0004 inch and air-dry for 30 minutes. The wash primer shall have been reduced for spray application by adding a quantity of alcohol (90 percent ethyl alcohol plus 10-percent n-butyl alcohol) equal to the volume of acid accelerator-diluent used. The panels shall then be sprayed to a dry-film thickness of 0.0003 to 0.0005 inch. Air-dry panels for 30 minutes. The lacquer primer, prior to application, shall be reduced as specified in 4.5. Where topcoating is specified, test lacquer conforming to table II shall be applied in 2 coats (30 minutes apart to a total dry film thickness of 0.010 to 0.0014 inch) and air-dried for 48 hours, unless otherwise specified. The test lacquer shall be reduced 1 volume of lacquer to 1 volume of thinner conforming to Specification MIL-T-19544 before use.

4.5.2 Control formula product. The control product to be used as a standard of comparison for judging the performance of the manufacturer's product shall be assembled in strict conformance with the formula in table III.

4.6 Test methods.

4.6.1 Standard tests. The tests listed in Table IV shall be conducted in accordance with the specified methods of Fed. Test Method Std. No. 141, or the applicable ASTM Method, and as specified therein. Panels shall be prepared in accordance with 4.5.1 unless otherwise specified in the applicable test methods.

* 4.6.2 Accelerated stability. The stability test shall be conducted in accordance with ASTM D 1849 except that the container shall be stored for 7 days at 60°C (140°F). To determine evidence of seediness or other irregularities, the lacquer primer shall be reduced as specified in 4.5 and a panel prepared as specified in 4.5.1 without topcoating. The panel shall be examined for evidence of film irregularities or seediness.

TABLE II. Test lacquer. 1/

Ingredient	Percent by weight
White dispersion 2/	23.8
Dioctyl phthalate	5.4
Cellulose nitrate RS 1/2 second (70 percent in ethanol)	5.9
Acrylic resin solution (40 percent in toluene) 3/	35.8
Methyl ethyl ketone (TT-M-261)	13.1
Methyl isobutyl ketone (TT-M-268)	16.0

1/ This is the white control formula lacquer of Specification MIL-L-19537.

2/ RBH No. 6610 (TiO - 60 percent, RS 1/2 second NC-8 percent, ethyl alcohol 3.5 percent, ethyl acetate 16 percent, toluene 12.5 percent).

3/ Rohm and Haas Company, Acryloid B-82, or equal, (40 percent in toluene).

TABLE III. Control formula. 1/

Zinc yellow	300 grams
Aluminum silicate ASP-100	300 grams
(May be procured from Engelhard Minerals and Chemicals Corp.) Aroplaz 1365 (60 percent in xylene) 150 grams	
(May be procured from Ashland Chemical Co. Div. of Ashland Oil and Refining Co. Toluol (TT-T-548)	300 grams
Grind for 48 hours in a 1-gallon pebble mill and add the following:	
Aroplaz 1365 (60 percent in xylene)	600 grams
1/2-second nitrocellulose solution 2/	1,010 grams

1/ The Table III formulation with the specified proprietary raw materials represents a product of established outdoor weathering durability. The listing of these proprietary materials is not to be construed as an endorsement thereof or as precluding lacquers formulated with raw materials from other proprietary sources or other formulation within the compositional framework of Table I. Such products may prove equivalent or even superior in performance to the control formula. However, the Table III formulation should be employed as the comparison standard, for control purposes.

2/ 1/2-second nitrocellulose solution:

(a) 1/2-second nitrocellulose (TT-N-350) (70 percent in ethyl alcohol)	214 grams
(b) Methyl isobutyl ketone (TT-M-268)	292 grams

(c)	Ethyl acetate (TT-E-751)	146 grams
(d)	Isopropyl alcohol	82 grams
(e)	Butyl alcohol (TT-B-846)	146 grams
(f)	Xylene (TT-X-916)	130 grams

4.6.3 Dilution stability. Two volumes of the lacquer primer shall be reduced with 3 volumes of the solvent mixture, specified in 3.4.2.1, and observed for evidence of curdling, precipitation, or separation immediately and after 4 hours (see 3.5.9).

4.6.4 Suspension properties. Six fluid ounces of the lacquer primer, thinned for spraying as specified in 4.5, shall be placed in an 8-ounce jar. The jar shall be stoppered and shall not be agitated or disturbed for 24 hours. At the end of this period, the material shall be examined for excessive settling, with a spatula, without stirring. The material shall then be restoppered and the jar shaken vigorously for 20 seconds. The contents shall be re-examined for any evidence of nonuniformity or undispersed pigment (see 3.5.10).

4.6.5 Surface appearance. Panels prepared in 4.5.1 shall be examined for conformance to 3.6.3.

4.6.6 Sanding characteristics. After 30 minutes' air-dry, the lacquer-primer film shall be scuff sanded manually with a No. 400 soft-back sandpaper dipped in water. The sandpaper shall be examined for clogging, and the lacquer primer shall be examined for gouging or deep scratches. If there are any questions on whether scratches are deep, the test shall be rerun, using a similarly prepared panel which has been allowed to dry for 24 hours before sanding (see 3.6.4).

4.6.7 Coating anchorage. Duplicate test panels shall be prepared and finished as specified in 4.5.1 with topcoating of lacquer. The adhesion shall be determined in accordance with method 6304 of Federal Test Method Standard No. 141, except that panel shall be air-dried 72 hours (see 3.6.5).

4.6.8 Flexibility (mandrel test). Soft steel or tinplate panels, 0.020-inch thick, shall be prepared with topcoat as specified in 4.5.1, except that they shall be air-dried for 2 hours and baked at 180° +5°F for 1 hour. Panels shall be tested in accordance with method 6221 of Federal Test Method Standard No. 141 (see 3.6.6).

4.6.9 Blushing. A film of lacquer primer, thinned as specified in 4.5, shall be sprayed to a thickness of 0.0003 to 0.0005 inch. Blush resistance shall be determined in accordance with method 6091 of Federal Test Method Standard No. 141. The film shall be observed continuously until fully hard (see 3.6.7).

* TABLE IV. Test method index.

Test	Applicable method in Fed Test Std. No. 141 Method	ASTM method	Requirement paragraph	Paragraph giving further references
Volatile and non-volatile content	--	D 1644	Table I	--
Solvent content	7360		3.4.2	--
Pigment content	--	D2698	Table I	--
Analysis of zinc-yellow pigment	--	D 444	3.4.3	--
Vehicle isolation	--	D 2968	Table I	--
Nitrocellulose	5205		Table I	--
Phthalic anhydride	--	D 1307	Table I	--
Condition in container	3011		3.5.1	--
Accelerated stability	--		3.5.2	4.6.2
Storage stability	--	D 1849	3.5.3	--
Weight per gallon	--	D 1475	3.5.4	--
Coarse particles and skins	4092		3.5.5	--
Water content	4081		3.5.6	--
Color	--	D 2244	3.5.7	--
Viscosity	--	D 1200	3.5.8	--
Dilution stability	--		3.5.9	4.6.3
Suspension properties	--		3.5.10	4.6.4
Fineness of grind	--	D 1210	3.5.11	--
Odor	--	D 1296	3.5.12	--
Spraying Properties	4331		3.6.1	--
Drying time	4061		3.6.2	--
Surface appearance	--		3.6.3	4.6.5

TABLE IV. Test method index (Continued)

Item	Applicable method in Fed. Test Method Std. No. 141	ASTM method	Requirement paragraph	Paragraph giving further references
Sanding characteristics	--		3.6.4	4.6.6
Coating anchorage	6304		3.6.5	4.6.7
Flexibility	--		3.6.6	4.6.8
Blushing	--		3.6.7	4.6.9
Lacquer resistance	--		3.7.1	4.6.10
Water resistance	--		3.7.2	4.6.11
Anchorage (tape test)	--		3.7.3	4.6.12
Hydrocarbon resistance	--	D 1308	3.7.4	4.6.13
Weather resistance	--		3.7.5	4.6.14

4.6.10 Lacquer resistance, primer absorption. Test panels measuring 5 inches by 8 inches shall be prepared, using pretreatment coating conforming to Specification MIL-C-8514 reduced for spraying as directed in 4.5.1. The pretreatment coating shall be sprayed on the test panel to a thickness of 0.0002 to 0.0004 inch and air-dried for 30 minutes. These test panels shall then be sprayed with a 0.0003- to 0.0005-inch film of lacquer primer and air-dried 30 minutes, 1, 2, 4, 6, and 18 hours, re-spectively. The lacquer primer shall be reduced as directed in 4.5, prior to application. After drying for the specified interval, the panels shall be sprayed with 2 coats of test lacquer, film thickness 0.0010 to 0.0014 inch and allowed to dry for 72 hours. The test panel shall be examined for film embrittlement as provided in method 6304 of Federal Test Method Standard No. 141. The test shall be conducted and results recorded relative to the control formula product (see 3.7.1).

4.6.11 Water resistance. Two test panels, carefully solvent cleaned, shall be prepared, using lacquer primer under test and control formula lacquer primer, as directed in 4.5.1, with topcoating. After air-drying for 72 hours, the coated panels shall be immersed in distilled water at room temperature for 24 hours. After the immersion period, each panel shall be removed from the water and compared for blistering or other film irregularities with the similarily prepared and immersed control formula panels. Panels shall be retained for the anchorage (tape test) (see 3.7.2 and 4.6.12).

4.6.12 Anchorage (tape test). Panels tested for water resistance (4.6.11) shall be wiped dry with a soft cloth, and immediately thereafter, two parallel scratches down to metal, using a stylus, shall be made 1

inch apart on the portion of panel previously immersed. The minute after removal from water, a 1-inch wide strip of flat (newly manufactured), masking tape, Minnesota Mining Code No. 250, shall be applied, adhesive side down, across the scratches. The tape shall be pressed down with two passes of a 4-1/2 pound rubber-covered roller approximately 3-1/2 inches in diameter by 1-3/4 inches in width, the surface of which has a durometer hardness value within the range of 70 to 80. The tape shall be removed in one abrubt motion and the panel examined for damage, such as removal of lacquer topcoat from the lacquer primer of the entire system from the metal panel (see 3.7.3).

* 4.6.13 Hydrocarbon resistance. Panels prepared as directed in 4.5.1, without topcoating, and air-dried for 48 hours, shall be immersed in hydrocarbon fluid, Type III, of TT-S-735 for 4 hours in accordance with ASTM D 1308. The panels shall then be removed from the hydrocarbon fluid, examined, air-dried for 24 hours and compared with a similarly prepared and tested panel coated with control formula product (table III). Panels prepared as directed in 4.5.1, with topcoating, shall be immersed as above for 24 hours. The panels shall then be removed, examined and air-dried for 24 hours and then subjected to a 180° bend over a 1/2-inch diameter mandrel (see 3.7.4).

4.6.14 Weather resistance (durability). Duplicate 5- by 16-inch test panels, prepared as specified in 4.5.1, with and without topcoat, shall be exposed in an unprotected place for a period of 1 year, at an angle of 45° facing south at 26° north latitude. After exposure, the panels shall be examined for any deterioration of the finish system (see 3.7.5).

5. PACKAGING

* 5.1 Packaging. The lacquer primer shall be packaged and packed in accordance with PPP-P-1892. The level of packaging shall be A or C, and the level of packing shall be A, B, or C as specified (see 6.2).

* 5.2 Marking. Interior packages and exterior shipping containers shall be marked in accordance with MIL-STD-129. In addition, individual cans or pails shall bear a printed label showing the date of manufacture and the following information:

"This primer shall be applied over pretreatment coating conforming to MIL-C-8514.

The manufacturer shall specify the thinner and volume to be employed.

"Precautions:

1. Lacquer primer from one vendor shall only be thinned with a non-photochemically reactive thinner supplied by the same vendor."

6. NOTES

6.1 Intended use. The lacquer primer covered by this specification is intended for use as a fast-drying, spray-type, corrosion-inhibiting

cellulose-nitrate primer. The lacquer primer acts as a tie coat between a pretreatment coating and topcoating of nitrocellulose or acrylic-nitrocellulose lacquer and is satisfactory for use with pretreatment coating on new or previously painted metal which has been stripped clean. Lacquer primer must be used with non-photochemically reactive topcoatings.

* 6.2 Ordering data. Procurement documents should specify the following:

(a) Title, number, and date of this specification.

(b) Size of container in which lacquer primer is to be furnished.

(c) Level of packaging and packing (see 5.1).

(d) The unit of purchase to be the U.S. Gallon (231 cubic inches at 23°C (73.4°F) (see 3.5.4 for weight per gallon).

(e) Thinner shall be procured with the primer from the same manufacturer and furnished as a kit.

(f) Specify periodic weather resistance and storage stability tests when required (see 4.3.3.2 and 4.4).

6.3 Solvent content. The solvent for the resin used shall be such that the final lacquer primer formulation will have a solvent content which is nonphotochemically reactive (see 3.4.2 and 3.4.2.1).

6.4 Changes from previous issue. The margins of this specification are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

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