

PPG AMERCOAT

Protective & Marine Coatings

Mari-Tech 2010

Marine Technologies-Changing Trends

***IMO Compliant & Environmentally
Friendly Coatings for Ballast Tanks***

*Gilles Masse- Représentant Technique
Amercoat Canada*

NEW IMO PSPC *Implementation Dates*

PSPC implementation as per SOLAS amendment-IMO resolution MSC. (216) 82

- Applicable to ships of not less than 500 GT*
- * For which the building contract is placed on or after July 1st, 2008*
- * In absence of a building contract, the keels of which are laid on January 1st, 2009*
- * The delivery is on or after July 1st, 2012*



IMO PSPC Definition

Performance Standards for Protective Coatings provides technical requirements for protective coatings in dedicated seawater ballast tanks of all types of ships of not less than 500 gross tonnage and double side skin spaces arranged in bulk carriers of 150 m in length.

This standard is based on specification and requirements which intend to provide a target useful coating life of 15 years, over which the coating system is intended to remain in “Good” condition.

WHAT ABOUT EXISTING VESSELS?

Well maintained ballast tanks and double bottoms are essential in the overall structural integrity of a vessel and long term neglect can result in disaster.



Dry-docking periods are typically the best time to perform tank blasting and coating operations but not without some sacrifice.

- ♦ **Extended dry-docking periods with vessel being out of service.**
- ♦ **High costs associated with blasting and painting operations while in port.**
- ♦ **Interference to and from other trades.**





Environmental concerns associated with abrasive grit blasting have driven the industry to develop alternate methods of surface preparation, the most effective being SSPC-SP12 UHP Water Jetting.





Owners have also employed contractors who specialize in tank coating refurbishment while underway to avoid excessive costs associated with extended dry-docking periods.

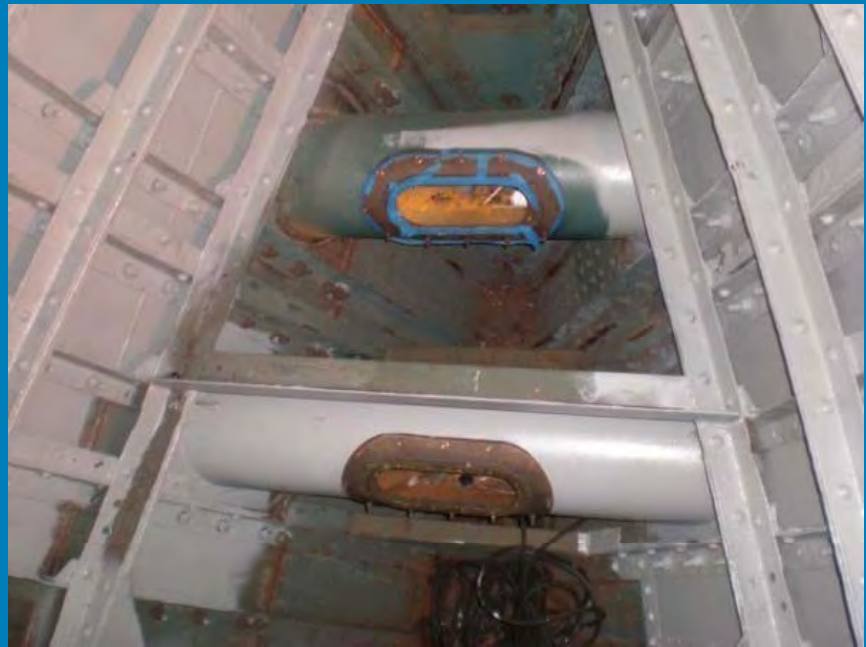


These and other factors have necessitated the development of high performance coating systems better suited to meet the demands of today's environmental and economical concerns.



THE SOLUTION WAS ALREADY IN OUR PRODUCT LINE

We were the first to have commercialized Epoxy Phenalkamines and this unique type of coating quickly became an industry favorite. Based on its 25 year history & known for its tolerance to cold weather application without the use of accelerators, its tolerance of poorly prepared surfaces & presence of some moisture on surface.



Next Generation

Today's priorities have created a requirement for improved technology:

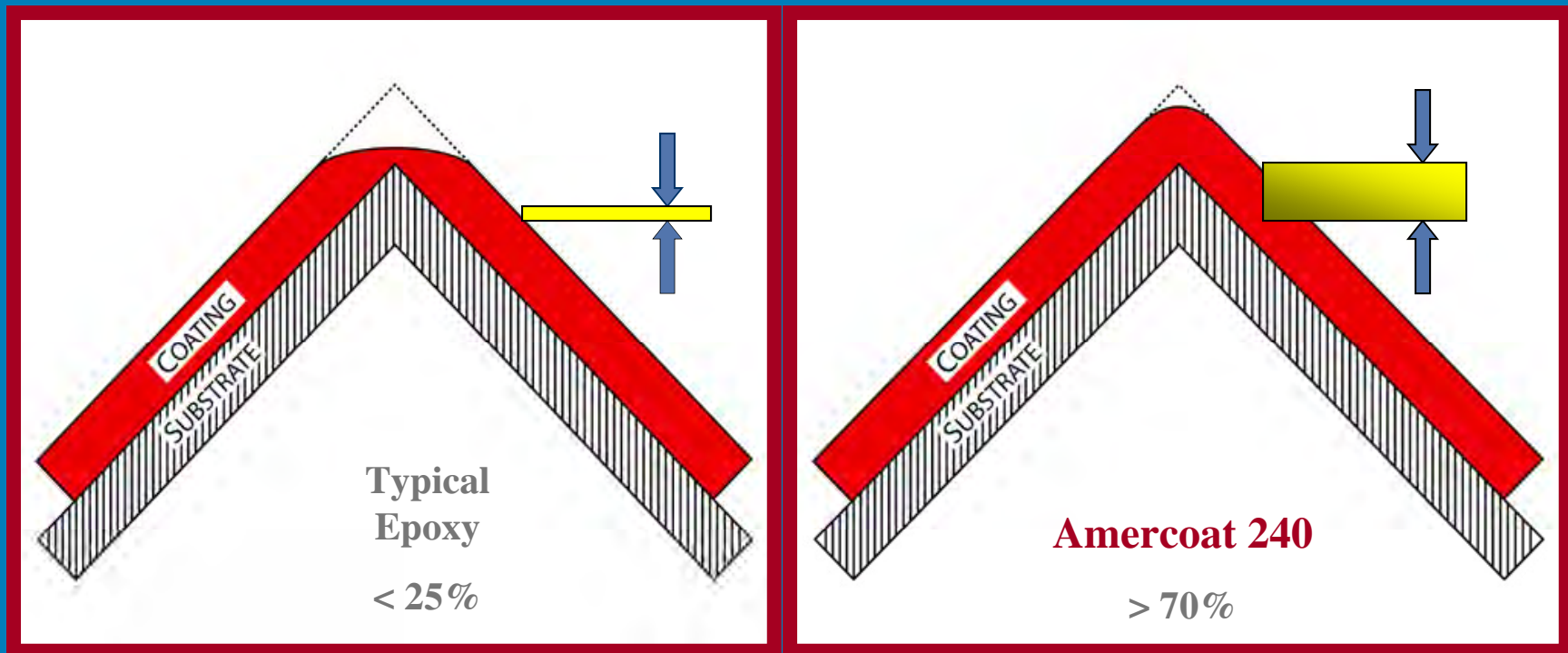
- 💧 **Lower VOC**
- 💧 **Greater coverage, less material required**
- 💧 **Wider use throughout all areas of vessels**
- 💧 **User friendly, surface tolerant, low application costs**
- 💧 **Extended performance (especially in tanks)**

Amercoat 240

Universal Epoxy

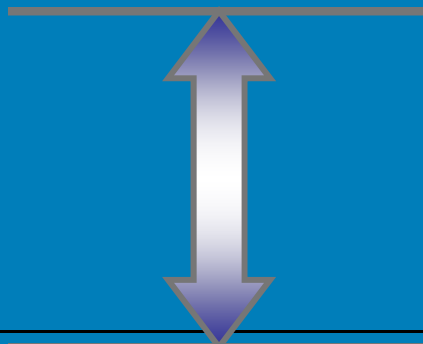
- **VOC < 150 gms/ltr; Extremely low HAPs / VOHaps**
- **High solids, greater coverage**
- **Suitable for fuel tanks**
- **Improved rheology and handling characteristics**
- **Greater edge coverage, extended service life in tanks**

Edge Coverage



High Film Build

**Typical
Epoxy
Coatings**



Microns		Mils
375		15
250		10
125		5
0		0

Amercoat 240



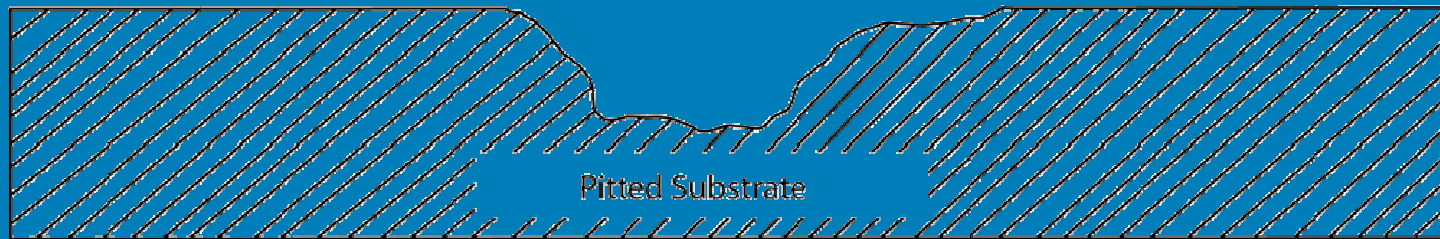
**Single coat
applications up to
12 mils / 300 microns**



Ballast Tank Linings

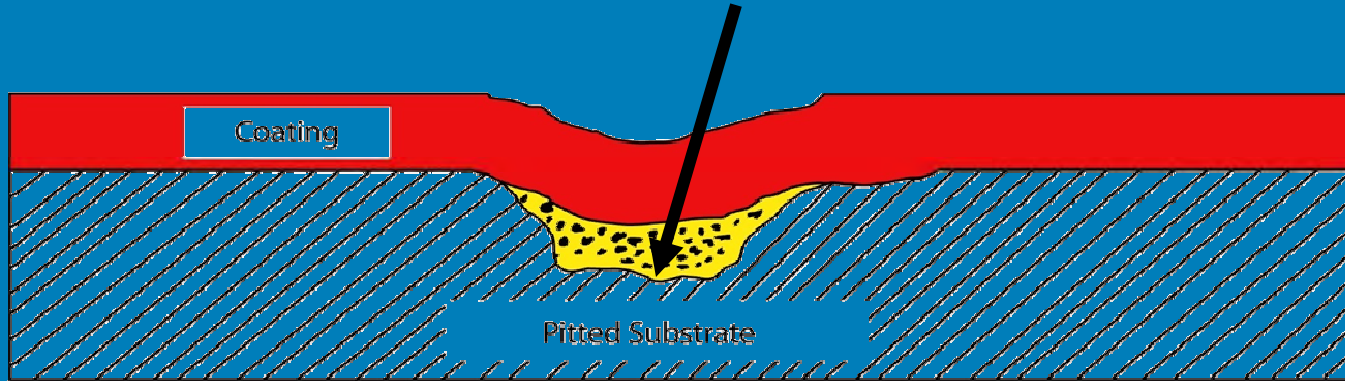
Amercoat

Substrate Wetting



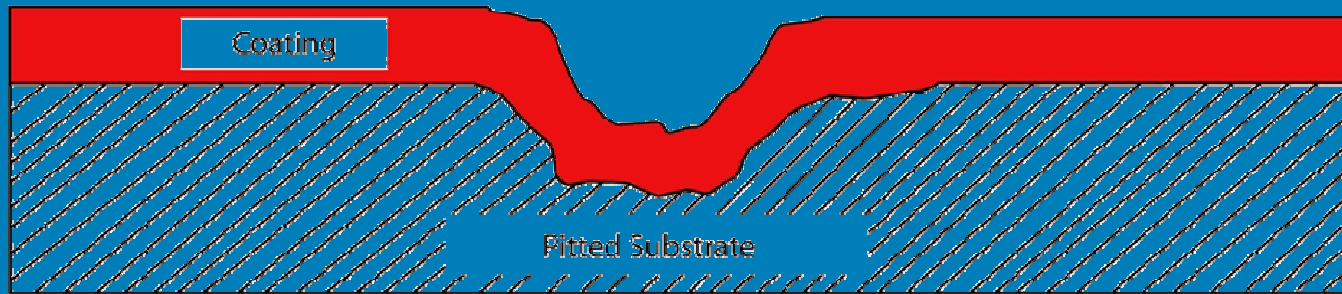
Pitted substrates are common in repair work and coatings with good wetting properties are necessary to help arrest corrosion and for the proper protection of the surface being coated.

Potential Corrosion Cell



Many of today's 100% solids high performance coatings and general purpose epoxies do not exhibit good wetting characteristics and have a tendency to “bridge” pits, leaving a void below the paint film where moisture can accumulate resulting in continuing corrosion. Although a “stripe coat” in way of pitted areas can help in this problem, it is best done prior to the application of the first full coat to be effective, which is not practical when large areas are being coated.

Substrate Wetting



Coatings that are formulated with good wetting characteristics as part of the design rheology, such as **Amercoat 240**, flow into pits and fill that void. “Stripe Coats” can then be applied following full coats resulting in better corrosion control in these problem areas.

Exterior Application

Resistance to Weathering and Improved Color Stability Combined with Excellent Durability

High Abrasion Resistance



Low Permeability



AMERCOAT 240 Universal Epoxy

RAISED THE BAR FOR THE INDUSTRY

A comprehensive testing project to study the performance of Amercoat 240 and other proprietary products when used in conjunction with SSPC-SP12 UHP Water Jetting surface preparation and application of coatings over flash rusted substrates was started.

MARINTEK



SINTEF

Repeated testing and classification of ballast tank coatings by the Norwegian Marine Technology Research Institute has consistently resulted in Amercoat 240 receiving the highest possible rating in all categories.

Pre-rusted panels, power tool clean St. 3

B-1

Shop primed panels, power tool clean St. 3

B-1

Performance of Amercoat 240 applied over pre-rusted panels UHP Water Jet blasted WJ2L.

Cyclic Corrosion – ASTM D5498

	Hours		
	1000	3000	4000
ASTM D714 (blister)	10	10	10
ASTM D610 (rust)	10	10	10
ASTM D1654 (rust creep from scribe)	10	8	6

*Performance of Amercoat 240
applied over pre-rusted panels
UHP Water Jet blasted WJ2L.*

**Ambient DI Water Immersion
Ameron Test Method 2010**

15 Months

ASTM D714 (blister) 10

ASTM D610 (rust) 10

Performance of Amercoat 240 applied over pre-rusted panels UHP Water Jet blasted WJ2L.

Elcometer Adhesion Test Ameron Test Method 0202

<u>Exposure</u>	<u>Fail Load</u>	<u>Type of Failure</u>
3000 hrs. Salt Fog Exposure	350 PSI	85% cohesive 15% adhesive
4000 hrs. Cyclic Corrosion	400 PSI	100% cohesive
15 mths. DI Water Immersion	400 PSI	80% cohesive 20% adhesive

Suitable for the following Cargoes;

- Crude Oil
- Sour Crude Oil
- Drilling Mud
- Aviation Fuel
- 50% Sodium Hydroxide
- Fresh Water
- Fuel Oils
- Bunker Oil
- Brine
- Dry Bulk Commodities
- Seawater

QUALIFICATIONS

- *Classified by Marintek, as class B1 for use in ballast water tanks*
- *Tested by NOHC as being suitable as a lining for grain storage containers.*
- *Lloyd's Register - Provisionally recognized as acceptable for saltwater ballast tanks and double bottom tanks; Certificate Number MATS/3404/1*
- *NAVSEA -MIL-PRF23236(C) Class 7, Type VII, Grade C*
- *NAVSEA -MIL-PRF-24647*
- *Certified by Det Norske Veritas (DNV) to comply with IMO Resolution MSC.215(82) Performance Standard for Protective Coatings (PSPC) for seawater ballast tanks.*

CASE HISTORY/Ballast Tank

Condition of coal tar epoxy after 25years

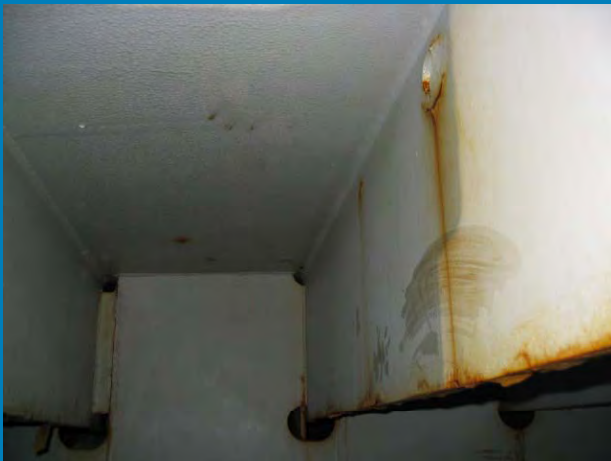


After Surface Preparation HP WJ >10,000psi



Condition After 3 Years

12.0 mils (250μ) in 2 coats



Amercoat 240

Summary

- **VOC < 150 gms/ltr. Virtually HAPs free**
- **High solids, greater coverage.**
- **Suitable for ballast, fuel and water tanks plus all exterior areas with improved weatherability.**
- **Improved rheology and handling characteristics, low temperature cure without need for “false cure” accelerators, brush and roller application possible.**
- **Excellent wetting of substrate, > 70% edge retention and superior water resistance.**
- **Tolerant of alternate methods of surface preparation.**
- **Well suited for refurbishment of deteriorated substrates.**

AMERCOAT 240

UNIVERSAL EPOXY COATING



Équipes **Amercoat** *Team*

Darryl Hodder **Newfoundland**

Jacques Cossette **Québec**

Gilles Masse **Montréal**

Dennis O'Reilly **Ontario**

Don MacKinnon **Nova Scotia**

Dean Hopkins **New Brunswick**

Robbin Martinson **Vancouver**

*Raising the bar
for performance!*



Amercoat

MERCI THANK YOU!
Questions?

Visitez nous/Visit us
AMERCOAT CANADA
Kiosque/Booth 65