



DEPARTMENT OF THE NAVY

NAVAL SEA SYSTEMS COMMAND
1333 ISAAC HULL AVE SE
WASHINGTON NAVY YARD DC 20376-0001

IN REPLY TO

4123
Ser 05Q/2006-263
17 October 2006

ITW American Safety Technologies
Attn: David Robinson
565 Eagle Rock Ave.
Roseland, NJ 07068

Dear Mr. Robinson:

Subj: APPROVAL OF ITW AMERICAN SAFETY TECHNOLOGIES' **MS-190**
AND **MS-275** COLOR TOPPING - MIL-PRF-24667B

Based on successful completion of qualification testing on your **MS-190** and **MS-275** color toppings in accordance with MIL-PRF-24667B, qualification is hereby granted to those color toppings for use with your currently qualified non-skid coating systems. QPL-24667-33 will be issued to reflect the addition of the **MS-190** and **MS-275** color toppings. QPL-24667-33 will now show **MS-180, MS-190, MS-200 and MS-275** color toppings approved for use with your currently qualified non-skid coating systems. Qualification is subject to the conditions printed on the reverse side of this page.

Based on Navy Environmental Health Center's (NEHC) administrative health hazard assessment (AHHA), enclosure (1) your **MS-190** and **MS-275** color toppings, can be safely used respecting limitations outlined in enclosure (1) of the NEHC letter. In addition, the safety precautions outlined in your Material Safety Data Sheet (MSDS) for each product must be strictly followed and diligently applied.

CONDITIONS UNDER WHICH QUALIFICATION IS GRANTED

The listing of your product on the Qualified Products List does not guarantee acceptance of the product in any future purchase nor does it constitute a waiver of the requirements of the specification or the provisions of any contract.

Any use of the listing for publicity, advertising, or sales will not state or imply that the product or the process is the only one of that type so qualified, or that the government in any way recommends or endorses the manufacturer's product in preference to other qualified products. (Violation cause for removal from the list.)

Listing applies only to products produced in, or process used in, the plant specified in the letter of notification. The listing is effective at 8:00 a.m. (Local time of the qualifying activity) as of the date of the letter of notification.

Listing applies to amendments or revisions of the specification, unless otherwise notified.

Listing applies only to products or processes identical to those qualified (or to products defined in the family of products granted qualification coverage). The qualifying activity must be advised in advance of any intended change to a qualified product or process and must be provided with complete description of the change. Failure to notify the qualifying activity of any change is cause for removal from the listing regardless of the extent of the change.

4123
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17 October 2006

If you have any questions regarding this letter,
please contact the undersigned at (202)781-3734.

Sincerely,



CHERYL A. TURNER
Command Standards
Executive Office

Encl: (1) NEHC Ltr
IH17/001088/10/16/06

Copy to:
DCMA, Springfield



DEPARTMENT OF THE NAVY
NAVY ENVIRONMENTAL HEALTH CENTER
620 JOHN PAUL JONES CIRCLE SUITE 1100
PORTSMOUTH VA 23708-2103

6261
Ser IH17/ 001088
16 OCT 2006

From: Commanding Officer, Navy Environmental Health Center
To: Commander, Naval Sea Systems Command, (SEA 05Q, Ms. C. Turner),
1333 Isaac Hull Avenue SE, Stop 5160 Washington Navy Yard, DC 20376-5160

Subj: TOXICOLOGIC SAFETY EVALUATION: EPOXY-BASED AND POLYURETHANE
COLOR TOPPING COATINGS FOR A NON-SKID SYSTEM

Ref: (a) NAVSEASYSCOM ltr 4123 Ser 05Q/2006-134 of 18 May 06
(b) NAVENVIRHTHCENINST 6270.8 of 3 Oct 2003
(c) MIL-PRF-24667B(SH) of 3 Jun 2005

Encl: (1) Toxicologic Safety Evaluation and Precautions for an Epoxy-based Coating:
MS-275
(2) Toxicologic Safety Evaluation and Precautions for a Polyurethane Color Topping
Coating: MS-190

1. Reference (a) requested a toxicologic safety evaluation (enclosures (1) and (2)) for epoxy-based and polyurethane color topping coatings constituting a non-skid system. The coatings are described in the accompanying table. This non-skid system will be used on the decks of aircraft carriers and air-capable amphibious aviation ships. Its non-skid nature provides protection from unscheduled movements involving equipment or those due to simple falls.

Table of Coatings for Non-skid System

Product	Chemical Class
MS-275	Amine-based Epoxy Resin
MS-190	Isocyanate-based Polyurethane

2. Reference (b) outlines the procedure for this evaluation while reference (c) summarizes the Department of Defense performance specification required for these coatings. The information in this letter can be considered anticipatory for later phases of industrial hygiene recognition, evaluation and control. The latter three phases are outlined for follow-up by the industrial hygienist.

3. The primary health concerns of freshly applied coatings are occupational asthma, pulmonary sensitization, dermal sensitization, and eye irritation and the more remote hazards attending splashes (ocular toxicity) and spills (dermal toxicity). Adherence to the span of controls can prevent injury from uncured coatings of these types. Their use can be considered safe given limitations of enclosures (1) and (2). If additional information is required regarding hazards

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surrounding their use, please call Mr. Harold Zedd, in the Acquisition Technical Support
Department, Industrial Hygiene Directorate, by telephone at DSN: 377-0726 or commercial
757-953-0726. Mr. Zedd can be reached by fax at 757 953-0689 or by e-mail at
harold.zedd@med.navy.mil.



J.T. Pierce
By direction

Copy to:
BUMED (M4B4)

Toxicologic Safety Evaluation and Precautions for an Epoxy-based Coating: MS-275

- Ref: (a) MIL-PRF-24667B(SH) of 3 Jun 2005
(b) Searches from MEDLINE Plus®, National Library of Medicine, Bethesda, MD
(11 October 2006)
(c) Klaassen, C.D., ed. Casarett and Doull's Toxicology: The Basic Science of Poisons.
6th ed. New York: McGraw-Hill, 2001
(d) Industrial Hygiene Sampling Guide for Consolidated Industrial Hygiene Laboratories
(21 April 2000)
(e) Rosenau MJ, Last JM. Public Health and Preventive Medicine, 16th ed. New York:
McGraw-Hill Professional, 2004
(f) OPNAVINST 5100.23G (30 December 2005)
(g) OPNAVINST 5100.19D CH-1 (30 August 2001)
(h) 29 CFR 1910.1200. Hazard Communication Standard (30 December 1992)
(i) ANSI Z358.1. Standard for Emergency Eyewash and Shower Equipment (2004)

1. Scope. This paint system is an epoxy-based system that will be applied as a non-skid coating (reference (a)) to decks of aircraft carriers and air-capable amphibious aviation ships. The focus of this enclosure is directed at coating application as opposed to later stages of use.

2. Evidence-based Literature Review. The toxicologic literature has been reviewed to assess possible hazards (reference (b)). Searches were directed at glycol ethers, amine and epoxy resin chemistry revealing more than 500 matches. Coating application appears to represent dermal and sensitization hazards. However, once dried it poses little or no hazard. Thus, this evaluation focuses on the toxic properties of various curing agents and solvents such as glycol ethers.

3. Toxicity. The framework used in the evaluation of toxicologic harm includes three elements, the chemical agent, an exposure and a human receptor. Thus, the chemical agent is defined by any toxic effects it is capable of producing. Toxic or hazardous outcomes result from the interaction of a chemical with a human receptor or target in the occurrence of an exposure. The two most important factors defining exposure are its level and duration (dose and time). A particular human target is defined by its susceptibility to the toxic effects that such a chemical agent may produce. Effects occur only when all three elements (agent, exposure and target) align in a manner permitting toxicity. Polyamines such as those contained in these compounds can act as sensitizers (reference (c)), causing allergy in individuals. The limiting toxicities of a glycol-based ether include contact dermatitis and skin irritation. It may also affect the central nervous system during high level exposures (1000 parts per million), resulting in cognitive effects such as disorientation and confusion (reference (c)).

4. Industrial Hygiene Anticipation and Recognition. Toxicologic findings in paragraph (3) support the use of personal protective equipment (respirators, eye protection and protective clothing and impermeable gloves) during coating application to assist in limiting airborne concentrations and other exposures. When dry this coating offers no additional toxicity concerns. Preventing eye and skin contact is also important.
5. Industrial Hygiene - Evaluation. Air monitoring for aliphatic amines (polyamines) and glycol ethers is warranted. General sampling requirements are outlined in reference (d).
6. Industrial Hygiene - Stages of Prevention. Effective control is best viewed through integration of primary, secondary and tertiary efforts (reference (e)). Primary steps such as training can preclude application-associated exposures, while secondary steps offer further concentration reduction. Tertiary prevention entails decontamination of eye and skin surfaces. These precautions are applicable to painting (consistent with paragraph (2)). Once painted, no additional requirements apply.
 - a. Primary Precautions. Fluid labeling and training in their use, including spill cleanup are the first steps in primary prevention. Training should include information about toxicity and comply with the requirements of (f) - (h). These references require discussion of health hazard recognition and the limitations of personal protective devices.
 - b. Secondary Precautions. Individuals spraying the coating system should use extensive respiratory protection (a full-face continuous flow airline respirator). When brushing or roller painting, organic vapor respirator and chemical goggles are required. Workers should also wear full body chemical-resistant coveralls (Tychem® SL or equivalent) and viton gloves for skin protection. Personnel in adjacent spaces should exercise care when coatings are being applied.
 - c. Tertiary Precautions. An ocular injury always requires pre-hospital irrigation and may require an ophthalmology consult. Appropriate ANSI criteria for suitable eyewashes is noted in reference (i). A splash incident with fluid covering significant body surface area may necessitate deluge under a safety shower. Training should emphasize the seriousness of subcutaneous-type injuries involving aerosol paint guns.
7. Emergency Contacts. The Regional Poison Control Center (1-800-222-1222) can be contacted regarding acute or chronic exposures should they occur.

**Toxicologic Safety Evaluation and Precautions for a
Polyurethane Color Topping Coating: MS-190**

- Ref: (a) MIL-PRF-24667B(SH) of 3 Jun 2005
(b) Searches from MEDLINE Plus®, National Library of Medicine, Bethesda, MD (10 Oct 2006)
(c) Klaassen, C.D., ed. Casarett and Doull's Toxicology: The Basic Science of Poisons. 6th ed. New York: McGraw-Hill, 2001
(d) Industrial Hygiene Sampling Guide for Consolidated Industrial Hygiene Laboratories (21 April 2000)
(e) Rosenau MJ, Last JM. Public Health and Preventive Medicine, 16th ed. New York: McGraw-Hill Professional, 2004
(f) OPNAVINST 5100.19D CH-1 (30 August 2001)
(g) OPNAVINST 5100.23G (30 December 2005)
(h) 29 CFR 1910.1200. Hazard Communication Standard (30 December 1992)
(i) ANSI Z358.1. Standard for Emergency Eyewash and Shower Equipment (2004)

1. Scope. The focus of this enclosure is directed at the application of this product as opposed to later use stages. This evaluation is based on a consideration of a polyurethane-based paint that serves as a non-skid color coating. Occupational asthma concerns are noted for polyurethane-based paints but can be minimized or eliminated using the guidance in paragraph (7).

2. Evidence-based Review of Scientific Literature. The toxicologic literature has been used to assess possible hazards (reference (b)). Searches were directed at polyurethane paints. The literature indicated the significance of uncontrolled exposures with this paint system's formulation. Once dried, the polyurethane paint does pose a toxicologic hazard. The four aspects of the compound's emissions capable of creating exposures are those associated with formulation (high risk), distribution and warehousing (low risk), application (intermediate risk) and living in the environment (no risk).

3. Toxicity. The framework used in the evaluation of toxicologic harm includes three elements, the chemical agent, an exposure and a human receptor. Thus, the chemical agent is defined by the toxic effects it is capable of producing. Toxic or hazardous outcomes result from the interaction of a chemical with a human receptor or target in the occurrence of an exposure. The two most important factors defining exposure are its level and duration (dose and time). A particular human target is defined by its susceptibility to the toxic effects that such a chemical may produce. Effects occur only when all three elements (agent, exposure and target) align in a manner permitting toxicity. Dried polyurethane coatings do not ordinarily pose a toxic hazard. However, exposure to polyurethane compounds during application phases (wet state) are associated with adverse health effects (reference (c)) such as occupational asthma and eye and dermal irritation.

4. Industrial Hygiene - Anticipation and Recognition. Irritation and heightened dermal absorption are likely end points if this product were used in an uncontrolled manner. Toxicologic findings in paragraph (3) support the use of personal protective equipment (respirators, eye protection and protective clothing and impermeable gloves), among other control options. Late in the life cycle, non-skid coatings are typically removed using specialized equipment. Workers, engaged in removal should be specifically out fitted with protective equipment, such as respirators, gloves and protective eye ware. The scope of this toxicologic safety evaluation is limited to application concerns.

5. Industrial Hygiene - Evaluation. Sampling and analytical protocols are discussed in reference (d).

6. Industrial Hygiene - Stages of Prevention. Effective control is best viewed through integration of primary, secondary and tertiary efforts (reference (e)). Primary steps such as training can preclude application-associated exposures, while secondary steps offer further concentration reduction. Tertiary prevention entails decontamination of eye and skin surfaces. These precautions are applicable to painting (consistent with paragraph (2)). Once painted, no additional requirements apply.

a. Primary Precautions. Fluid labeling and training in their use, including spill cleanup are the first steps in primary prevention. Training should include information about toxicity and comply with the requirements of (f) - (h). These references require discussion of health hazard recognition and the limitations of personal protective devices.

b. Secondary Precautions. Individuals spraying the coating system should use extensive respiratory protection (a full-face continuous flow airline respirator). When brushing or roller painting, organic vapor respirator and chemical goggles are required. Workers should also wear full body chemical-resistant coveralls (Tychem® SL or equivalent) and viton gloves for skin protection. Personnel in adjacent spaces should exercise care when coatings are being applied.

c. Tertiary Precautions. An ocular injury always requires pre-hospital irrigation and may require an ophthalmology consult. Appropriate ANSI criteria for suitable eyewashes is noted in reference (i). A splash incident with fluid covering significant body surface area may necessitate deluge under a safety shower. Training should emphasize the seriousness of subcutaneous-type injuries involving aerosol paint guns.

7. Emergency Contacts. This product is not intended for personal cleaning purposes. The Regional Poison Control Center (1-800-222-1222) can be contacted regarding acute or chronic exposures should they occur.