MILITARY SPECIFICATION

ENAMEL, ALKYD, CAMOUFLAGE

This amendment forms a part of Military Specification MIL-E-52798A(ME) dated 21 May 1976.

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*1.2 Classification, add the following:

"1.2.2 Types. The enamel shall be furnished in the following types as specified:

Type I	- Standard formulation for all colors.
Type II	- Non-Lead formulation for Forest Green."

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2.1, under SPECIFICATIONS, FEDERAL delete:

"TT-P-346	- Pigment, Chrome Yellow and Chrome-Orange Dry.
TT-P-375	- Pigment, Indian Red and Bright Red (Iron Oxide), Dry for use in Protective Coatings).
TT-P-390	- Pigment, Iron Oxide Black Synthetic, Dry Packaging, Packing and Marking of."

*Under SPECIFICATIONS, MILITARY add:

"MIL-E-52891	- Enamel, Lusterless, Zinc Phosphate, Styrenated Alkyd Type

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Add the following under STANDARDS:

"MILITARY

MIL-STD-1188	- Commercial Packaging of Supplies and Equipment."

FSC 8010

*Add the following under Other Publications:

"AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D3335 - Test for Low Concentrations of Lead, Cadmium and Cobalt in Paint by Atomic Absorption Spectroscopy."

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*Under TABLE III. Pigmentation, add the following:

"Forest Green,Type II	-Acid insoluble green pigment as in Type I forest green, chromium oxide, organic yellow pigment derived from tetrachloroisoindoline, light stable organic brown or maroon pigment, carbazole dioxane violet."

Add the following:

* "3.4.1.1 Zinc phosphate pigment, type I only. For colors Light Green, Forest Green, Dark Green and Olive Drab, Zinc Phosphate shall constitute 15 ± 1 percent of the pigment by weight."

* "3.4.1.2 Type II composition. Type II shall contain no lead based pigments and lead content shall not exceed 0.06 percent by weight of total nonvolatile content upon analysis."

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* Change TABLE V to include the following:

"Forest Green, Type II-	Total Solids Min.	- 60
	Pigment	- 39-43
	Vehicle Solids	- 18 min.
	Extender	- 50 max.
	Contrast Ratio	- 0.98 min.

*Make the following changes for type I only:

				"(New Column)" $Zn\ PO_4$ Max.	Min.	Max.
Light Green	delete	"50"	add	"36"	14	16
Forest Green	delete	"50"	add	"36"	14	16
Dark Green	delete	"50"	add	"36"	14	16
Olive Drab	delete	"50"	add	"36"	14	16

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3.6.13 Accelerated weathering. Change sentence beginning on line 4 to read: "In addition, the color after accelerated weathering shall remain within 2.5 NBS Units of chromaticity and the average of the visual reflectance values specified in table I."

*Add the following to this paragraph:

"For Type II Forest Green, the color change shall be less than 1.0 NBS Unit."

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4.3.3 Pigment analysis: Change sentence beginning on line 2 to read: "Make appropriate qualitative and quantitative tests on the extracted pigment to determine if only permissible pigments were used in formulating the different colors and zinc phosphate is present in colors Light Green, Forest Green, Dark Green and Olive Drab."

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Add the following paragraphs:

* "4.3.3.1 Zinc phosphate content. The zinc phosphate content shall be analyzed in accordance with 4.3.3.4 of MIL-E-52891.

* 4.3.3.2 Lead content (type II only).

* 4.3.3.2.1 Determination of lead by atomic absorption spectroscopy. Determine percent of lead in accordance with ASTM Method D3335. Nonconformance to 3.4.1.2 shall constitute failure of this test.

* 4.3.3.2.2 Determination of lead by X-ray emission spectrometric analysis. (alternate method).

* 4.3.3.2.2.1 Test panel preparation. Using 100 grams of a known lead free type II enamel, prepare standard aliquots containing 0.00, 0.03, 0.06, and 0.09 percent lead metal, based on total nonvolatile paint, by adding calculated amounts of lead napthenate of a known lead content. Thoroughly, mix the aliquots to incorporate the lead and draw down the standards and enamel to be tested on duplicate black and white Morest cards using a 0.0020 inch (0.004 inch gap clearance) film applicator. Dry for 48 hours at a temperature of 23° ± 1.1°C (73.4° ± 2°F), a relative humidity of 50 ± 4 percent, and under dust free conditions. Cut the drawdowns into a suitable size and shape to fit the sample holder of the X-ray fluorescence spectrometer.

* 4.3.3.2.2.2 X-Ray analytical procedure. Lead content shall be determined using an X-ray fluorescence spectrometer capable of determining lead content at a

minimum level of 0.03 percent by weight of the total nonvolatile paint. The parameters of angle, crystal, pulse height selection, counting time, collimator, X-ray tube, voltage and amperage, shall be established for a wave length dispersive fluorescence spectrometer according to conventional X-ray analytical procedures. The analytical line Pb L-alpha or Pb L-beta shall be used. To calibrate, place the known standrds in the X-ray unit and measure the count rates of lead, lead background and the Compton scattered background from the X-ray tube. The ratio R, of net lead intensity and Compton scattered background is calculated as follows:

$$R = \frac{I_{Pb} - \left(I_{Pb\ \text{Background I}} + I_{Pb\ \text{Background II}}\right)}{\frac{2}{I_{\text{Compton Line}}}}$$

Where I = Gross Intensity
and the background is taken on each side of the Pb line.

Establish a lead calibration curve using these results. Determine the lead content of the test paint using the above procedure and calibration curve. When using an energy dispersive fluorescence spectrometer, it shall be set up in accordance with the manufacturer's manual.

* 4.3.3.2.2.3 Failure criteria. Nonconformance to 3.4.1.2 shall constitute failure of this test."

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4.4, delete and substitute as follows:

"4.4 Inspection of packaging. Inspection of military levels of packaging shall be in accordance with PPP-P-1892. Commercial packaging shall be inspected for conformance to MIL-STD-1188."

5.1, delete and substitute as follows:

"5.1 Preservation, packing and marking. Preservation shall be level A or commercial and packing shall be level A, level B or Commercial as specified (see 6.2). Level A preservation, level A or B packing and military packaging marking shall be in accordance with PPP-P-1892. Commercial preservation, packing and marking shall be in accordance wth MIL-STD-1188. The enamel shall be furnished in the size of container specified (see 6.2)."

6.1 Intended use; change last sentence to read: "For adequate camouflage properties, it is necessary to apply the enamel to a minimum dry film thickness of 0.0018 inch."

6.2 (c), delete and substitute as follows:

"(c) Degree of preservation and degree of packing required (see 5.1)."

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Under TABLE VIII delete:

"Chrome Yellow TT-P-346 Type III	42.85	22.10	32.70	25.80		
Red Iron Oxide TT-P-375, Type II	11.50	2.75	2.50	15.60	17.10	3.05
Black Iron Oxide TT-P-390	96.00"					

*Add to TABLE VIII

		Forest Green Type II
Acid Insoluble Green Pigment	-	59.7
Chromium Oxide	-	30.0
Organic Yellow[1]	-	2.3
Organic Brown[2]	-	8.0

[1]IRGAZINE 2GLT Yellow
[2]17-3075 HOSTOPERM Brown HRF

The margins of this amendment are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment 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 amendment.

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