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A-A-3164
August 20, 1998
Superceding
TT-L-20
April 25, 1967

COMMERCIAL ITEM DESCRIPTION

SYNTHETIC LACQUER, CAMOUFLAGE, EXTERIOR, VOC COMPLIANT

The General Services Administration has authorized the use of this commercial item description as a replacement for Federal Specification TT-L-20 for all federal agencies.

1.0 SCOPE. This description covers a lusterless (flat) and semigloss synthetic resin lacquer for application onto lacquer resistant primer or recoating prepared metal surfaces. Not for use on bare metal, without a primer undercoat. Provides a rapid tack free and dry hard condition at temperatures lower than curing type resins.

2.0 SALIENT CHARACTERISTICS.

Characteristics	Requirements	Methods
(1) Min. Nonvolatile (liquid wt. basis)	flat-45.0%; semigloss 40.0%	ASTM D 1644
(2) Max. Pigment ¹ (N.V. wt. basis)	flat 60.0%; semigloss 50.0%	ASTM D 1644
(3) Min. Vehicle/resin ² (N.V. wt. basis)	flat 40.0%; semigloss 50.0%	ASTM D 2372
Nitrocellulose Content	25.0% - 30.0%	FedStd 141C/5205.2
Non-drying resins	53.0% - 61.0%	ASTM D
(4) Volatile Organic Content	420 g/L (SCAQMD Rule 1124)	EPA Test Method 24
(5) Material Safety Data Sheet	required for all shipments	or ASTM D 2369
(6) Drying time @ (40-60 microns wet film)		
"dry-to-touch"	15 minutes maximum	ASTM D 1640-83
"dry-hard"	40 minutes maximum	ASTM D 1640-83
(7) Specular gloss @ 60° angle	see Note ³ attached	ASTM D 523
(8) Prohibited chemicals, ^{Appendix A}	less than 0.06% (wt.)	ASTM specific ⁴
(9) Adhesion	3B rating or better	ASTM D 3359
(10) Contrast ratio (1.0 mil dry film)	see Note ⁵	ASTM D 2805
(11) Dilutable -com'l lacq'r. thinner	no phasing/coagulation	visual
(12) Self lifting ⁶	no wrinkles after 30 min.	visual
(13) Water resistance ⁷	no whitening or defects	ASTM D 870
(14) Viscosity (#4 Ford cup)	16-25 seconds maximum	package lacquer
(15) Removal of dried lacquer film	shall be removable	See Note 8, attached
(16) Cold bending & flaking ⁸	No cracking or flaking	ASTM D 522
(17) Color ¹⁰	Visual match to FedStd 595B	ASTM D 1729
(18) Fade resistance pigments ¹¹	Equal or better than pigment colors in Lightfastness Group II	ASTM D 4302

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any other data which may improve this document should be sent to: General Services Administration, GSA Center (10FTE), Auburn, WA 98001-6599

FSC 8010

3.0 NOTES.

¹ **Pigment** Insignia white: flat color no. 37875 and semigloss color no. 27875 shall contain no tinting pigment, whatsoever.

² **Vehicle/resin.** Shall be phthalic anhydride modified non-drying oils. Phenolics resins and rosins are not permitted. The finished formulation shall have a minimum useable shelf life of 24 months with periodic warehouse temperatures up to 43°C (110° F)

³ **Specular gloss.** Shall be in accordance with the following requirements

<u>Semigloss colors</u>	<u>Min.</u>	<u>Max.</u>
24151 Interior green	12	17
25042 Sea blue	5	8
26081 Seaplane gray	8	12
27038 Instrument black	12	17
27875 Insignia white	40	55
<u>Nonspecular colors</u>		
all colors	-	5

⁴ **Prohibited chemicals.** Manufacturers may provide Certification from raw material suppliers. However, in case of dispute, the Government reserves the right to test for prohibited chemicals using any suitable ASTM method and protocols to verify that products contain less than 0.06% (wt.) of the Appendix A prohibited toxic chemical., provided the method(s) provide specific qualitative and quantitative determination of the prohibited chemicals. The test method selected shall differentiate similar chemical structures for positive identification and shall have sufficient sensitivity to quantitatively measure concentrations down to 0.012% (wt.) +/- 10% reproducibility, in triplicate.

⁵ **Contrast ratio.**

insignia white 37875	88 minimum
insignia white 27875	88 "
orange yellow 33538	88 "
bright red 31136	88 "
all other colors	98 "

⁶ **Self lifting.** Apply a 2nd coat of lacquer to the 1st "dry-hard" coat of the same lacquer, and observe for any signs of "lifting" of the first coat such as wrinkling, bubbling or other indication other than a smooth undisturbed lacquer film. Evidence of self-lifting shall be reason for rejection of all lacquer batches or lots manufactured in accordance with the same formulation and raw materials.

⁷ **Water Resistance.** This requirement applies to all colors of TPD-20 lacquer. Using a drawn-down bar, apply a 1.0 +/-0.2 mil dry film of lacquer to three (3) flat plate aluminum surfaces which are mechanically abraded (200 grit+) and degreased with a clean cloth, damp with clean new, lacquer thinner. No primer is under the lacquer which may interfere with results. Cure the film at 23°C and a maximum of 60% relative humidity for 72 hours. Totally submerge the three cured draw down specimens, horizontally under 2.54 cm (1.0 inch) of 23° C tapwater for 24 hours, remove and sponge dry. Repeat this procedure for four (4) cycles with no more than 15 minutes before re-immersion. The lacquer fails if any specimen shows even slight signs of "whitening-clouding", softening, lifting, blistering, change in color, loss of adhesion or hardness.

⁸ **Removal of dried lacquer.** Using a soft cotton wipe, previously wetted with lacquer thinner, a 1.0 mil thickness of dry-hard lacquer shall be dissolved using light to moderate hand pressure. Pre-wetting or softening of the dried lacquer surface is permitted. Two such removal actions using a clean final wipe cloth, dampened with lacquer thinner, shall result in complete lacquer removal to the bare substrate or an insoluble primed surface.

⁹ **Cold Bending and Flaking.** Use Method B [3/4" diameter or 1.905 cm] cylindrical mandrel of ASTM D 522. To degreased, mill finish aluminum sheet, 8mm - 10 mm thick (22-28 gauge), apply a light fog coat of the test coating in lieu of a primer; allow the "fog" coat to dry for 40 minutes at a minimum of 23°C and 40-60% relative humidity. Apply a 40-60 micron thick wet film of test coating over the fogged (primer) base coat and allow to dry for 24 hours, at the above conditions, before testing in accordance with ASTM D 522.

¹⁰ **Color proximity.** Color shall be as specified in the contract or purchase order in accordance with FedStd 595B; CIE Lab. Delta E = 1.0 maximum.

¹¹ **Fade resistant pigments.** In case of dispute or color fading complaints from Government users, commercial lacquer products shall have equal or better fade resistance to the ASTM "Lightfast-ness II - Very good lightfastness" color group pigments listed ASTM D 4302, when tested in accordance with ASTM D 2244 or D 822. Test shall be run using unfiltered light, no water exposure and a duration sufficient to detect fading of the standard color lacquer/paint which shall contain pigments listed within ASTM D 4302

Review activities:

Army AV
Navy SH
Air Force 99

Preparing activity:

Civil agency -GSA

User activities:

Army AV

Appendix A (03-01-98)

List of EPA 17 Prohibited Toxic Chemicals
(A Pollution Prevention Initiative)

The Contractor shall select grades of raw materials or solvents that are free of or have less than 0.06% (weight basis) of background traces of the following toxic chemicals.

A product label may state the product is free of the EPA list of 17 targeted toxic chemicals.

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|--------------------------------------|-----------------------------------|
| (1.) Benzene | (10.) Methyl ethyl ketone |
| (2.) Cadmium and cadmium compounds | (11.) Methyl isobutyl ketone |
| (3.) Carbon Tetrachloride | (12.) Nickel and nickel compounds |
| (4.) Chloroform | (13.) Tetrachloroethylene |
| (5.) Chromium and chromium compounds | (14.) Toluene |
| (6.) Cyanide and cyanide compounds | (15.) 1,1,1-trichloroethane |
| (7.) Lead and lead compounds | (16.) Trichloroethylene |
| (8.) Mercury and mercury compounds | (17.) Xylenes |
| (9.) Methylene chloride | |