Downloaded from http://www.everyspec.com

METRIC
MIL-DTL-24631/1C(SH)
6 June 1997
SUPERSEDING
DOD-P-24631/1B(SH)
3 February 1992

DETAIL SPECIFICATION SHEET

PAINT, EPOXY, BLACK R0 1.8, NAVY FORMULA 184, 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-24631/1C, type I, Navy Formula 184, Black, R0 1.8 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.

Downloaded from http://www.everyspec.com

TABLE I. Navy formula 184 - component A.

Ingredient	Pounds	Gallons	Kilograms	Liters
Modified amine curing agent 2/	375.03	45.74	170.11	173.13
Carbon black 3/	8.77	0.59	3.98	2.23
Titanium dioxide 4/	2.76	0.09	1.25	0.34
Magnesium silicate 5/	256.25	11.30	116.24	42.77
Dispersant 6/	1.43	0.17	0.65	0.64
Thickener 7/	17.01	1.19	7.72	4.50
Naphtha 8/	28.50	3.93	12.93	14.88
n-Butanol 9/	247.00	36.59	112.04	138.50
Thickener activator 10/	4.24	0.41	1.92	1.55
Component A totals	940.99	100.01	426.83	378.55

TABLE II. Navy formula 184 - component B.

Ingredient	Pounds	Gallons	Kilograms	Liters
Epoxy resin 11/	439.06	45.73	199.16	173.09
Carbon black 3/	8.13	0.54	3.69	2.04
Titanium dioxide 4/	2.69	0.90	1.22	3.41
Magnesium silicate 5/	294.50	13.03	133.59	49.32
Dispersant 6/	1.53	0.18	0.69	0.68
Thickener 7/	25.67	1.81	11.64	6.85
Naphtha 8/	28.00	3.86	12.70	14.61
n-Butyl acetate 12/	245.00	33.29	111.13	126.00
Thickener activator 10/	6.63	0.66	3.01	2.50
Component B totals	1051.21	100.00	476.83	378.50

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 1255, available from Columbian Carbon, Inc., or equivalent.
4/ Titanium dixoide shall conform to the requirements of ASTM D 476, Type III or Type IV.
5/ Magnesium silicate shall conform to the requirements of ASTM D 605.
6/ The dispersant shall be Tenlo 70, available from the Henkel Corporation, 300 Brookside Avenue, Ambler, PA 19002, or equivalent.
7/ The thickener shall be Bentone SD-2, available from Rheox, Inc., P.O. Box 700, Hightstown, NJ 08520, or equivalent.

Downloaded from http://www.everyspec.com

8/ The naphtha shall be any naphtha with an aromatic content of 97-99% and a minimum flash point of 43°C (110°F) when measured in accordance with ASTM D 3278.

9/ Normal-butyl alcohol (n-butyl alcohol, n-butanol) shall meet the requirements of ASTM D 304.

10/ The thickener activator shall be “propylene carbonate” available from Jefferson Chemical, Shaker Heights, OH, or equivalent.

11/ The epoxy resin shall be Scotch Weld 2216B (Clear Amber) 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).

12/ Normal-Butyl acetate (n-Butyl acetate) shall conform to the requirements of ASTM D 4615.

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.

Downloaded from http://www.everyspec.com

TABLE III. Quantitative requirements.

Requirements	Component A		Component B		Mixed components	
	Min	Max	Min	Max	Min	Max
Pigment content, percent (%) by weight (wt) 1/	26.0	34.0	28.0	36.0	---	---
Volatiles content, %wt 2/	26.0	34.0	23.0	31.0	---	---
Nonvolatile vehicle content, %wt 3/	36.0	40.0	38.0	46.0	---	---
Consistency, KU	---	---	---	---	---	110
Mass per unit volume, grams per liter (g/L) [pounds/gallon (lb/gal)] 4/	4082 (9.0)	4445 (9.8)	4581 (10.1)	4944 (10.9)	---	---
Set to touch time, hours	---	---	---	---	---	6
Dry hard time, hours	---	---	---	---	---	24
Volatile organic content (VOC), g/L (lb/gal)	---	---	---	---	---	340 (2.8)
Fineness of grind, Hegman	---	---	---	---	5	---
Flash point, °C (°F)	---	---	---	---	26 (80)	---
Pot life, hours	---	---	---	---	3	---
Gloss 60 degree (°) specular, %	---	---	---	---	---	20
Wet green reflectance (RW), %	---	---	---	---	0.80	1.02
Contrast ratio	---	---	---	---	---	0.91
Course particles, %	---	0.3	---	0.3	---	0.6

1/ Calculation includes weights for all ingredients not covered by notes 2 and 3. Minimum-maximum range was ± 4 percentage units.
2/ Calculation includes weights for following ingredients of components A and B (as appropriate): naphtha, n-Butyl alcohol, n-Butyl acetate and Propylene carbonate. Minimum-maximum range was ± 4% percentage units.
3/ Calculation for component A includes weight of Scotchweld 2216A. Calculation for component B includes weight of Scotchweld 2216A. Minimum-maximum range was ± 4% percentage units.
4/ Minimum-maximum range was ± 4 units.

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-N802)