

Onboard Maintenance / Repair Guide



CHUGOKU MARINE PAINTS, LTD.
Technology Planning Div. Technical & Production Headquarter

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Key Factors to Consider for Onboard Maintenance

Key Factors

- 1: Surface Preparation (Most Important)
- 2: Opening → Stirring → Mixing (for 2 comp type)
of the Paint
- 3: Paint Application

Key Factors to Consider for Onboard Maintenance

1: Surface Preparation

- Removal of surface contaminants (salt, oil and grease)

Salt

→ Water wash using deck brushes etc.



Oil / Grease

→ Degrease using rags soaked in thinner.



Key Factors to Consider for Onboard Maintenance

1: Surface Preparation

■ Removal of Rust



← Rust should be removed using Chipping hammers and/or power tools

→ Loose old paint should be removed using scrapers, followed by power tool cleaning.

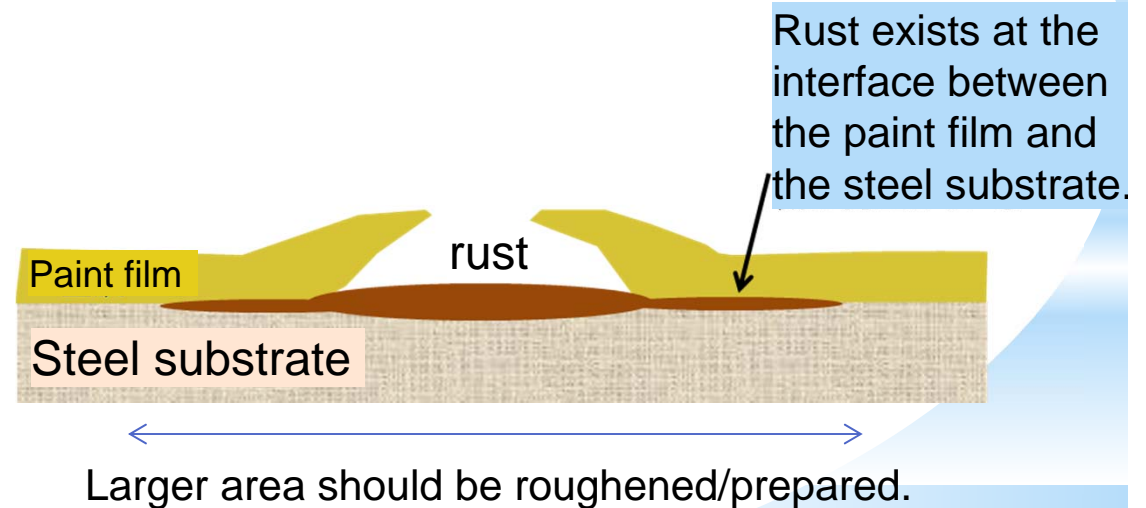
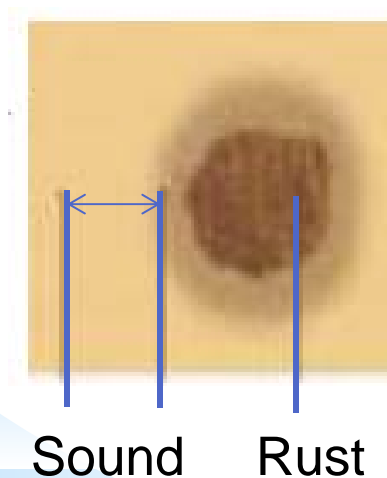


Key Factors to Consider for Onboard Maintenance

1: Surface Preparation

■ Before Touch Up applications

Remove rust but also roughen the surrounding surface so that the Touch Up paint will adhere.



Key Factors to Consider for Onboard Maintenance

1: Surface Preparation

■ Accommodation Space

Surfaces of the areas with higher risk of corrosion such as access to the deck, accommodation ladders etc. should be prepared carefully.



Key Factors to Consider for Onboard Maintenance

1: Surface Preparation

■ Inside the Tank

Extra attention should be paid because this is the area with bad air flow, risky working environment and insufficient lighting.



Key Factors to Consider for Onboard Maintenance

1: Surface Preparation



- General tools for surface preparation (Personal Protective Equipment including safety goggles is required.)

Disc grinder



Rotary wire brush



Needle Scaler



Hand wire brush



Chipping Hammer



Scraper

Key Factors to Consider for



Onboard Maintenance

2: Opening, Stirring, and Mixing (for 2 comp type) of the Paint

1) **Personal protective equipment** must be worn before opening the paint.



Key Factors to Consider for Onboard Maintenance



2: Opening, Stirring, and Mixing (for 2 comp type) of the Paint

2) Carefully check the **product name and color** before opening.



3) **Pre-mix the base component** to homogenize the container because heavy pigments tend to settle at the bottom. (Power agitate is preferable)



Key Factors to Consider for Onboard Maintenance



2: Opening, Stirring, and Mixing (for 2 comp type) of the Paint

4) Add the curing agent to the base component at specified ratio, by making sure not to leave any material in the container, **agitate until the contents are thoroughly mixed.**



5) Add the **recommended thinner** to achieve required viscosity and stir thoroughly.



Key Factors to Consider for Onboard Maintenance



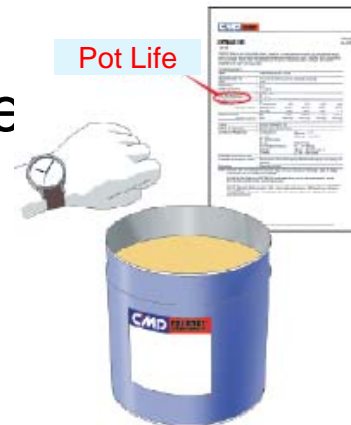
2: Opening, Stirring, and Mixing (for 2 comp type) of the Paint

6) **Filter** the mixture when spraying.

(The suction pump should be fitted with a mesh filter)




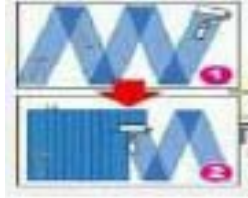

7) Be sure to use the mixture within the Pot Life specified.



Key Factors to Consider for Onboard Maintenance

3: Paint Application



Application Method	Characteristics
Brush	<p>Good for small, complex areas. (the areas of difficult access) Requires certain level of experience and skill to achieve uniform paint film. Do not dip the entire brush into the paint. (Half the length is enough)</p> 
Roller	<p>Good for large flat areas, e.g. decks and hatch covers. Dip the roller in the paint until fully saturated. Start painting by forming a 'W' shape from one side, and then quickly fill in the parts in between from the other side by spreading the paint being applied to finish up. Never try to paint over an area that has partially dried. (May result in a disaster)</p> 
Airless Spray	<p>Good working efficiency, but may cause overspray. Always hold the spray gun straight (horizontally and vertically) at the surface to be painted.</p> 

Key Factors to Consider for Onboard Maintenance

3: Paint Application

Brush

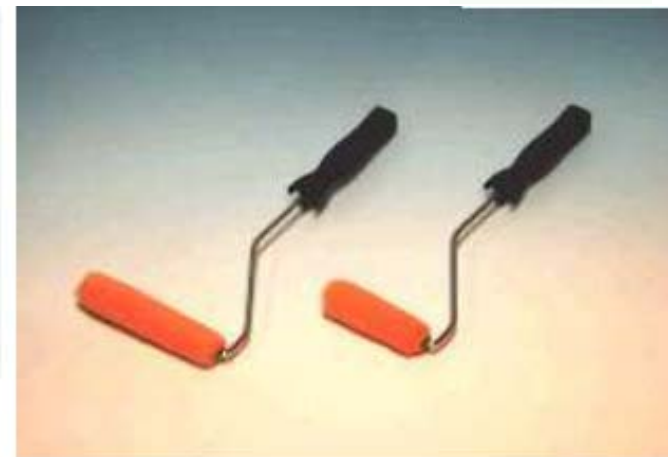


Angle Brush

Flat Brush

Oval Flat Brush

Roller



- Short Nap (9mm or shorter)**
: for flat/smooth areas
- Medium Nap(10-15mm)**
: for general use
- Long Nap(20mm or longer)**
: for rough surface

Key Factors to Consider for Onboard Maintenance

1) Ventilation

Ensure to have a good, clean air flow.

2) Keep things tidy

Rainfall / dust must be avoided until the paint is sufficiently cured.

Keep the painting area clean and tidy, free from trash and dust.

3) Humidity

Relative humidity during application must be lower than 85%.

4) Temperature

Application should not be carried out when the ambient temperature is lower than 5°C, if possible.

Extra care must be taken when the substrate temperature is higher than 40°C, because solvent evaporation gets faster.

5) Drying

Do not enter the area until the paint is fully dried.

Each layer of coat must be dried, when applying multiple coats.

6) Curing

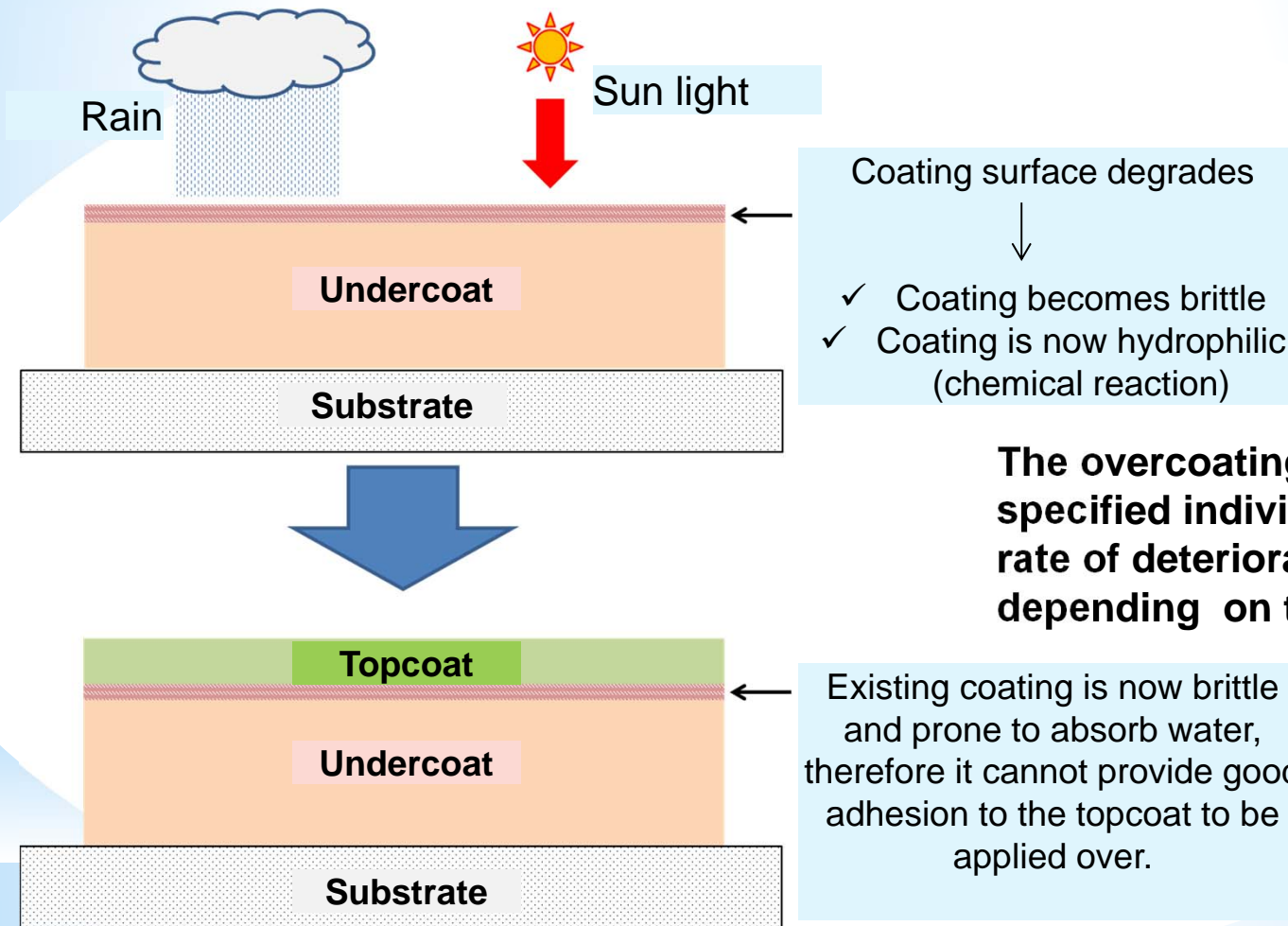
Ensure to have sufficient time for curing before ballasting or loading cargoes.

(Ref) Overcoating Recommendations

New OLD	Acrylic	Epoxy	Urethane	Alkyd
Acrylic	O	X	X	X
Epoxy (within the overcoating interval)	O	O	O	O
Epoxy (extended the overcoating interval)	O1	O1	O1	O1
Urethane	O3	O1	O	O1
Alkyd	O2	O2	O2	O

- O** Suitable for overcoating
- O1** Roughen the surface before overcoating
- O2** Suitable for overcoating provided that the old coating is allowed to weather for at least 1 year.
- O3** - For full coat repairs at DD etc. :
 Roughen the Urethane coating → Apply Epoxy paint → Apply Acrylic paint
 - For spot repairs (Brush T/U) performed by ship crew:
 Roughen the Urethane coating → Apply Acrylic paint

(Ref) What is the Overcoating Interval ?



(Ref) Product Data Sheet

What is Product Data Sheet?

Everything you need to know when handling the paint is written on the Product Data Sheet.

Always check the sheet in advance!

BANNOH 500 (B 500)

Nov. 2015
No. 5055

BANNOH 500, is a multi-purpose primer, which gives excellent physical properties such as toughness, abrasion resistance and adhesion, etc., and has excellent flexibility, resistance to sea water and cathodic protection.
It is suitable for most areas of ship.

TECHNICAL DATA

Type	Epoxy paint				
Recommended Use	Anti-corrosive primer for ship's hull, exposed decks, superstructures and ballast water tanks, etc.				
Information	Mixing Ratio	Base : Hardener = 81 : 19 [by volume]			
	Color	Grey, Light Grey, Red brown, White			
	Flash Point	Base = 23.1, Hardener = 24.9 [°C]			
	Density	1.30 [g/mL] (ISO:2811)			
	Volume solids (VS)	60 (+/-2) [volume %] (ISO:3233)			
	VOC	398 [g/L] (Method24)			
	Coverage (Theoretical)	0.167 - 0.333 [L/m ²]			
Film Thickness	WET	167 - 333	[microns]		
	DRY	100 - 200	[microns]		
(DFT 200microns)		5°C	10°C	20°C	30°C
Drying Time	Set-to-touch	7hrs.	5.5hrs.	4hrs.	2.5hrs.
	Hard Dry	24hrs.	18hrs.	10hrs.	8hrs.
Painting Interval	Min	24hrs.	18hrs.	10hrs.	8hrs.
	Max	*	*	*	*
Pot Life		18hrs.	14hrs.	7hrs.	4hrs.

Condition of Application	Method of Application	Airless spray, Brush, Roller
	Weather	Temperature: Minimum 5°C, Humidity: Maximum 85%RH, Dew Point +Minimum 3 degC
	For Airless Spray	Viscosity : 1.6 - 2.0Pa·s Tip No. : (GRACO)619, 621, 623 Paint Output Pressure: 14.7 - 17.7 [MPa] Spray Speed : 60 - 80 [cm/sec]
	Thinner	EPOXY THINNER A, Thinning: 0 - 15 % by Volume
	Recommendable Surface Preparation:	New building : Dependent on yard procedures. Please consult your CMP representative. Repair/Maintenance : Remove oil and grease etc. Remove salt and the other contaminants by (high pressure) fresh water cleaning and completely dry. Clean damaged area by abrasive blasting to the standard Sa2 (ISO 8501-1:2007) minimum or power tooling to St3 (ISO 8501-1:2007). Water jetting : Consult your CMP representative for recommendations. Type and degree of surface preparation depends on type and condition of actual substrate and on desired performance. Use in accordance with standard worldwide marine specifications.
Preceding Coats	CERABOND 2000, EPICON ZINC RICH PRIMER B-2, NZ PRIMER S, etc.	

(Ref) Product Data Sheet



BANNOH 500 (B 500)

Nov. 2015
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Areas where the paint can be applied.

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Painting Interval	Min				
	Max				
Pot Life		18hrs.	14hrs.	7hrs.	4hrs.

Mix Ratio for 2 comp paint

Standard Spreading Rate and Film Thickness to achieve desired coating performance

Time required before the coating is dried / cured

Minimum and Maximum time for overcoating

The maximum time the mixture can be used after mixing (2 comp paint)

(Ref) Product Data Sheet



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	Preceding Coats	CERABOND 2000, EPICON ZINC RICH PRIMER B-2, NZ PRIMER S, etc.
	Subsequent Coats	BANNOH 500 N, EPICON FINISH HB, UNY MARINE, etc.

Name of the Thinner to be used and Recommended thinning ratio.

Surface Preparation required for each case. (preparation grade, method etc.)

Other Precautions

Suitable application method, Required environmental conditions etc.

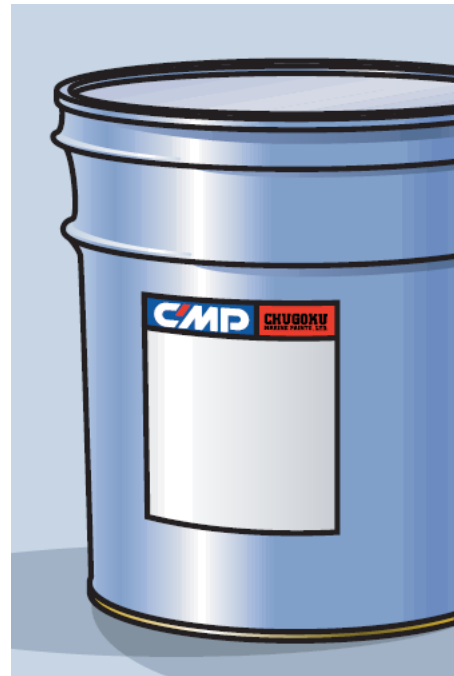
Compatible undercoat / topcoat

Packaging	Two pack product												
Notes	<p>1.* Kindly consult with CMP sales office.</p> <p>2.Ventilation shall be maintained from coating application until the completion of curing in order to remove residue of solvents and promote curing.</p> <p>3.Agitate Base with a power agitator until it is turned homogeneous, and then combine entire contents of Hardener with Base and mix thoroughly by with power agitator. Then add appropriate thinner and mix thoroughly.</p> <p>4.Excessive solvent results in reduced sag resistance and paint film property.</p> <p>5.Drying time before the first cargo hold loading</p> <table border="1"> <tr> <td>Temp.</td> <td>10°C</td> <td>20°C</td> <td>30°C</td> </tr> <tr> <td>200microns(Days)</td> <td>18</td> <td>10</td> <td>6</td> </tr> <tr> <td>350microns(Days)</td> <td>27</td> <td>15</td> <td>9</td> </tr> </table> <p>6.Density, VS and VOC are measured from product samples without thinning. Values may vary depending on color, manufacturing process, local regulations, etc.</p>	Temp.	10°C	20°C	30°C	200microns(Days)	18	10	6	350microns(Days)	27	15	9
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This product should be used only by professional applicators. Consult the current Chugoku Marine Paints Safety Data Sheets. Follow all local or national health, safety and environmental regulations. Observe all safety labels on packaging and containers. Take precautions against possible risks of fire or explosions as well as protection of the environment. Apply only at ventilated areas. Handle with care.

This data sheet contains the best and latest of our knowledge on the date of issue on our laboratory in Japan testing and practical application experience, and subject to change without notice. Since the paints are used under unexpected circumstances in some cases, guarantee can not be given except on the quality of those paints themselves.

Thank You for your Attention



CMP

中国涂料株式会社