



*Marine***MEND**

Repair Kit Procedure

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The Purpose of this procedure is to clearly explain what must be done in order to repair a MarineLine coated cargo tank using a MarineMend Repair Kit. This repair procedure should be used when the MarineLine coating has been misapplied or damaged. If you have any questions prior to the application that has not been covered in this procedure, please contact Advanced Polymer Coatings for assistance.

Personal Protective Equipment (PPE)

- **Donning:** Put on and use PPE properly to achieve the intended protection and minimize the risk of exposure.
- **Doffing:** Removing PPE in a way that avoids self-contamination

Donning and Doffing Coveralls

Donning and Doffing instructional images are shown below.



PPE Applied in Layers

- **Protective Barrier Cream**
 - Silicone or water based
- **Nitrile Gloves**
 - 7 mil thickness or greater
- **Chemical Resistant Gloves**
- **Long Sleeve T-shirt or Sleeve covers**
- **Pants**
- **HazMat Suit**
 - Tychem 2000-4000 or equal
- **Hood Sock**
- **Safety Eye protection**
- **Respiratory Protection**



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Step 1: Pre-Surface Preparation

- Identify and mark all areas that need to be repaired.
- A detergent wash and chemical cleaning must be done to the surfaces to be repaired.
- All surfaces must be completely dry before surface preparation.

Note: Do not open MarineMend kits

Step 2: Surface Preparation

- 1) Identify all areas to be repaired and tape off 25 mm around its periphery.
- 2) Remove MarineLine coating topcoat (Grey) and feather in the edges.
 - If the damaged areas are small and independent (separate) from each other, the small, damaged areas may be hand sanded with a medium grit aluminum oxide sandpaper. Sand the topcoat (grey) of the MarineLine coating and remove any rust spots.
 - For areas that are larger, use one of the following methods:
 - 1.) A vacuum blaster, which gives the best adhesion profile
 - 2.) A disk grinder with medium grit aluminum oxide disk, or needle head.
- 3) The area should then be vacuumed thoroughly to remove all dust particles and washed with solvent (Acetone is preferred, Toluene and MEK are suitable).



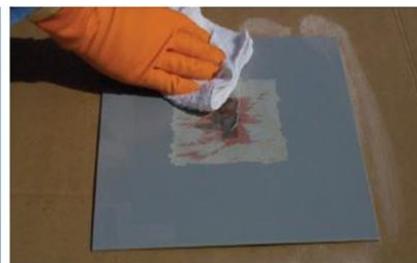
Masked area –25mm periphery.



Pneumatic air drill (~ 20,000 to 25,000 RPM)



Sand masked area.



Clean the repair area with appropriate solvent. Note: Always use clean white cloth. Do not use shop rags.

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Step 3: MarineMend Basecoat Application

- 1) Tape off the edges only revealing the bare steel surface.
- 2) Make sure all areas to be coated have been prepared before opening and mixing MarineMend basecoat.
- 3) **Mixing:** Pour the entire contents of MarineMend Part B (catalyst) bottle into Part A (Resin) container and mix thoroughly for 2-3 minutes.
 - The pot life for MarineMend once mixed is 30 min at 20 degrees Celsius.
- 4) Use a small brush or roller to apply the mixed MarineMend Basecoat to the properly prepared bare steel surface at a wet film thickness of 160-200 microns.
- 5) After applying the basecoat, remove the tape immediately to reduce thick coating edges.
- 6) Allow the basecoat to B stage (dry to touch) with good ventilation until the coating has tacked up and released all solvent. This could take up to 24 hours depending on temperature and airflow.
 - Start by checking the coating after 6 hours, if the coating is still not dry to touch then continue to check every 2 hours until the coating is dry.
- 7) Once B stage (dry to touch) is complete, sand the basecoat smooth and clean the coated area prior to topcoat application.



1. Tape off bare steel area



2. Apply basecoat



3. Allow coating to B Stage

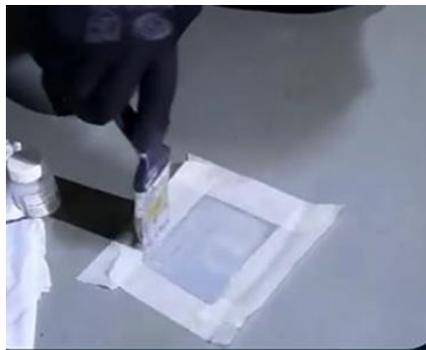


4. Sand basecoat smooth

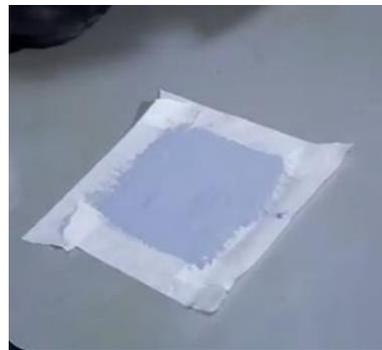
MarineMEND

Step 4: MarineMend Topcoat

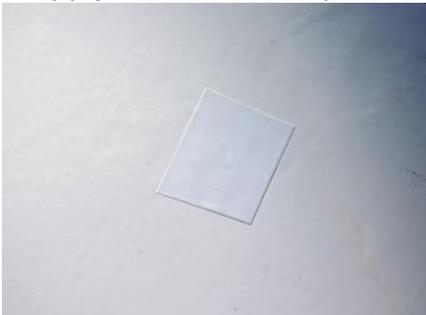
- 1) Tape off outer sanded area.
- 2) Make sure all areas to be coated have been prepared before opening and mixing MarineMend topcoat.
- 3) **Mixing:** Pour the entire contents of MarineMend Part B (catalyst) bottle into Part A (Resin) container and mix thoroughly for 2-3 minutes.
 - The pot life for MarineMend once mixed is 30 min at 20 degrees Celsius.
- 4) Use a small brush or roller to apply the mixed MarineMend Topcoat to the properly prepared surface at a wet film thickness of 160-180 microns.
- 5) After applying the topcoat, remove the tape immediately to reduce thick coating edges.
 - After you remove the tape, make sure to mark the repair areas so you can easily identify where the repair areas are in the cargo tank.
- 6) Allow the topcoat to B stage (dry to touch) with good ventilation until the coating has tacked up and released all solvent. This could take up to 24 hours depending on temperature and airflow.
 - Start by checking the coating after 6 hours, if the coating is still not dry to touch then continue to check every 2 hours until the coating is dry.



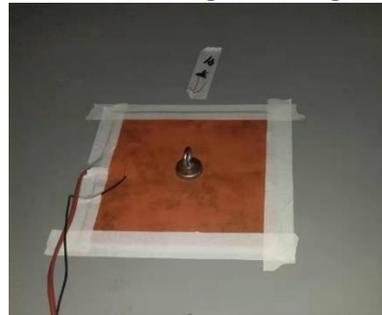
1. Apply MarineMend topcoat



2. Allow coating to B stage



3. Inspect application



4. Heat cure the repair



Step 5: Curing Requirements

- After all the repair areas are hard dry, each area should be spot heat cured to obtain optimum performance.

- **Option 1: (Preferred Best)**

Silicone Heating Pad: Place heating pad firmly on repair area, taping off the edges or using magnets. Heat repair area for 1 hour at 80 °C or 24 hours at 60 °C.

- Option 2: (Preferred)

Heat Gun: Heat repair area for 1 hour at 80 °C or 24 hours at 60 °C.

- Option 3:

Heating Lamp: Heat repair area for 1 hour at 80 °C or 24 hours at 60 °C.

- Option 4:

Hot cargo heat cure: Please consult your MarineLine representative for approved hot cargoes and temperature/ time requirements.

- Option 5:

Ambient Cure: The repair material will not achieve optimum chemical resistance and performance properties if ambient cured.

Post cure under ambient conditions at a minimum of 30 °C and hold for three days. Followed by a hot cargo or hot water at the following temperatures:

- 40 °C for 5 days
- 50 °C for 3 days
- 60 °C for 1 day

❖ **Continue to the next page for the Silicone Heating Pad Procedure.**

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Silicone Heating Pad Procedure

Material Needed:

- Silicone Heating Pad
- Kapton Tape
- Heat-Resistant Magnet
- Temperature Gauge



Silicone Heating Pad



Kapton Tape



Heat-Resistant Magnet



Temperature Gauge

Steps:

- 1) Allow repair to hard dry.
- 2) Secure the heating pad to the repair area via one of the following methods:
 - a. For carbon steel or other magnetic substrates, heat-resistant magnets or Kapton tape can be used to secure the heat pad in place.
 - b. For Stainless steel or other non-magnetic substrates, Kapton tape can be used to secure the heat pad in place.
- 3) Set the temperature at 80 °C.
- 4) Allow the temperature to stabilize at 80 C for 15 minutes.
- 5) After the temperature has stabilized start the soak time and hold for 1 hour.
- 6) When the 1-hour soak time has finished, turn off the heating pad and allow it to cool prior to removing the Kapton tape and heating pad.





Technical Specs

- ❖ MarineMend Basecoat and Topcoat are both Grey in color.

Shelf Life:

- When stored at a temperature of 20-25 °C, the repair kit shelf life is 12 months.
- Store material in a climate-controlled area between 20-35 C 48 hours before using material.

Pot Life:

- When applied at a temperature between 20-27 °C, the pot life is 30 minutes.
- An induction time is not required
- If the temperature is cooler, the pot life will be longer
- If the temperature is warmer the pot life will be shorter

Surface Preparation:

- A profile needs to be created that allows bonding of the coating to the surface.
- The best method to achieve a proper profile is vacuum blasting.
- This can also be achieved by sanding, either by hand or machine (scored, not smooth).
- The surface must be free of rust and clean of debris/ contaminants.

Note: Do not use "Puddy" (ex. Belzona), to fill in pitted or cracked areas in the steel.

- ❖ Please contact Advanced Polymers Coatings Customer Care Department if you have any questions regarding your MarineLine/ MarineMend coating.
- ❖ Please use our customer care portal for all inquiries regarding the MarineLine/MarineMend coating.
- ❖ You can watch a step-by-step MarineMend application video on the MarineLine Customer Care Portal website under Frequently Asked Questions

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