

MIL-P-21960B (NAVY)

11 May 1967

SUPERSEDING

MIL-P-21960A (Wep)

12 October 1962

## MILITARY SPECIFICATION

### PAINTING AND MARKING; WARHEADS, GUIDED MISSILE

This specification has been approved by the NAVAL AIR SYSTEMS COMMAND, and the NAVAL ORDNANCE SYSTEMS COMMAND, DEPARTMENT OF THE NAVY.

#### 1. SCOPE

1.1 This specification establishes the painting and marking requirements of empty, loaded, exercise and inert warheads of guided missiles manufactured for the U.S. Navy.

#### 2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of the specification to the extent specified herein.

### SPECIFICATIONS

#### FEDERAL

TT-C-490

Cleaning Methods and Pretreatment  
of Ferrous Surfaces for Organic  
Coatings

#### MILITARY

MIL-C-450

Coating Compound, Bituminous  
Solvent Type, Black

MIL-S-5002

Surface Treatments (Except  
Priming and Painting) for  
Metal and Metal Parts  
In Aircraft

MIL-P-7962

Primer Coating, Cellulose-Nitrate  
Modified Alkyd Type, Corrosion  
Inhibiting, Fast Drying (For Spray  
Application Over Pretreatment  
Coating)

MIL-C-8514

Coating, Pretreatment, Smooth  
Finish, Spray Type (For Aircraft)

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MIL-F-18264	Finishes: Organic, Aircraft; Application and Control of
MIL-L-19537	Lacquer: Acrylic - Nitrocellulose Gloss (For Aircraft Use)
MIL-L-19538	Lacquer, Acrylic - Nitrocellulose Camouflage for Aircraft Use
MIL-C-21567	Compound, Silicone, Soft Film
MIL-P-22332	Paint, Priming, Exterior and Interior (For Ammunition)

## STANDARDS

## FEDERAL

FED STD NO. 595	Colors
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## MILITARY

MIL-STD-105	Sampling Procedures and Tables for Inspecting by Attributes
MIL-STD-130	Identification Marking of U. S. Military Property
MIL-STD-709	Ammunition Color Coding

## DRAWINGS

The drawings applicable to the warheads to be painted form a part of this specification. In the case of conflicting requirements, the drawings shall take precedence.

(Copies of specifications, standards, drawings and publication required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

## 3. REQUIREMENTS

3.1 Materials and processes. - The materials and processes specified herein shall comply with the applicable specifications and standards listed in 2.1 and with the applicable drawings. Requests for changes in materials or processes shall be made to the NAVAL AIR SYSTEMS COMMAND or NAVAL ORDNANCE SYSTEMS COMMAND, as applicable.

3.2 Surfaces to be painted. - The surfaces to be painted shall be those specified in the applicable drawings. Normally, all metallic surfaces which are to remain exposed will be painted.

3.3 Surfaces not to be painted. - Care shall be exercised that no paint be applied to surfaces indicated in the applicable drawings as not

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to be painted. Surfaces which are to fit closely to those of similar metals will normally not be painted, but may be otherwise protected prior to final assembly.

3.4 Preparation for painting. - All surfaces shall be thoroughly free of oil, grease, dirt, scale, rust and other foreign matter and shall show no visible signs of corrosion products. Ferrous metals shall be cleaned in accordance with Specification TT-C-490.

3.4.1 Treatment of nonferrous metals. - Nonferrous metals shall be treated in accordance with Specification MIL-S-5002.

3.5 Painting and marking by contractor.

3.5.1 Primer coating: - All metallic surfaces to be painted except those which are to be in contact with explosives, shall be prepared with pretreatment coating conforming to Specification MIL-C-8514 plus one coat of primer conforming to Specification MIL-P-7962. Surfaces shall be thoroughly clean and be capable of supporting an unbroken film of water in accordance with the water break test of Specification MIL-F-18264, prior to paint application.

3.5.1.1 Mating surfaces of dissimilar metals. - Nonferrous metal surfaces which are to be assembled in close contact with ferrous metal surfaces shall be given an additional coat of primer conforming to Specification MIL-P-7962. The primer coats shall be thoroughly dry before assembly to the mating surface.

3.5.2 Cavity coating. - Unless otherwise specified, interior surfaces which are to be in contact with explosives shall be coated with bituminous coating compound conforming to Specification MIL-C-450, Grade I or II, or paint conforming to Specification MIL-P-22332.

3.5.3 Exterior surfaces. - Unless otherwise specified in the contract or purchase order, exterior surfaces which are to be coated shall receive two coats of Acrylic-Nitrocellulose Lacquer conforming to Specification MIL-L-19537. The color of the coating shall be as designated in the applicable drawing in accordance with FED STD No. 595. Sufficient time shall be allowed for the first coat to dry hard before the second coat is applied.

3.5.4 Unpainted surfaces. - Unless otherwise specified surfaces not painted shall be coated with a thin film of compound conforming to Specification MIL-C-21567. Care shall be taken to avoid contact of the compound with cavity coating or painted surfaces. Thread luting, when required, shall be in accordance with the applicable drawings.

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3.5.5 Empty warhead marking. - Identification marking or stenciling shall be in the form shown in 3.5.5.3 below and shall be made with lacquer conforming to Specification MIL-L-19537, color black No. 17038 of FED-STD No. 595. Paint coats shall be thoroughly dry before marking is applied.

3.5.5.1 Dimensions. - Marking indicating the type of warhead, and Mark and Mod number shall be in letters one-half inch high. Other lettering shall be at least 1/4" high.

3.5.5.2 Location. - Marking shall be located within a rectangular area so as to be readily visible and so as not to interfere with alignment marks, loading identification band or other identification. The lettering shall be parallel to the longitudinal axis, with the left margin toward the forward end of the warhead.

3.5.5.3 Information to be included. - Stenciled or lettered marking shall be applied in the manner illustrated below and shall include the type of information shown, as applicable:

U. S. NAVY  
\*PROCURING ACTIVITY  
WARHEAD, GUIDED MISSILE  
MK \_\_\_\_\_ MOD \_\_\_\_\_  
ASSEMBLY DWG. \_\_\_\_\_  
SERIAL NO. \_\_\_\_\_  
EMPTY WEIGHT \_\_\_\_\_ LBS.  
NAME OF MANUFACTURER \_\_\_\_\_  
CONTRACT NO. \_\_\_\_\_ LOT NO. \_\_\_\_\_

(Space shall be allowed for subsequent marking by the loading activity in accordance with 3.6.2)

3.5.5.4 Punched or stamped markings. - Markings applied to parts by punching or stamping shall be as specified in the applicable drawings and in accordance with standard MIL-STD-130. After application of such markings, all gaging requirements shall be complied with.

### 3.6 Painting and marking by the loading activity.

3.6.1 Identification bands. - After loading, a band indicating the type of filler or other characteristics of the warhead shall be applied circumferentially as specified in the applicable drawings. The loaded warheads shall have the type of filler marked adjacent to the identification band. The band shall be interrupted where necessary to reveal alignment marks, arrows and similar mechanical markings. Lacquer conforming to Specification MIL-L-19537 shall be used. The color and width of the band shall be as specified in Standard MIL-STD-709. Color coding shall also be applied to the outer surfaces of

\* NAVAIRSYSCOM or NAVORDSYSCOM, as applicable.

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containers which are a fixed and integral part of the ammunition, such as the missile armament section. This does not apply to containers from which the warhead is removed prior to assembly to the missile.

3.6.2 Loaded warhead marking. - After loading, the following information shall be marked or stenciled, using lacquer conforming to Specification MIL-L-19537, color black No. 17038 of FED STD No. 595, in the manner illustrated:

LIST OF DRAWING NUMBERS FOR LOADED ASSEMBLY  
 TYPE OF FILLER (OR INERT LOAD)  
 FILLER WEIGHT (OR INERT MATERIALS WEIGHT)  
 TOTAL LOADED WEIGHT  
 LOADING ACTIVITY (OFFICIAL ABBREVIATIONS)  
 DATE OF LOADING (MONTH AND YEAR)  
 LOT NUMBER (IF APPLICABLE)

3.7 Repainting. - Surfaces on which paint or markings are marred, scratched or removed during loading or handling shall be repainted or touched up so as to conform to the requirements of this specification.

3.8 Workmanship. - All paint coats shall be evenly applied, smooth, continuous and adherent, and shall cover only the surface specified. Precautions shall be taken to avoid contamination of surfaces after cleaning, preparation and painting, to insure compliance with this specification.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Inspection. - Warheads shall, during cleaning and preparation for painting, application of paint and marking, be subject to such sampling, inspection and testing as necessary to determine compliance with all requirements of this specification and the applicable drawings. In addition, warheads shall be inspected after shipment from the manufacturer to the loading activity for scratches, chipping, or other surface finish damage, including the coating compound on the explosive cavity.

4.2 Sampling. - Sampling procedures, when used, shall be in accordance with Military Standard MIL-STD-105 and as specified by the NAVAL AIR SYSTEMS COMMAND.

4.3 Tests. - Tests, when required, shall be in accordance with the applicable specifications, listed in 2.1 and the applicable drawings.

#### 5. PREPARATION FOR DELIVERY

There are no delivery requirements applicable to this specification.

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## 6. NOTES

6.1 Intended use. - This document, in conjunction with applicable drawings, is intended to standardize the painting and marking of empty, loaded, exercise, dummy and inert guided missile warheads manufactured for the U. S. Navy. Details of the application procedures for the paint coatings specified herein are contained in Specification MIL-F-18264.

6.2 Ordering data. - Procurement documents should specify the following:

- (a) Title, number and date of this specification.
- (b) Applicable drawings.
- (c) Inspection procedures.

6.3 Supersession data. - This specification includes the requirements of MIL-P-21960A (Wep) dated 12 October 1962.

Custodians:

NAVY- AS ,OS

Preparing Activity

NAVY - AS

SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 119-R004
<p style="text-align: center; margin: 0;"><u>INSTRUCTIONS</u></p> <p style="margin: 0;">This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity (as indicated on reverse hereof).</p>		
SPECIFICATION MIL-P-21960B (NAVY) PAINTING AND MARKING: WARHEADS, GUIDED MISSILE		
ORGANIZATION (of submitter)		CITY AND STATE
CONTRACT NO.	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT \$
MATERIAL PROCURED UNDER A <input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT		
1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? A. GIVE PARAGRAPH NUMBER AND WORDING.		
B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.		
2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID		
3. IS THE SPECIFICATION RESTRICTIVE? <input type="checkbox"/> YES <input type="checkbox"/> NO IF "YES", IN WHAT WAY?		
4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)		
SUBMITTED BY (Printed or typed name and activity)		DATE

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DEPARTMENT OF THE NAVY

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Washington, D.C. 20360

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