INSTALL INTERIOR DECK COVERING SYSTEMS

1. SCOPE

1.1 Intent. This standard specification describes the requirements for the Contractor to install interior deck covering systems onboard Coast Guard vessels.

1.2 Appendices.

AUTHORIZED SYSTEM	APPENDIX
Cosmetic Polymeric Epoxy Resin	A
Ceramic (Porcelain/Quarry) Tile	B
Retardant Tile	C
Electrical Insulating Sheet	D
Carpeting	E

1.3 Exclusions. This standard specification does not cover installation of electrical matting and anti-fatigue matting, as these are removable deck covering systems - normally cut and laid down (without adhesive) onto existing deck covering systems, where applicable.

2. REFERENCES

COAST GUARD DRAWINGS

None.

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2012, Requirements for Preservation of Ship Structures

OTHER REFERENCES

American National Standards Institute (ANSI), A118.10, 2008, Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-set Ceramic Tile and Dimension Stone Installation

American National Standards Institute (ANSI), A137.1, 2008, Standard Specification for Ceramic Tile

ASTM International (ASTM) F1066, 2004, Tile, Floor, Vinyl Composition

ASTM International (ASTM) F1700, 2004, Solid Vinyl Floor Tile

Federal Specification (Fed Spec) DDD-C-95, Mar 1972, Carpets and Rugs, Wool, Nylon, Acrylic, Modacrylic

MIL-A-21016, May 1990, Adhesive, Resilient Deck Covering

MIL-A-24456, Jun 1979, Adhesive for Plastic-Vibration Damping Tile

MIL-A-46106, Jun 1992, Adhesive-Sealants, Silicone, RTV, One-Component

MIL-PRF-24613, Nov 2007, Deck Covering Materials, Interior, Cosmetic Polymeric

MIL-PRF-23236, Aug 2003, Coating Systems for Ship Structures

MIL-PRF-24647, Jun 2006, Paint System, Anticorrosive and Antifouling, Ship Hull

MIL-PRF-24667, May 2008, Coating system, Non-Skid, for Roll or Spray Application

MIL-DTL-15562, May 1996, Matting or Sheet, Floor Covering Insulating for High Voltage Requirements

MIL-PRF-3135, Sep 2008, Deck Covering Underlay Materials

MIL-PRF-32170, Jun 2006, Deck Tiles, Wear-Resistant

MIL-STD-1623, Jan 2006, Fire Performance Requirements and Approved Specifications for Interior Finish Materials and Furnishings

Society of Automotive Engineers (SAE) Aerospace Material Specification AMS-S-8802, 2005, Sealing Compound, Temperature-Resistant, Integral Fuel Tanks and Fuel Cell Cavities, High-Adhesion

Tile Council of North America TCA Handbook for Ceramic Tile Installation, 2011

The Society for Protective Coatings (SSPC) Surface Preparation Specification No.11 (SSPC-SP 11), 2004, Power Tool Cleaning to Bare Metal

3. **REQUIREMENTS**

3.1 System requirement compliance. The Contractor shall comply with the manufacturer's instructions in regards to suitable surface and ambient conditions, in addition to instructions for proper handling, mixing and application of paint, underlay, and deck covering system components.

3.2 Deck covering system installation particulars. The Contractor shall refer to the applicable appendix herein, and install the deck covering system(s) designated in the work item. Ensure that each new deck covering system is installed over entire deck surfaces, from bulkhead to bulkhead (butted against permanently installed fixtures and furniture), with the exception of areas under enclosed built-in furniture or under equipment with enclosed foundations, unless otherwise specified in the work item.

3.2.1 Installation over new underlayment. For installation of new deck covering over new underlay, accomplish the following tasks:

3.2.1.1 Decking system removal. Completely remove and dispose of the existing deck covering system, including underlayment and cove base, as applicable, to expose the metal deck.

3.2.1.2 Surface preservation. Prepare and coat the exposed deck surfaces, including deck drains, and vertical bounding surfaces (in way of base coving removal), as applicable; as specified below:

STEEL SURFACES	ALUMINUM SURFACES
Power tool cleaning to SSPC-SP 11 (to produce a 1.0 mil anchor profile)	Mechanical cleaning, using power sanders and abrasive sandpaper with no metallic contents, to remove all existing coatings and rust spots, down to bare metal.

3.2.1.2.1 Inspection. Before applying primer coating, perform a visual inspection of the prepared deck surfaces, for signs of corrosion, deterioration, defects, and other abnormalities; submit a CFR.

3.2.1.2.2 Surface coating. Coat all prepared surfaces with one coat, 5.0-6.0 mils DFT of a High Build

Epoxy coating, conforming to MIL-PRF-24647 or MIL-PRF-23236.

3.2.1.3 Underlay material.

3.2.1.3.1 General application. Prepare and apply epoxy underlay material over the entire primed deck surfaces, in accordance with Table 3-1 (Underlayment Requirements). Fill in all depressions in the deck, level fair welded seams and deck irregularities, and level off underlay to a minimum thickness of 1/8-inch on the deck. Where necessary, slope the underlay material within an 18-inch radius of deck drains toward the drains. Within coaming and shower stalls, ensure a minimum underlayment thickness of 1/4 inch, with the entire area sloped toward the drain. When installing cosmetic polymeric systems, cove the underlay material up to a maximum height of four inches, to form a coved base over all vertical structures, including stiffeners bounding the deck. Sand underlay, as necessary, to provide a smooth finish.

TABLE 3-1 - UNDERLAYMENT REQUIREMENTS

DECK COVERING SYSTEM	REQUIRED EPOXY UNDERLAYMENT (MIL-PRF-3135)
NEW INSTALLATIONS/COMPLETE RENEWALS	
*All Deck Coverings requiring underlayment	Type III** or IV, Class 2
REPAIR OF EXISTING SYSTEMS	
*Cosmetic Polymeric Epoxy Resin	Type I, Class 2
Ceramic Tile	Type I, Class 2
Fire-Retardant Deck Tile	Type II, Class 2
Carpeting	Type II, Class 2
Electrical Insulating Sheet	Type II, Class 2

***No underlayment required for Single Step Cosmetic Polymeric System (MIL-PRF-24613, Type III), unless specified in the work item. System is applied directly to over coated deck surfaces.**
**** A waterproof membrane must be applied to all Type III underlayment.**

3.2.1.3.2 Waterproof membrane. A waterproof membrane meeting the requirements of commercial standard ANSI A118.10 shall be applied to all MIL-PRF-3135 Type III underlayment. The waterproof membrane shall be certified by the manufacturer to be compatible with both the underlayment and the installed deck covering. The membrane shall be one continuous barrier covering the entire deck, including the cove base 4 inches up each vertical surface and shall be installed in accordance with the manufacturer's instruction.

3.2.1.3.3 Insulating underlayment. When insulating underlayment is specified in a work item, install the underlay material to a thickness of 1/2 to 3/4 inch, in lieu of what is specified above in paragraph 3.2.1.3.1 (General application), to serve as an insulating agent over deck surfaces that are subject to condensation.

NOTE

Insulation underlayment may be used to prevent condensation in certain areas - e.g., above ballast tanks and hot machinery spaces, especially where these decks form the deck tops of living spaces.

3.2.2 Installation over existing underlayment. For installation of deck covering over existing underlayment, accomplish the following tasks:

3.2.2.1 System removal. Remove the existing top deck covering, including cove base (as applicable), to expose, but not damage the existing underlayment.

3.2.2.2 Underlayment preparation. Sand the exposed underlayment, to provide a smooth surface, free of irregularities.

3.2.3 Installation over metal substrate – no underlayment required. For installation of deck covering directly over metal substrate, accomplish the following tasks:

3.2.3.1 Remove existing deck covering system, including cove base, to expose the metal deck surfaces.

3.2.3.2 Prepare and coat all exposed deck surfaces, as specified in paragraph 3.2.1.2 (Surface preservation).

3.3 New deck covering protection. After completing the installation of all deck covering systems, the Contractor shall close the work areas to all traffic for as long as is required to prevent damage to the deck coverings during curing period, when applicable. Cover all new deck coverings with suitable covers for the remainder of the availability, to protect against damage or contamination.

NOTE

Deck covering colors/color schemes will be specified in the work item.

4. NOTES

4.1 Guidance for deck covering system selection. Guidance for selecting appropriate interior deck covering systems for spaces onboard Coast Guard vessels is provided in Table 4-1 below.

TABLE 4-1 – DECK COVERING SYSTEMS AUTHORIZED ONBOARD COAST GUARD VESSELS

INTERIOR DRY SPACES [1, 2, 3, 4, 5, 6]	
SPACE	**MATERIAL**
AFFF Station (within coaming)	1. High Build Epoxy [6]
Air pressure locks	1. High Build Epoxy [6] with Slip-resistant covering
Ammunition stowage. handling room, ready service room (in traffic and working areas only)	1. High Build Epoxy [6] with Slip-resistant covering
Auxiliary Machinery Spaces	1. High Build Epoxy [6]
Bath	1. Wear resistant deck tile 2. Cosmetic polymeric epoxy covering (MIL-PRF-24613 Type III) [7, 8]
DC/Machine Shops and Other Shop Spaces	1. High Build Epoxy [6]
Dry Goods Storerooms with Storage Racks Installed	1. High Build Epoxy [6]
Electrical/Electronics spaces manned [5]	1. Electrical grade sheet 2. Wear resistant deck tile 3. Cosmetic polymeric epoxy covering (MIL-PRF-24613 Type III) [7, 8]
Flag Quarters, CO and XO Quarters, Wardroom and CPO Lounges	1. Carpet 2. Wear resistant deck tile
Labs and Electrical or Electronic Workshops [5]	1. Electrical grade sheet 2. Cosmetic polymeric epoxy covering (MIL-PRF-24613 Type III) [7, 8] 3. Wear resistant deck tile

Living and Working Spaces (including offices, berthing, medical spaces, manned storerooms, and passageways serving those spaces)	1. Cosmetic polymeric epoxy covering (MIL-PRF-24613 Type III) [7, 8] 2. Wear resistant deck tile 3. Vinyl composition tile or vinyl tile
Machinery Spaces	1. High Build Epoxy [6]
Messing Areas	1. Porcelain tile/Quarry tile 2. Cosmetic polymeric epoxy covering (MIL-PRF-24613 Type III) [7, 8] 3. Wear resistant deck tile
Pilot House and Control Stations, Chart Room. Combat Information Center. and Ships Store	1. Fatigue reducing deck tile 2. Cosmetic polymeric epoxy covering (MIL-PRF-24613 Type III) [7, 8] 3. Wear resistant deck tile
Shops (walking areas around power tools)	1. High Build Epoxy [6] with Slip-resistant covering
Side Passageways only serving shop spaces (not main passages)	1. High Build Epoxy [6]
INTERIOR WET SPACES [1, 2]	
SPACE	**MATERIAL**
Food Service Spaces (galley, scullery. food serving lines) [9]	1. Porcelain/Quarry tile 6” x 6” or 8” x 8” 2. Cosmetic polymeric epoxy covering (MIL-PRF-24613 Type III) [7, 8]
Heads	1. Cosmetic polymeric epoxy covering (MIL-PRF-24613 Type III) [7, 8] 2. Porcelain tile 3” x 3” with waterproof membrane, waterproof epoxy adhesive, and waterproof grout

Laundry Facilities	1. Porcelain/Quarry tile 6” x 6” or 8” x 8” (with water-proof membrane and epoxy adhesive and grout only) 2. Cosmetic polymeric epoxy covering (MIL-PRF-24613 Type III) [7, 8]
Shower Stalls	1. Cosmetic polymeric epoxy covering (MIL-PRF-24613 Type III) [7, 8]
Small Enclosed Spaces Attached to Sanitary Spaces (e.g. Closets Containing Hot Water Heaters)	1. High Build Epoxy [6] 2. Porcelain/Quarry tile
Waste handling, trash compactor, incinerator spaces	1. Porcelain/Quarry tile 6” x 6” or 8” x 8”
Other Wet Working Spaces	1. High Build Epoxy [6] with Slip-resistant covering
MISCELLANEOUS SPACES [2]	
SPACE	**MATERIAL**
At each side of door with high coaming normally used for continuous traffic, and at the head and foot of ladders.	1. Slip-resistant covering treads (3-treads)
Dry side of doors to weather decks	1. Door mats, portable
Unmanned spaces (wet or dry)	1. High Build Epoxy [6]
Working areas around steering gear, electrical machinery (except where rubber matting is installed), and as necessary to ensure safe footing around power tools	1. High Build Epoxy [6] with Slip-resistant covering

NOTES:
1. Recommended material systems are numbered sequentially in priority order.
2. Non-skid pads (MIL-PRF-24667, Type XI, Composition PS) shall be applied as needed to provide slip resistance.
3. Anti-fatigue matting, such as Nomad Brand matting manufactured by 3M Co. or equal, may be used as needed.
4. Install slip-resistant covering in working areas around machinery where possible lubricant or hydraulic fluid spills or leakage can occur. Application of slip-resistant covering is not required where nonslip plates or gratings are installed.
5. Install electrical grade mats or sheets around all electrical switchboards, operating and servicing areas, electric and electronic equipment as required for prevention of electronic shock.

6. Spaces calling for High Build Epoxy shall be prepared and painted in accordance with SFLC Standard Specification 6310 – "DECKS, METAL INTERIOR AND NON-SKID AREAS / Metal Decks – No application of deck coverings."
7. An initial seal coat shall be applied to the MIL-PRF-24613 Type III cosmetic polymeric.
8. MIL-PRF-24613 Type I Class 1-3 can be used for repair of existing MIL-PRF-24613 Type I, Class 1-3 cosmetic polymeric systems.
9. Install CRES pan within coaming under steam kettle.

APPENDIX A

REQUIREMENTS FOR COSMETIC POLYMERIC EPOXY RESIN DECK COVERING SYSTEMS

A1. SCOPE

A1.1 Intent. This appendix describes the particular requirements for the Contractor to install cosmetic polymeric epoxy resin deck covering systems.

A2. REQUIREMENTS

A2.1 General. The Contractor shall mix and prepare the epoxy resin deck covering system designated in the work item, in accordance with manufacture's recommendations; trowel-apply the prepared system to a thickness as specified below in Table A-1 (Cosmetic Polymeric Epoxy Resin Systems), over deck underlayment or coated deck surfaces, as specified in the work item. Type I, Class 1-3 shall only be used for repair of existing Type I, Class 1-3 systems.

TABLE A-1 - COSMETIC POLYMERIC RESIN SYSTEMS

EPOXY RESIN TYPE AND CLASS (MIL-PRF-24613)	THICKNESS (Inch)
Type I, Class 1 (Epoxy, with Broadcast Quartz)	1/8
Type I, Class 2 (Epoxy, with Color Flake Topping)	1/16
Type I, Class 3 (Epoxy, with Marble Chip Aggregate)	1/4
Type III (Single Step – Epoxy Only)	1/8

A2.1.1 Cove base. Include a cove base to a maximum height of four inches at all adjacent vertical bounding surfaces, where applicable.

A2.1.2 Sealing requirements.

A2.1.2.1 Type I system. For "Type I" system installation, seal the system in accordance with the deck covering system manufacturer's instructions.

WARNING!

Application of sealer coats in excess of what is recommended by the manufacturer of Type I Cosmetic Polymeric Systems is not in compliance with MIL-PRF-24613, and may also reduce the effectiveness of the systems' non-slip properties.

A2.1.2.2 Type III system. For “Type III”/”Single Step” system installation, seal the system in accordance with the deck covering system manufacturer's instructions.

NOTE

The “Type III”/”Single Step” Cosmetic Polymeric Systems were formulated as a low maintenance system – not requiring periodic re-sealing. A single seal coat shall be applied per manufacturer’s instructions as part of installation or repair. No further seal coats shall be applied for installation or maintenance.

APPENDIX B

REQUIREMENTS FOR CERAMIC TILE DECK COVERING SYSTEMS

B1. SCOPE

B1.1. Intent. This appendix describes the particular requirements for the Contractor to install particular ceramic tile deck covering systems.

B2. REQUIREMENTS

B2.1. General. The Contractor shall install the designated ceramic tiles (ANSI A137.1), over deck underlayment or coated deck surfaces, as specified in the work item, in accordance with the TCA Handbook for Ceramic Tile Installation. Tile sizes are listed in Table B-1.

TABLE B-1 - CERAMIC TILE PARTICULARS

TYPE OF CERAMIC TILE (ANSI A137.1)	TILE SIZE (INCHES)
Quarry Tiles	6 x 6
	8 x 8
Porcelain Tiles	*3 x 3
	**6 x 6 or 8 x 8

***Head Spaces only**
****All Other Wet Spaces**

B2.1.1. Trim units. Where applicable, install 4-inch high base ceramic tile trim units (bullnosed at the top edge and coved at the bottom edge) at all vertical projections through the deck. Install bullnosed trim units around depressions in the deck, and rounded internal and external matching corner units.

B2.1.2. Grouting. After the tiles have been firmly set in place, prepare and apply a suitable epoxy grout material to fill all joints even with the surface of the tiles.

B2.2. Surface cleanliness. Upon completion of tile installation and grouting, the Contractor shall ensure that all tile surfaces are clean and free of grout and other debris.

APPENDIX C

REQUIREMENTS FOR FIRE-RETARDANT DECK TILE COVERING SYSTEMS

C1. SCOPE

C1.1. Intent. This appendix describes the requirements for the Contractor to install particular fire-retardant deck tile covering systems.

C2. REQUIREMENTS

C2.1. General. The Contractor shall install the type of tile deck covering system designated in the work item, and listed in Table C-1 (Flooring System Particulars), secured with suitable adhesive, over deck underlayment or coated deck surfaces, as specified in the work item.

TABLE C-1 - FLOORING SYSTEM PARTICULARS

TILE TYPE	ADHESIVE REQUIREMENT
*Vinyl Composition Tile (ASTM F1066) or Vinyl Tile (ASTM F1700)	Latex Adhesive (MIL-A-21016) – Dry Areas
	Epoxy Adhesive (MIL-24456) – Wet and Damp Areas
Wear Resistant Deck Tile (MIL-PRF-32170, Type I, Class 1)	Epoxy Adhesive (MIL-24456) – Wet , Damp, and Dry Areas
Rubber (Fatigue Reducing) Deck Tile (MIL-PRF-32170, Type I, Class 2)	Latex Adhesive (MIL-A-21016) – Dry Areas
	Epoxy Adhesive (MIL-24456) – Wet and Damp Areas

***Must meet fire performance requirement of MIL-STD 1623.**

C2.1.1. Cove base. Install a 4-inch high vinyl cove base molding, or cove up the sheet edges to a maximum height of four inches at all bulkhead boundaries, where applicable.

C2.1.2. Seam sealing. Use a silicone sealer (MIL-A-46106, Type I) or polysulfide sealant (SAE-AMS-S-8802, Type 2, Class B), to waterproof all seams against bulkheads, stationary furniture, pipes, and other deck fittings. Where weld lines (beads) prevent deck covering from butting tightly against structure, use a suitable caulking compound in place of tile adhesive; paint the caulking to blend with the deck covering or bulkhead (after the caulking compound has skinned over).

C2.1.3. Protective edging. Where an exposed edge fails to butt up against a fitting or bulkhead, install a 1-inch x 0.08-inch stainless steel or brass strip, or a vinyl bevel-edged strip, screwed or cemented to the deck to protect the edge.

C2.2. Adhesion enhancement. Immediately after the deck covering has been cemented to the deck, the Contractor shall thoroughly roll a 150-pound sectional roller over the deck covering to facilitate adhesion.

APPENDIX D

REQUIREMENTS FOR ELECTRICAL INSULATING SHEET SYSTEMS

D1. SCOPE

D1.1. Intent. This appendix describes the particular requirements for the Contractor to install electrical insulating sheet deck covering systems.

D2. REQUIREMENTS

D2.1. General. The Contractor shall fit and install new electrical grade sheet confirming to MIL-DTL-15562, Type I, secured with a latex adhesive conforming to MIL-A-21016, over deck underlayment or coated deck surfaces, as specified in the work item.

D2.1.1. Cove base. Install a 4-inch high vinyl cove base molding, or cove up the sheet edges to a maximum height of four inches at all bulkhead boundaries.

D2.1.2. Seam sealing. Use a silicone sealer (MIL-A-46106, Type I) or polysulfide sealant (SAE-AMS-S-8802, Type 2, Class B), to waterproof all seams against bulkheads, stationary furniture, pipes, and other deck fittings. Where weld lines (beads) prevent deck covering from butting tightly against structure, use a suitable caulking compound in place of tile adhesive; paint the caulking to blend with the deck covering or bulkhead (after the caulking compound has skinned over). Ensure that there are no seams within three feet of electrical hazards. Where this is not possible, accomplish one of the following tasks:

- Seal seams between sheets or mats with a thermoplastic deck covering such as vinyl sheet, fused chemically, or heat welded or heat fused with a special hot air gun; or
- Install a 3-4 inch wide strip of 20 mil thick polyvinyl chloride (PVC) tape, or 1-foot wide strip of the same electrical grade deck covering system under the seams, to prevent a direct path to ground via seams.

D2.1.3. Protective edging. Where an exposed edge fails to butt up against a fitting or bulkhead, install a 1-inch x 0.08-inch stainless steel or brass strip, or a vinyl bevel-edged strip, screwed or cemented to the deck to protect the edge.

D2.2. Adhesion enhancement. Immediately after the deck covering has been cemented to the deck, the Contractor shall thoroughly roll a 150-pound sectional roller over the deck covering to facilitate adhesion.

APPENDIX E

REQUIREMENTS FOR CARPETING

E1. SCOPE

E1.1. Intent. This appendix describes the particular requirements for the Contractor to install new carpeting.

E2. REQUIREMENTS

E2.1. General. The Contractor shall cut, fit, and install new carpeting meeting or exceeding the requirements specified in Table E-1 (Carpeting Particulars), install the carpet by the tackless procedure or by cementing it to the primed deck with an adhesive as recommended by the carpet manufacturer over deck underlayment or coated deck surfaces, as specified in the work item

TABLE E-1 - CARPETING PARTICULARS

MATERIAL SPECIFICATION	CONSTRUCTION
Wool (With a Velvet Weave, Woven through the Back - Certified as Meeting the Requirements of Cancelled Fed Spec DDD-C-95 Type II Class 1,2, or 4; and Conforming to the Fire Requirements of MIL-STD-1623	Single Cut Pile (52 Oz. Per Sq. Yd. Pile)
	Single Level Loop Pile (42 Oz. Per Sq. Yd. Pile)
	Multilevel Loop Pile - Woven Through Back (44 Oz. Per Sq. Yd. Pile)

E2.2. Protective edging. The Contractor shall install a bright CRES or aluminum strip, where the carpet abuts other deck covering in foot traffic areas

E3. NOTES

E3.1. Carpeting procurement sources. Carpeting approved for installation onboard Coast Guard vessels may be procured from the following sources:

NAME	CONTACT INFORMATION
Marine Carpet Sales	http://www.marinecarpetsales.com/marine-carpet-products.cfm
Continental Flooring Company	(800) 825-1221; (410) 750-2614
Abby Carpet Fleming and Sheely	9103 Yellow Brick Road Rosedale, MD 21237 (410) 682-6600