

METRIC

DOD-E-699D

AMENDMENT 1

12 September 1990

MILITARY SPECIFICATION

ENAMEL, EXTERIOR, DECK, GRAY (FORMULA NO. 20) (METRIC)

This amendment forms a part of DOD-E-699C, dated 9 January 1978, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 1

2.1: Delete "MIL-Z-15486 - Zinc Oxide, Technical (Acicular, Paint Use)."

2.2, ASTM: Add "D 79 - Standard Specification for Zinc Oxide Pigments. (DoD adopted)."

DD Form 1426 note, line 3: Delete "Naval Ship Engineering Center, SEC 6124" and substitute "Naval Sea Systems Command, SEA 5523."

DD Form 1426 note, line 4: Add "-5101" after "20362".

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2.2, ASTM: Add the following:

"D 1364 - Standard Test Method for Water in Volatile Solvents (Fischer Reagent Titration Method).

(DoD adopted)

D 3335 - Standard Test Method for Low Concentrations of Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy.

(DoD adopted)."

2.2, ASTM: Delete the following:

"D 209 - Lampblack, Specification for.

D 2088 - Low Concentrations of Lead in Paint, Determination of."

AMSC N/A

FSC 8010

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Table I: Delete and substitute.

TABLE I. Formula No. 20.

Ingredients	Specification	(Pounds) <sup>1</sup>	Kilograms
Zinc oxide	ASTM D 79	59.091	(130)
Titanium dioxide <sup>2</sup>	-----	16.818	(37)
Carbon black <sup>3</sup>	-----	5.909	(13)
Silica <sup>4, 5</sup>	-----	45.455	(100)
Magnesium silicate	MIL-P-15173, type B	63.636	(140)
Varnish solution	MIL-V-15218, type II	113.636	(250)
Alkyd resin solution <sup>6</sup>	-----	102.273	(225)
Paint thinner	TT-T-291, type II, grade A	75.0	(165)
Drier <sup>7</sup>	-----	-----	---

<sup>1</sup>The formula is given slightly in excess of 100 gallons to allow for normal manufacturing loss (see 6.6).

<sup>2</sup>The titanium dioxide pigment shall be an aluminum oxide, modified chalk resistant, rutile titanium dioxide containing no less than 90 percent titanium dioxide and no less than 1.8 percent aluminum oxide. Silicon dioxide and zinc oxide may also be present.

<sup>3</sup>Use "Raven 8000" by Columbian Carbon Company or equal.

<sup>4</sup>The silica shall show no less than 98 percent of silica (SiO<sub>2</sub>), shall not lose more than 1.5 percent on ignition at 950°C +/- 50°C, and coarse particles shall not exceed 3 percent retained on a No. 325 sieve. Under 300-power magnification, the silica shall show crystals having sharp angles indicative of material made from crushed quartz of a variety of sizes of particles.

<sup>5</sup>In order to meet the gloss requirement of this specification, a maximum of 35 percent of the pulverized silica may be replaced by diatomaceous silica conforming to MIL-S-15191.

<sup>6</sup>The alkyd resin solution shall conform to type I, class A of TT-R-266. In addition, it shall conform to the solvent requirements of TT-R-266, applicable to alkyd resin solutions intended for use in coating used in areas with regulations controlling the emission of solvents into the atmosphere (see 6.5).

<sup>7</sup>Types and amounts of driers shall be the manufacturer's choice. Driers shall contain no heavy metals and finished paint shall meet all requirements of this specification.

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Table II, Characteristics: Last line under "maximum", delete "0.5" and substitute "0.06".

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3.7.7.1, line 1, title: Delete "full" and substitute "filled."

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4.4, line 2: Delete the period and add "in table III."

Table: Add title "Table III. Test procedures."

Table III, Test: Delete "Stability in partially full container" and substitute "Skinning (partially filled container)."

Table III, Applicable method FED-STD-141:

Change "4021" to "4021.1."  
Change "4053" to "4053.1."  
Delete "4081".  
Change "4061" to "4061.2."  
Change "6101" to "6101.1."  
Change "4321" to "4321.2."  
Change "4331" to "4331.1."  
Change "4250" to "4250.1."  
Change "3011" to "3011.2."  
Change "3021" to "3021.1."  
Change "4203" to "4203.1."  
Change "5141" to "5141.1."

Table III, Applicable ASTM test method:

Add "D 1364" below "D 563".  
Delete "2088" and substitute "3335."

4.4.2, line 1: Change "4061" to "4061.2."

4.4.3, line 2: Change "6101" to "6101.1."

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4.4.5, line 2: Delete "2088" and substitute "3335."

4.4.6, line 1: Change "4321" to "4321.2."

4.4.7, line 4: Change "4331" to "4331.1."

4.4.8.1, line 2: Change "2012" to "2012.2."

4.4.9.1, line 1: Change "2012" to "2012.2."

4.4.10, line 4: Change "4250" to "4250.1."

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4.4.11, line 2: Change "3011" to "3011.2."

4.4.12.1, line 2: Change "3021" to "3021.1."

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4.4.13, line 3: Change "4203" to "4203.1."

4.4.15, line 1: Change "5141" to "5141.1."

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Table IV, Ingredient, line 3: Delete "Lampblack" and substitute "carbon black."

Custodians:

Army - MR  
Navy - SH  
Air Force - 99

Preparing activity:

Navy - SH  
(Project 8010-0281)

Review activities:

Army - ME  
Navy - YD  
Air Force - 84