

METRIC

MIL-DTL-24631/2B(SH)

6 June 1997

SUPERSEDING

DOD-P-24631/2A(SH)

16 October 1984

DETAIL SPECIFICATION SHEET

PAINT, EPOXY, DARK GRAY R0 3.6, NAVY FORMULA 185, TYPE I (METRIC)

This specification is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and the issue of MIL-DTL-24631 listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation.

FORMULA: This formula covers flexible epoxy paint MIL-DTL-24631/2B, type I, Navy Formula 185, Dark Gray, R₀ 3.6 paint for camouflage use. The paint shall consist of the ingredients specified in the quantities specified. Notes are indicated by _/ numbers.

AMSC N/A

FSC 8010

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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TABLE I. Navy formula 185 - component A.

Ingredient	Pounds	Kilograms	Gallons <u>1/</u>	Liters <u>1/</u>
Curing agent <u>2/</u>	461.4	209.286	56.4	213.5
Carbon black <u>3/</u>	4.5	2.046	0.3	1.1
Titanium dioxide, ASTM D 476, Types III or IV	7.7	3.486	0.2	0.9
Magnesium silicate, ASTM D 605	239.7	108.735	10.6	40.3
Aromatic solvent <u>4/</u>	10.5	4.775	4.8	18.1
n-Butyl alcohol, ASTM D 304	181.5	82.328	26.8	101.5
Thickener <u>5/</u>	8.9	4.0	0.6	2.4
Dispersant <u>6/</u>	0.6	0.297	0.1	0.3
Thickener activator <u>7/</u>				
Component A totals	914.3	414.953	99.8	378.1

TABLE II. Navy formula 185 - component B.

Ingredient	Pounds	Kilograms	Gallons <u>1/</u>	Liters <u>1/</u>
Curing agent <u>8/</u>	368.6	167.211	38.4	145.4
Carbon black <u>3/</u>	5.6	2.5	0.4	1.4
Titanium dioxide, ASTM D 476, Types III or IV	13.7	6.2	0.4	1.6
Magnesium silicate, ASTM D 605	296.9	134.673	13.2	49.9
Aromatic solvent <u>4/</u>	51.9	23.562	7.1	26.9
n-Butyl acetate, ASTM D 4615	293.8	133.252	39.6	150.0
Thickener <u>5/</u>	11.1	5.016	0.8	2.9
Dispersant <u>6/</u>	0.8	0.4	0.1	0.4
Thickener activator <u>7/</u>				
Component B totals	1042.4	472.824	100.0	378.5

- 1/ Volume is given for guidance only. Actual volumes are dependent on specific raw materials used.
- 2/ The curing agent shall be Scotch Weld 2216A (transparent) modified amine available from the 3M Company, 3M Center, 2501 Hudson Road, St. Paul, MN 55144, or equivalent. See 3.5.7 of MIL-DTL-24631A(SH).
- 3/ The carbon black shall be "Raven 450" available from Columbian Carbon, Akron, OH or equivalent.
- 4/ The solvent shall be any 97% to 99% aromatic with a flash point of 38 to 43°C (100-110°F).
- 5/ The thickener shall be "Bentone 38" available from Rheox, Inc., P.O. Box 700, Hightstown, NJ 08520, or equivalent.

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- 6/ Dispersant shall be "Tenlo 70" available from the Henkel Corporation, 300 Brookside Avenue, Ambler, PA 19002, or equivalent.
- 7/ The thickener activator shall be "propylene carbonate" available from Jefferson Chemical, Shaker Heights, OH, or equivalent.
- 8/ The epoxy resin shall be Scotch Weld 2216B (clear amber) epoxy available from the 3M Company, 3M Center, 2501 Hudson Road, St. Paul, MN 55144, or equivalent such as Epon 828 from Shell Chemical Co.. See 3.5.7 of MIL-DTL-24631A(SH).

Use of alternate ingredients in the formula must have prior approval of the Naval Sea Systems Command. Approval will be based on review of data showing equivalent physical and chemical characteristics to the specified ingredient. It will be necessary to demonstrate that the paint compound made using the alternative ingredient will conform to all requirements of the MIL-DTL-24631 general specification.

QUANTITATIVE REQUIREMENTS. The paint shall meet the quantitative requirements of table III and the qualitative requirements of section 3 of the MIL-DTL-24631 general specification.

TABLE III. Quantitative requirements.

Requirements	Component A		Component B		Mixed components	
	Min	Max	Min	Max	Min	Max
Pigment content, percent (%) by weight (wt) <u>1</u> /	25.9	33.6	27.4	35.4	---	---
Volatiles content, %wt <u>2</u> /	17.9	21.9	31.2	35.2	---	---
Nonvolatile vehicle content, %wt <u>3</u> /	48.5	52.2	33.4	37.4	---	---
Consistency, KU	---	---	---	---	60	---
Mass per unit volume, grams per liter (g/L) [pounds/gallon (lb/gal)]	10.85 (9.06)	1109 (9.26)	1236 (10.32)	1248 (10.52)	---	---
Fineness of grind, Hegman	---	---	---	---	6	---
Flash point, °C (°F)	---	---	---	---	27 (80)	---
Wet green reflectance (R_w), %	---	---	---	---	1.74	2.06
Set-to-touch time, hours	---	---	---	---	---	8
Dry hard time, hours	---	---	---	---	---	24
Pot life, hours	---	---	---	---	5	---
Gloss 60 degree (°) specular, % <u>4</u> /	---	---	---	---	---	4
Contrast ratio	---	---	---	---	0.9	---
Course particles, %	---	0.3	---	0.3	---	0.6
Volatile organic content (VOC), g/L (lb/gal)	---	---	---	---	---	340 (2.8)

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- 1/ Calculation includes weights for all ingredients not covered by notes 2 and 3. White tinting paste weight is not included in the calculation since it will be unique to each manufacture. Manufacturers shall calculate pigment %WT before tinting weight is included. Minimum pigment %WT was calculated as 100%-maximum %WT volatiles-maximum %WT nonvolatile vehicle. Maximum pigment %WT was calculated as 100%-minimum %WT volatiles-minimum %WT nonvolatile vehicle.
- 2/ Calculation includes weights for following ingredients of components A: aromatic solvent and n-Butyl alcohol. Calculation includes weights for following ingredients of components B: aromatic solvent and n-Butyl acetate. Minimum-maximum range was \square 2% from volatile weight %.
- 3/ Calculation for component A includes only weight of Scotchweld 2216A. Calculation for component B includes only weight of Scotchweld 2216A. Minimum-maximum range was \square 2% from nonvolatile vehicle weight %.
- 4/ Flatting agent, Silicron G601 from Glidden-Durkee Division of SCM Corp, or equivalent, may be added to either component A or component B, as required, to achieve gloss. Weight and volume totals shall be adjusted to reflect any flatting agent addition.

CHANGES FROM PREVIOUS ISSUE: Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Preparing activity:
Navy - SH
(Project 8010-N803)