

NAVAL SEA SYSTEMS COMMAND

What Can NSRP Do for NAVSEA?



NSRP Meeting

Sept 2023

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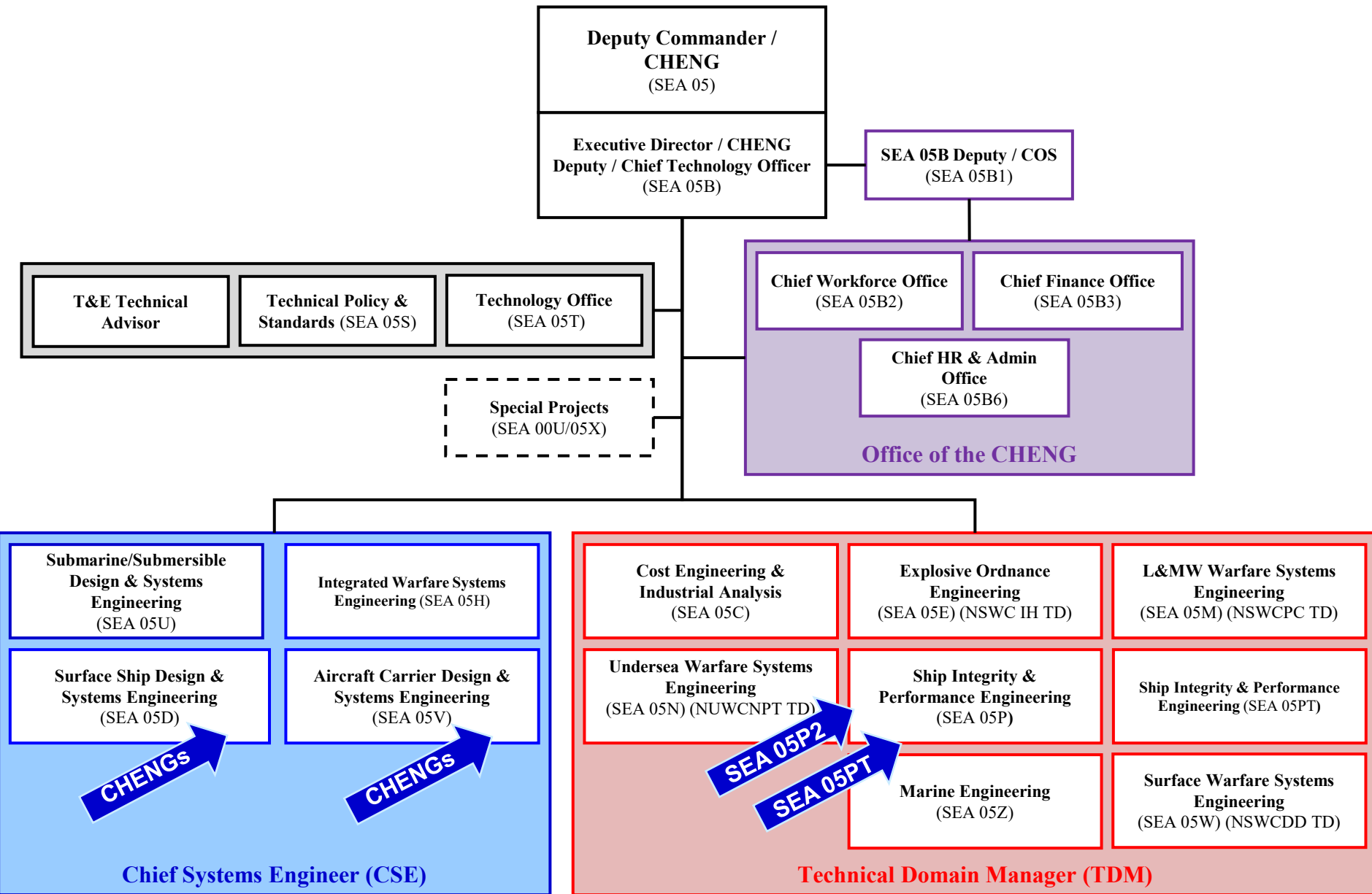
OBJECTIVES

- Summarize evolving Naval Sea Systems Command (NAVSEA) organization and coating requirements:
 - Headquarters NAVSEA organization & objectives.
- Summarize **how the NSRP team can assist** NAVSEA in improving coatings and coatings application procedures:
 - What is the most efficient means of improving topside corrosion control coatings materials and processes?
 - What can be done to implement the published update to the MIL-PRF-22262C abrasive blast media specification?
 - How and where to use MIL-PRF-16173F preservatives?
 - What can be done to implement the published update to the MIL-PRF-32704 solid decking specification?
- Summarize **challenges** regarding suppliers of coatings and other materials to NAVSEA.



Naval Systems Engineering Directorate (SEA 05)

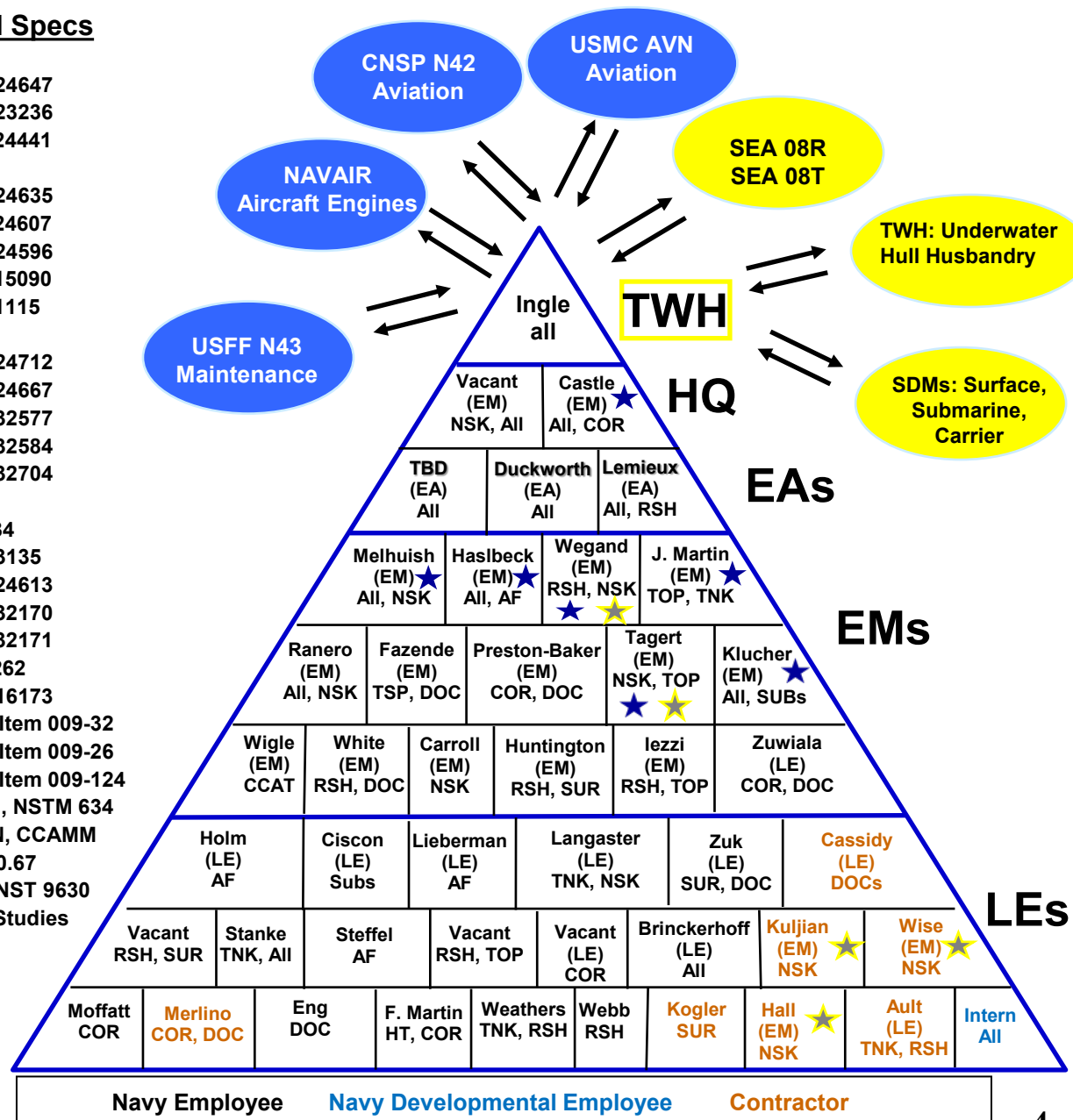
Draft: Aug 2023



Technical Authority Pyramid - Coatings & Corrosion Control

Draft: Aug 2023

Code	Product	Related Specs
All	All Technical Products, Managerial	All
AF	Antifouling Coating Systems	MIL-PRF-24647
TNK	Tank Coatings, Epoxy Primers	MIL-PRF-23236 MIL-DTL-24441
PRM	Primers, Single Component	TT-P-645
TOP	Topside, Alkyds & Polysiloxanes	MIL-PRF-24635
INT	Interior Coatings (SEA 08)	MIL-DTL-24607 MIL-PRF-24596 MIL-DTL-15090 MIL-DTL-1115
HT	High Temp Coatings, Metallic	TT-P-28
PWD	Powder, Interior, Cosmetic	MIL-PRF-24712
NSK	Nonskid	MIL-PRF-24667 MIL-PRF-32577
DCK	Deck Coverings	MIL-PRF-32584 MIL-PRF-32704 DDD-C-95 MIL-D-3134 MIL-PRF-3135 MIL-PRF-24613 MIL-PRF-32170 MIL-PRF-32171
SUR	Abrasive blasting, surface prep	MIL-A-22262
SEL	Sealants & Preservatives	MIL-PRF-16173
DOC	Policy Documents	Standard Item 009-32 Standard Item 009-26 Standard Item 009-124 NSTM 631, NSTM 634 S636-MAN, CCAMM
COR	Corrosion, PCOE	DODI 5000.67 NAVSEAINST 9630
RSH	Research & Development	Reports, Studies
UNDS	Regulations, Underwater hull	TBD



Implementation of Toppide Corrosion Control (TCC) Technology Package

BACKGROUND:

2015 – 2016: NRL demonstrated TCC on a DDG, showed a 34 fold reduction in ship's force time required to address topside corrosion by eliminating sources of "running rust."

2022 – 2023: Leadership interest in TCC.

IMPLEMENTATION APPROACH:

2015 – 2023 SEA 05 has updated specifications and technical requirements to implement TCC technologies.

- Updated coating material specifications.
- Updated Standard Item 009-32 coating application requirements.
- Defined practices & procedures with technical letters and Design Memoranda.
- TCC technology is available to fleet customers but technology must be included in work package.

The slide, titled "TCC System Technology" and featuring the U.S. Naval Research Laboratory logo, details various corrosion control technologies. It includes a central image of a ship with arrows pointing to different parts of its hull and deck. The technologies listed are:

- PEEL + STICK NON-SKID:** Eliminates rust bleed-thru and provides additional protection from undercutting on-deck corrosion. Engineered for interior or exterior use, mostly in non-critical areas where foot traffic is high. Installation within Ships' Force capability.
- COMPOSITES FOR "RUST RUNNERS":** Successful corrosion control can be realized through the use of fiber reinforced composite materials. Examples include composite electrical enclosure, deck drains, cover plates and conduit terminals, vent screens, pipe hangers and deck grating.
- CSI CORROSION CONTROL:** Proper coating & weather sealing of CSI foundations and mating surfaces will reduce runny rust. Proper corrosion control of CSI also improves operational performance.
- FLUIDIZED BED (POWDER) COATINGS FOR WT DOORS, LOUVERS, AND OTHER PARTS:** Coats removable ship parts with efficiency and uniformity and prolonging service life -6 minutes to coat a WT door compared to 40 for the current powder coating process.
- POLYSILOXANE NON-SKID:** Provides excellent wear resistance and can be used in critical areas of surface ships. Offers superior corrosion and thermal resistance compared to traditional non-skid products. Easy to apply: spray or roll.
- POLYSILOXANE COATING:** Used for high durability freeboard, topside coating, and anchor chain paint. Offers longer service life (2 to 3x traditional LSA) requires less maintenance, cures faster when applied, needs fewer overall coats, and can be cleaned rather than repainted. Reduces the gradual "pinkening" of traditional silicone alkylid low solar absorption (LSA) formulas.
- USS PONCE LPD-15 experimental coating application March 2008, "3 years of service"** vs. **Standard Topside Silicone Alkyd Coating "4 months"**.

Proof of Concept New Technology

[NAVSEA Has Updated Requirements To Transition TCC Technologies To Fleet Service](#)

TCC Implementation Materials and Processes

TCC IMPLEMENTATION: Implementation for TCC on in-service ships based on requirements, resources, and schedule.

SEA 05P2 focus on requirements, qualified products, and communication with industry partners, waterfront teams, and sponsors.

TCC Technology

Requirement

Qualified Products

Polysiloxane Topside Coating with ultrahigh solids primer

2018 - Standard Item 009-32 requires polysiloxane
2023 – Standard Item 009-32 to require ultrahigh solids under polysiloxane

2020 – MIL-PRF-24635F adds single and two pack polysiloxane coatings
- Multiple qualified products

Fluidized bed, two coat, powder coating for gas turbine louvers

2011 - Standard Item 009-32 requires binary fluidized bed coatings on louvers

2014 – MIL-PRF-24712B updated qualification requirements
- Multiple qualified products, **but need more**

Polysiloxane nonskid with spray application for flight deck

2023 – Third DDG demonstration in process
2017 - A-A-59982 CID for nonskid spray system.

2021 – MIL-PRF-24667D updated qualification requirements
- No polysiloxane spray applied nonskid qualified **need qualified systems**

Wear resistant, peel & stick nonskid for exterior decking

2019 - Standard Item 009-32 requires LHA/LHD superstructure to use peel & stick nonskid
2023 – Standard Item 009-32 to expand applications

2023 – MIL-PRF-32704 with Amendment 1 published
- One qualified product, **but need more**

ONGOING ACTION: Qualification of products supports NAVSEA technology implementation.

TCC Implementation

Materials and Processes

TCC IMPLEMENTATION: Implementation for TCC on in-service ships based on requirements, resources, and schedule.

SEA 05P2 focus on requirements, qualified products, and communication with waterfront teams and sponsors.

TCC Technology

Composite materials to reduce “rust runners”

C5I, corrosion control technologies at equipment to ship interface

Requirement

2003 – Published first drawings for composite vent screen and deck grating

2021 – SURFMEPP Design Memorandum on composite cover plates

2022 – SURFMEPP Design Memoranda on Corrosion resistant materials on multiple ship classes

2022 - SURFMEPP Design Memorandum on repair of kick pipes using commercial, polymeric materials

2023 - SURFMEPP Design Memorandum to apply novolac based coatings in intakes / uptakes

Qualified Products

Mid-2000s - Supply system starts to procure composite vent screens, deck grating, and electrical boxes

2007 – SCD 609 for composite electrical boxes for the stern gate control station

2022 – Commercial product available to repair kick kick pipes, but need more materials

2032 - All required coatings qualified to MIL-PRF-23236 and install requirements in Standard Item 009-32

ONGOING ACTION: Updating documentation to facilitate TCC technology implementation.

TCC Implementation

Update Requirements to Improve Topside Coating System Performance

ISSUE: Current, FY24 Standard Item 009-32, Table 2 provides options for primers used under two-pack or single-pack polysiloxane topcoats. Topside coatings do not appear on the list of critical coated areas.

BACKGROUND: From 1980s to 2005, “Freeboard” was cited in Standard Item 009-32 as a Critical Coated Area.

In 2005, Surface and Air Type Commanders proposed to remove freeboard from Standard Item 009-32, Critical Coated Area list because:

- Government oversight associated with Critical Coated Areas increased job cost.
- Ship’s force can touch up topside coatings.

With TYCOM concurrence, FY-07 Standard Item 009-32, published on 14 Jul 2005 DID NOT include freeboard in Critical Coated Area - **remained the case to date.**

TCC demonstration project in 2015 installed two-pack, polysiloxane coating over an ultrahigh solids primer.

Installation conducted with NRL oversight of the coating installation process.

Topside coating system showing some corrosion in 2022, but generally performing effectively.



[Changes to FY-25 Standard Item 009-32 proposed to enhance life-cycle corrosion control performance of polysiloxane coating system on freeboard and topside areas.](#)

TCC Implementation

Require Freeboard and Topside Coating to be Critical Coated Areas

WAY AHEAD: Proposed updates to FY-25 Standard Item 009-32:

REVISE: Paragraph 3.7 table that lists Critical Coated Areas to include “Freeboard” for “Steel” structure.
[General technical community concurrence.](#)

WAY AHEAD: Change to FY-25 Standard Item 009-32 paragraph 3.7 for steel ships includes: “Freeboard”

REVISE: Table 2 to eliminate option to use solvent-based primer and require only Ultrahigh Solids (UHS), primers under polysiloxane topcoats.

[All comments at SSRAC and in follow-up discussions, raised concerns about immediate change to require only UHS primer under polysiloxane topcoat in Standard Item 009-32:](#)

WAY AHEAD: Work with SURFMEPP to develop a Design Memorandum to include UHS primers in DDG 51 Class work packages to demonstrate processes.

<u>Comments</u>	<u>Submitter A</u>	<u>Submitter B</u>	<u>Submitter C</u>	<u>Submitter D</u>
Short UHS critical overcoat window increases polysiloxane delamination risk and inherently breaks work into small zones	✓	✓	✓	✓
Limited experience with installation of polysiloxane over UHS polysiloxane over UHS primers (i.e., showing number of full ship installations)	-	-	3	1
Current qualified UHS primer and topcoat from different manufacturers increases delamination risk	✓			
Handrails, light fixtures cannot be sprayed and UHS primer brush option is challenging		✓		
Cracking of UHS primers for some qualified systems		✓		
UHS requires plural pumps and larger or heated hose that are difficult to manage on large areas		✓	✓	
Current data sheets do not have overcoat window requirements for all UHS coatings and installation processes and boot-top tie-in	✓			✓
Potential sole source of one primer (i.e., competitive disadvantage)				✓

[Seeking NSRP comments on use of UHS primers under polysiloxane may based on limited coating manufacturer technical data and experience.](#)

Update to MIL-PRF-22262C for Abrasive Blasting Media

ISSUE: April 1993 – published MIL-A-22262B(SH), “Abrasive Blasting Media, Ship Hull Blast Cleaning,” and then amended/validated specification through Jan 2021.

Update required in accordance with SEA 05S policy and to address key technical issues:

1. Update to **expand population of qualified abrasives** to include both manufactured and by-product abrasives required to prepare surfaces for conventional coatings and for thermal spray nonskid (i.e., all nonmetallic grits).

- Aluminum oxide
- Silicone carbide
- Metal oxides (varying types)



2. Update to current MIL-STD-961 **format and content** requirements.
3. Update testing requirements to **current ASTM standards** and other methods.
4. Update requirements and methods for maximum allowable **background radiation** to address procurement challenges at some Regional Maintenance Centers.
5. Update to address **beryllium content** in abrasive media and relationship between requirements for beryllium in solid abrasive blast media and beryllium in workplace air.
 - 2017 OSHA reduced the Permissible Exposure Limit (PEL) for beryllium from 2.0 ug/m³ to 0.2 ug/m³ for an 8 hour Time Weighted Average (TWA).
 - 2020 new OSHA, 29 C.F.R. § 1910.1024 rules for beryllium PEL of 0.2 µg/m³ for the 8 hour TWA went into effect at shipyards.
 - MIL-A-22262B(SH) maximum allowable beryllium content of 0.0075% weight (i.e., which is consistent with California, Code 22 CCR 66261.24 and SSPC AB-1) may not align with OSHA beryllium PEL.

[MIL-A-22262B required an update to address multiple technical issues and will require input from abrasive grit suppliers.](#)

Update to MIL-PRF-22262C for Abrasive Blasting Media

ISSUE: April 1993 – published MIL-A-22262B(SH), “Abrasive Blasting Media, Ship Hull Blast Cleaning,” and then amended/validated through Jan 2021

22 Aug 2023 – SEA 05P2 signed out final MIL-PRF-22262C and submitted to SEA 05S.

NOTE: This draft, dated 18 April 2023, prepared by Naval Sea Systems Command, has not been approved and is subject to modification. DO NOT USE PRIOR TO APPROVAL. (Project 5350-2022-001)

ENCH-POUND
MIL-PRF-22262C(SH)
DRAFT
SUPERSEDING
MIL-A-22262B(SH)
5 April 1993

PERFORMANCE SPECIFICATION
ABRASIVE BLASTING MEDIA, SHIP BLAST CLEANING

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

1. SCOPE

1.1 Scope. This specification covers inorganic abrasive media used in the blast cleaning of metal surfaces, such as ship hulls and tanks, to remove corrosion, scale, old paint, and other foreign matter resulting in surfaces that are clean and suitable for painting. Examples of inorganic abrasive materials are minerals, recycled materials like crushed glass, by-products of metal or energy production such as slags, and engineered materials that are manufactured to serve as industrial abrasives.

1.2 Classification. Inorganic abrasive materials covered in this specification are of the following types, classes, and grades as specified (see 6.2).

1.2.1 Types.

- Type I – Naturally occurring minerals.
- Type II – By-product, engineered, and manufactured materials.

1.2.2 Classes.

- Class 1 – Glass abrasive material.
- Class 2 – Garnet abrasive material.
- Class 3 – Aluminum oxide abrasive material.
- Class 4 – Other metal oxide abrasive material.
- Class 5 – Metal silicate abrasive material.
- Class 6 – Silicon carbide abrasive material.
- Class 7 – Coal slag abrasive material.
- Class 8 – Other slag abrasive material.
- Class 9 – Blend of the above.

1.2.3 Grades.

- Grade A – Total beryllium content shall be not greater than 0.00001 percent by weight.
- Grade B – Total beryllium content shall be not greater than 0.0075 percent by weight.

Comments, suggestions, or questions on this document should be addressed to Commander, Naval Sea Systems Command, ATTN: SEA 05S, 1333 Isaac Hull Avenue, SE, Stop 5160, Washington Navy Yard DC 20376-5160 or emailed to CommandStandards@navy.mil, with the subject line “Document Comment”. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

AMSC N/A FSC 5350

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.

New Types of abrasive media to natural materials and by-product (slags), engineered, and manufactured materials.

New Grades of abrasive media with current limits on maximum allowable beryllium and limit to further reduce beryllium exposure risk.

New Classes of abrasive media to include the Class 3 aluminum oxide media required by Standard Item 009-124 thermal spray nonskid process

New Classes of abrasive media to include the Class 4 “Other Metal Oxide” media of interest to shipyards.

Update to Beryllium Limit in Draft MIL-PRF-22262C for Abrasive Blasting Media

ISSUE: Oct 2022 – Public comment on DRAFT MIL-PRF-22262C included data on small-scale (e.g., 30 - 90 min.) abrasive blasting trials on mild steel panels to assess airborne contaminants from current, MIL-A-22262B qualified abrasive blast media.

Measured airborne contamination in blast booth using two air sampling pumps and two sampling cassettes.

Analyzed beryllium on cassette filter paper from air sampling cassettes for each trial in accordance with NIOSH 7300.



<u>Abrasive Blast Media</u>	<u>Beryllium Content on Safety Data Sheet (SDS)</u>	<u>Beryllium Content in solid EPA 6010D</u>	<u>Beryllium OSHA PEL (TWA)</u>	<u>Beryllium in Booth Air Air on Cassette</u>
Media A	0.00058%	0.00058%	0.2 µg/m ³	7.26 µg/m ³
Media B	0.00005%	0.00019%	0.2 µg/m ³	1.91 µg/m ³
Media C	Not Listed	0.000058%	0.2 µg/m ³	0.64 µg/m ³
Media D	0.0005%	0.000032%	0.2 µg/m ³	0.35 µg/m ³
Media E	Not Listed	Non Detect	0.2 µg/m ³	0.18 µg/m ³
Media F	Not Listed	Non Detect	0.2 µg/m ³	0.064 µg/m ³
Media G	Not Listed	Non Detect	0.2 µg/m ³	0.024 µg/m ³
Media H	Not Listed	Non Detect	0.2 µg/m ³	0.024 µg/m ³

[Final MIL-PRF-22262C will address comment on beryllium content in abrasive blast media by providing Grades of maximum allowable beryllium content.](#)

Update to Beryllium Limit in Draft MIL-PRF-22262C for Abrasive Blasting Media

ISSUE: MIL-PRF-22262C must address beryllium content in abrasive blast media to inform industrial hygiene community about potential worker exposure risks.

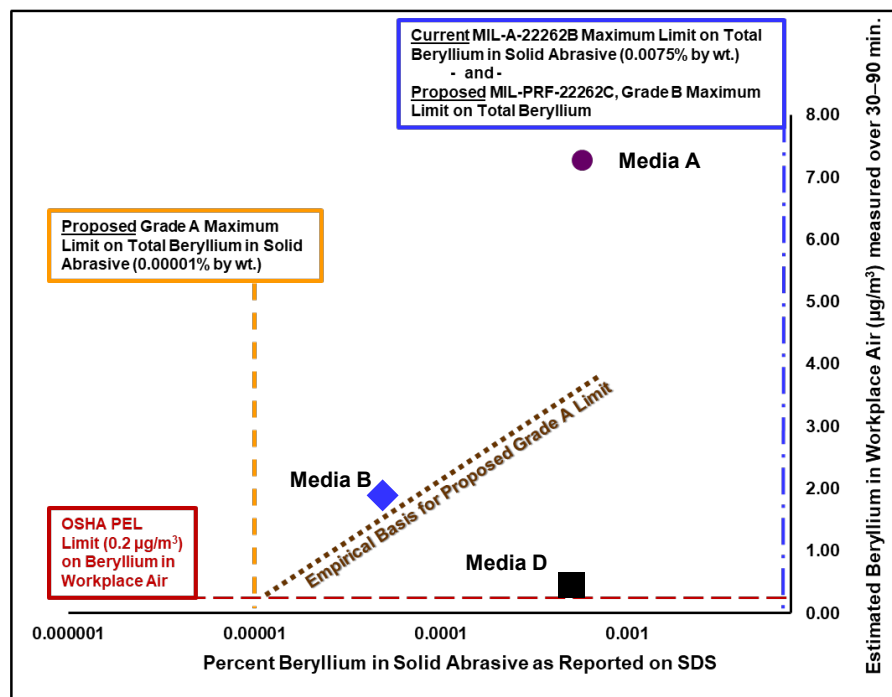
- Current, MIL-A-22262B maximum total allowable beryllium content of 0.0075% by weight has been in MIL-A-22262 since 1993 and is based on California Title 22, § 66261.24, “Characteristic of Toxicity.”
- Oct 2022 - Industry comment about MIL-PRF-22262C that suggested that a maximum total beryllium limit of 0.1 mg/kg (i.e., 0.00001% by weight) would mitigate the risk of blasting operations exceeding the 29 C.F.R. § 1910.1024, OSHA PEL of 0.2 $\mu\text{g}/\text{m}^3$ for the 8 hr TWA.

WAY AHEAD: SEA 05P2 provided all beryllium data to NAVSEA industrial hygiene experts and determined the final DRAFT MIL-PRF-22262C will include new abrasive “Grades” based on maximum allowable total beryllium content as follows:

“Grade A – Total beryllium content not greater than 0.00001% by weight.

Grade B - Total beryllium content not greater than 0.0075% by weight.”

- Public comment proposed MIL-PRF-22262C set maximum allowable beryllium limit of 0.00001% by weight. NSWC-CD validated beryllium detection limit.
- SEA 05P2 working with NSWC-CD to validate the correlation between airborne beryllium levels and level of beryllium in solid from the public comment.



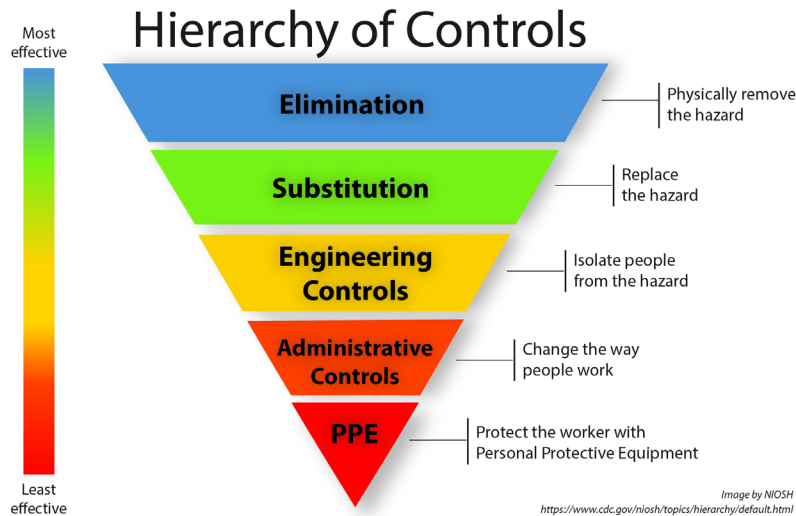
[NAVSEA to publish updated MIL-PRF-22262C with new “Grades” of media by 31 Dec 2023.](#)

Need to Update Beryllium Limit in Draft MIL-PRF-22262C for Abrasive Blasting Media

ISSUE: Current MIL-A-22262B qualified abrasive blast media contain beryllium and use of such media has been shown to result in beryllium levels in excess of the **29 C.F.R. § 1910.1024 OSHA Permissible Exposure Limit (PEL) of 0.2 µg/m³ for the 8 hour Time Weight Average (TWA).**

- **National Institute for Occupational Safety and Health (NIOSH)** explains how controlling exposures to workplace hazardous materials is essential to protecting worker health and safety.
- **NIOSH** provides a hierarchy of hazardous material controls to determine which actions will best control exposures with preferred order of action as follows:

- Preferred**
- Elimination
 - Substitution
 - Engineering controls
 - Administrative controls
 - Personal protective equipment (PPE)



WAY AHEAD: Proposed DRAFT MIL-PRF-22262C Grades, based on maximum allowable beryllium content, will allow shipyards to adopt a **SUBSTITUTION** on an as-needed basis, but shipyards can still use **ENGINEERING CONTROLS** and **ADMINISTRATIVE CONTROLS** and **PPE**.

[Adding Grades to MIL-PRF-22262C provides industrial hygiene staff with tools to make informed abrasive media selection decisions.](#)

Radioactivity Requirements and Methods in MIL-PRF-22262C

ISSUE: The radioactivity /Cobalt-60 requirements and analytical methods cited in the current, MIL-A-22262B are unclear and do not cite a government or industry consensus standard.

RESULTS: Commercial Laboratories use EPA Method 901.1, Gamma Emitting Radionuclides in Drinking Water, when conducting radioactivity testing on abrasives although based on aqueous technique, “the method is amenable to solids as long as the detector is calibrated to measure solids...”

- Environmental Measurement Laboratory, Procedures Manual (HASL-300) 28th Edition has similar method for solid samples.
- NAVSEA requires EPA Method 901.1 for testing.



WAY AHEAD: The DRAFT MIL-PRF-22262C maximum allowable radioactivity of abrasives requirement in paragraph 3.2.3 supported by technical community and will be retained with new analytical method in Section 4.

Retain: 20 picocurie/gram requirement from MIL-A-22262B in MIL-PRF-22262C paragraph 3.2.3.

Revise: MIL-PRF-22262C, paragraph 4.5.2.3 to cite the EPA Method 901.1 as follows:

Radioactivity. Gross gamma radioactivity and Cobalt-60 radioactivity shall be determined in accordance with EPA Method 901.1 but on the solid, undigested abrasive and reported as pCi/g. The gross gamma radioactivity shall be determined by summing the net gamma photons of energies from 0.1 Million electron Volts (MeV) to 2.1 MeV. The specific Cobalt-60 activity shall be based on the photo peak produced by the 1.332 MeV gamma photon. Limits of detectability, for example, minimum detectable activity shall be determined at the 90 percent confidence level. The results shall meet the requirements of 3.2.3 and 3.2.3.1.”

[Seeking NSRP assistance in getting abrasive manufacturers to submit data packages to update qualification.](#)

Updating MIL-PRF-16173 Specification

Include New Types and Classes of Preservatives

ISSUE: MIL-PRF-16173E(2), “Corrosion Preventive Compound, Solvent Cutback, Cold-Application” with interim amendments published on 19 Oct 2017, included:

- Updated Volatile Organic Compounds (VOC) requirements in paragraph 3.4.2 to state:
VOC for Class I compounds shall exceed 2.8 lbs/gal (340 grams/liter).
VOC for Class II compounds shall not exceed 2.8 lbs/gal (340 grams/liter).

Interim amendments require full specification update within two years.

WAY AHEAD: NAVSEA significantly updating MIL-PRF-16173 as part of a Paint Center of Excellence (PCOE) project to address the following issues:

- Instances where Navy has ordered material (i.e., MIL-PRF-16173E, Class I, Grade I) and received a product from one manufacturer that met operational requirements while at other times received the same Class/Grade product from a different manufacturer that **did not meet** their operational requirements.
- Update MIL-PRF-16173 to an “Application” based classification based system instead of current film removal characteristic based system.
- Replace obsolete tests like “shed” storage and eliminate archaic/redundant test methods (i.e., MIL-C-16173A published in 1953) by citing current ASTM test methods. Update the requirements for conformance testing.
- Add new technology products for long-term corrosion control performance without surface preparation (e.g., spray wax).



Update to MIL-PRF-16173 will include new Types, Classes, and Grades to better satisfy all Fleet customer needs.

Updating MIL-PRF-16173F Specification Including New Preservative Types, Modified Classes, and Revised Grades

DRAFT MIL-PRF-16173F

PERFORMANCE SPECIFICATION
CORROSION PREVENTIVE COMPOUND, SOLVENT CUTBACK, COLD-APPLICATION

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers corrosion preventive compounds that deposit thin, persistent and removable films.

1.2 Classification. Corrosion preventive compounds covered by this specification are furnished in the following classes and grades, as specified (see 6.2).

1.2.1 Types. The types of the corrosion preventive compounds are as follows:

Type I	A corrosion preventive compound having a VOC greater than 2.8 lbs/gal (340 grams/liter) and less than or equal to 6.0 pounds per gallon (lbs/gal) (728 grams/liter).
Type II	A corrosion preventive compound having a VOC greater than 0.1 lbs/gal (12 grams/liter) and less than or equal to 2.8 lbs/gal (340 grams/liter).
Type III	A corrosion preventive compound having a VOC less than or equal to 0.1 lbs/gal (12 grams/liter).

1.2.2 Classes. The classes of the corrosion preventive compound are the following (see 6.1):

Class 1	Temporary, hard film, solvent removable compound for corrosion protection during outdoor storage and overseas shipping.
Class 2	Temporary, solvent removable compound for corrosion protection during indoor storage of machinery, instruments, or parts.
Class 3	Persistent, solvent removable compound for inaccessible void spaces.
Class 4	Temporary, soft film, solvent removable compound for corrosion protection on equipment where miscibility with lubricants is required.
Class 5	Temporary, solvent removable compound for corrosion protection during storage of equipment (e.g. gear boxes) where miscibility with lubricants and nominal heat resistance is required.
Class 6	Temporary, penetrating, solvent removable compound for corrosion protection of fasteners and crevices.
Class 7	Temporary, water displacing, solvent removable compound for corrosion protection during outdoor or indoor storage.
Class 8	Temporary, solvent removable compound for corrosion protection of aluminum surfaces during outdoor or indoor storage.
Class 9	Temporary, low-pressure steam removable compound for corrosion protection during outdoor or indoor storage.
Class 10	Persistent, preservative wax, solvent removable compound for corrosion protection during outdoor or indoor storage.
Class 11	Temporary, hard asphaltic film, mechanically removable (e.g. peel, scrape, etc.) compound for corrosion protection during outdoor or indoor storage.

1.2.3 Grades. The grades of the corrosion preventive compound are the following:

Grade A	For brush application.
Grade B	For dip application.
Grade C	For fill and drain application.
Grade D	For spray application using spray equipment.
Grade E	For spray application using a self-pressurized container.

Created new Types of products to include lower VOC levels (e.g., <12 g/l)

Modified Classes to include specific applications (e.g., gear boxes, fasteners, etc.)

Revised Grades to define the application methods (e.g., self-pressurized container)

Modified Classes to cite MIL-PRF-16173E Grades that required specific preservative removal methods (e.g., solvent removable)

Modified Classes to include new, "Persistent" preservatives

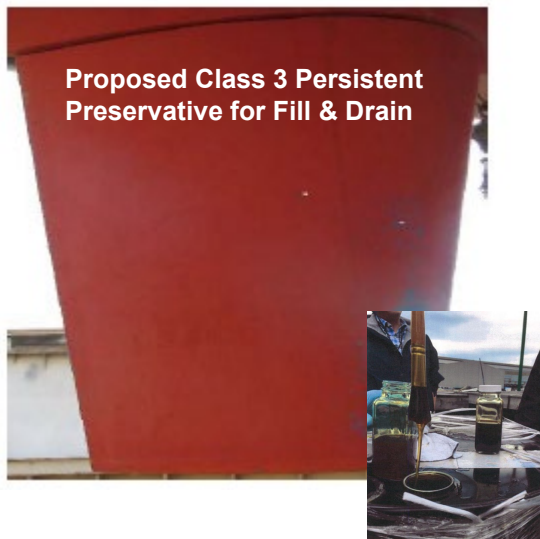
MIL-PRF-16173E cites 14 archaic Federal specifications while current MIL-PRF-16173F cites only one Federal specification

Updated MIL-PRF-16173 Specification Include Multiple New Requirements for Preservatives

STATUS: NAVSEA has created a draft MIL-PRF-16173F that includes new Type, Class, and Grade requirements.

NAVSEA will maintain [Qualified Product Database](#) listing for preservative products.

- NAVSEA completes technical development and final editorial review - October 2021 to March 2023
- MIL-PRF-16173F to be released to the industry and public for informal for comment - April 2023
- NAVSEA adjudicates comments and releases to Specification Review Board - June 2023
- NAVSEA adjudicates SRB comments - August 2023
- MIL-PRF-16173 to be published in September 2023



[NAVSEA currently soliciting comments on draft MIL-PRF-16173F in Navy technical community.](#)

Updated MIL-PRF-16173 Specification

Opportunity for Application of future, Class 10 “Persistent” Preservatives

STATUS: NAVSEA has created a draft MIL-PRF-16173F that includes new Type, Class, and Grade requirement that includes “Class 10, Persistent” preservatives intended as supplement for coatings in spaces where **coating installation and maintenance are impractical** and corrosion is an issue.

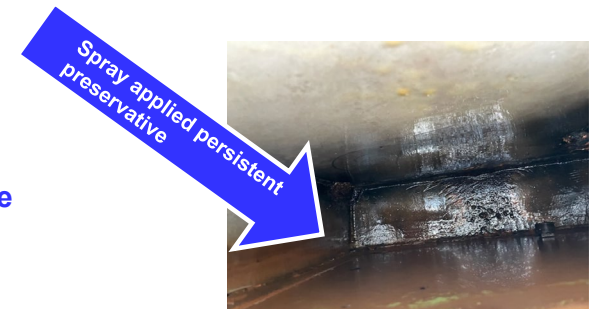
Key technical considerations for use of “persistent” preservatives:

- Space or void where coatings are impractical to install that are analogous to interior of rudder or bilge keel, but more accessible to the environment or weather.
- Cosmetic appearance of waxy, oily coating will not be an issue. Translucent, amber preservative attracts dirt or dust.
- Thick, waxy material will not interfere with mechanical equipment operation.
- Runoff or release of preservative to the environment will not be significant.



TECHNICAL COMMUNITY INPUT NEEDED ON KEY ISSUES:

1. Define OQE for acceptable, and unacceptable, preservative application process.
2. Preservative runoff and cleaning requirements for ship's force.
3. Need to define applicable spaces and areas for preservatives, possible new SURFMEPP [Design Memorandum](#).



[NAVSEA currently soliciting comments on draft MIL-PRF-16173F from NSRP with ideas about applications for preservatives.](#)

New MIL-PRF-32704 Specification Consolidates Requirements for Solid Decking

ISSUE: 20 Dec 2022, published MIL-PRF-32704, Amendment 1, “DECK COVERING MATERIALS, TILE AND SHEET FLOORING” that includes five Types of solid decking, including the Type XI “Peel and stick” nonskid from MIL-PRF-24667C.

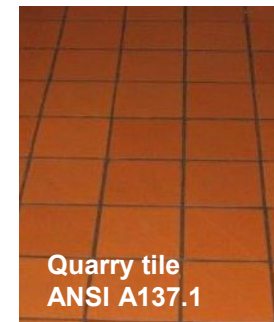
- Associated cancellation notice for MIL-PRF-32170 on halogen-free deck tile.
- Expands requirements for peel & stick nonskid to include new, “Application C” wear resistant materials.



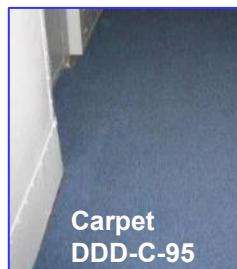
Type Ia – Solid vinyl
Type Ib – Vinyl composition



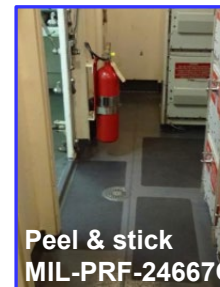
Type II - Wear-resistant,
halogen-free



Type Unglazed porcelain,
Type IV – Unglazed, quarry



Type V – Wool carpet



Type VI, Peel and stick nonskid,
(self-adhering slip-resistant treads)

New MIL-PRF-32704, Amendment 1 includes peel & stick nonskid and other solid decking systems.

New MIL-PRF-32704 Specification Consolidates Requirements for Solid Decking

MIL-PRF-32704 w/AMENDMENT 1

**PERFORMANCE SPECIFICATION
DECK COVERING MATERIALS, TILE AND SHEET FLOORING**

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers tile and sheet flooring materials for shipboard use as deck covering systems.

1.2 Classification. Tile and sheet flooring materials are of the following types, classes, grades, and compositions as specified (see 6.2).

1.2.1 Types.

- a. **Type Ia – Solid vinyl floor tile**
- b. **Type Ib – Vinyl composition tile**
- c. **Type II – Wear-resistant, halogen-free floor tile**
- d. **Type III – Unglazed, porcelain ceramic tile**
- e. **Type IV – Unglazed, quarry ceramic tile**
- f. **Type V – Wool carpet**
- g. **Type VI – Peel and stick nonskid (self-adhering slip-resistant treads)**

1.2.2 Classes.

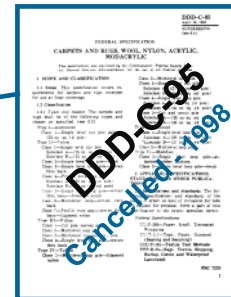
- a. **Class 1 – For general shipboard use**
- b. **Class 2 – For submarine use**

1.2.3 Compositions
~

1.2.4 Applications.

- a. **For interior use**
- b. **For exterior use**
- c. **For wear resistant use**

1.2.5 Grades
~



**Inactivated
24 Apr 2022**

**One manufacturer
extending qualification
by submitting:**

- QPL Request
- Formula validation
- Conformance data

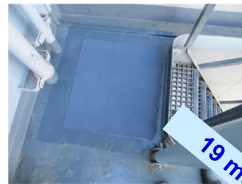
**Published
MIL-PRF-24667D
16 Feb 2021**

**One qualified
product**

New MIL-PRF-32704 Specification Requirements for Peel & Stick Nonskid

ISSUE: MIL-PRF-32704, Amendment 1 includes requirements for peel & stick nonskid from MIL-PRF-24667C as follows:

- **Type VI** defines peel & stick nonskid requirements: “. . . fabric, film, metal, or composite backing having a uniform closed coat of abrasive particles or a uniform coat of thermal spray nonskid on the front surface and a pressure-sensitive adhesive . . .”
 - **Static coefficient of friction by ASTM D2047 (James machine) not less than:**
 - 0.90 for dry**
 - 0.85 for wet**
 - **Strip strength, peel strength, chemical resistance, corrosion resistance requirements.**
- **Application C** defines wear resistant use peel & stick nonskid requirement by ASTM D4060 (Taber Abraser), CS 17 wheel, 1-kilogram (2.2-pound) load for 1,000 cycles as not greater than:
 - 0.1 gram (0.004 ounce).**



Type VI, Class 1,
Composition C,
Application C

19 months

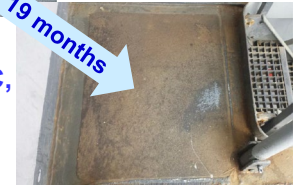


4X worn area



Archaic,
MIL-PRF- 24667C,
Type XI

19 months



[MIL-PRF-32704, Amendment 1 includes MIL-PRF-24667C peel & stick requirements and new requirements to support Fleet customer demand.](#)

Potential New Standard Item 009-26

Requirements for Peel & Stick Nonskid

ISSUE: Senior leadership interest in reducing ship's force topside workload on decking and coatings and noted rapid wear of peel & stick nonskid at tops and bottoms of ladders.

- **Current, FY-24 Standard Item 009-26, "Deck Covering; accomplish" cites application of exterior coatings and peel & stick nonskid in Attachment G as:**
"MIL-PRF-24667, Type XI nonskid must be installed in locations listed in Tables One and 2 and listed within 2.3. Exterior applications for MIL-PRF-24667, Type XI nonskid are located in Table 2 of 009-32 of 2.1."
- **Current, FY-24, Standard Item 009-32, "Cleaning and Painting Requirement; accomplish" includes requirements in Section 3.1 for peel & stick nonskid to be used on masts, antenna platforms, yardarms and superstructure walking surfaces, ladders and platforms leading to the flight deck, missile platforms, and antenna platforms on LHA/LHD Class.**

PROPOSED REQUIREMENT: Add new paragraph to Section 3.1 to require Application C peel & stick nonskid at the top and bottoms of ladders as follows:

3.1.27.6 Peel and stick nonskid (MIL-PRF-32704, Amendment 1, Type VI, Application C) must be installed the top and bottom of ladders.

KEY ISSUE: Proposed new requirement based on improved service life and reduced sailor workload.

Soliciting comments from technical community.



[Seeking NSRP support to determine if the MIL-PRF-24667C, Application C, peel & stick responds to leadership interest in reducing ship's force topside maintenance workload.](#)

Conclusions

- NAVSEA goal is to support Fleet customer by updating coating specifications and enhancing coating application processes.
- NAVSEA publishes new coating material and application requirements and suggests **establishing an NSRP tracking or informational forum to track implementation progress.**
- NAVSEA published MIL-PRF-32407 to consolidate requirements for solid decking and flooring.
- NAVSEA published MIL-PRF-24596C to better align colors with Fleet customer needs.
- NAVSEA goal to work with NSRP and waterfront community to address evolving regulatory issues.



QUESTIONS?