



MarineLINE®

Proper Tank Cleaning Preserves MarineLine® Coating Integrity

MarineLine® 784 has an ultra-smooth, glossy, low energy surface that reduces venting time, uses less cleaning chemicals and less fuel/energy for cleaning equipment, and leads to faster turnaround. A wide range of approved cleaning detergents and chemicals can be used to clean and prepare the coating for next cargoes allowing the shipowner to maintain the coating with minimal effort.



Methanol Cleaning

As presented in the APC MarineLine Chemical Resistance Guide, here are notes on Methanol.

- After carrying Methanol – **DO NOT STEAM.** Force Air Dry for 24 hours.
- Before carrying Methanol – if tanks have been steam cleaned prior to carriage of methanol, tanks must be allowed to cool to 30-40°C before loading.

Procedure To Gas Free The Tanks After The Discharge Of Methanol, Vam, Etc.

Step 1: Gas Freeing, with forced air, to Oxygen 21% LEL/LFL less than 1%, Close Tanks for 6 Hours –Check LEL again.

Step 2: If LEL **Not** Less than 1% - Continue Gas Freeing and Follow Step 1 again.

Step 3: Do NOT Introduce Moisture into Tanks during Gas Freeing.

Step 4: **Do NOT Steam** the Tanks After Discharge of Methanol.

Step 5: **Do NOT Wash** the Tanks or Introduce Moist Inert Gas BEFORE Step 1 and Step 2 are completed.

Disclaimer - The Methanol cleaning information provided by APC in the MarineLine Cargo Resistance List is to the best of APC's knowledge correct and given in good faith. This is subject to change without notice based on actual experience and continued coating development.

Best Cleaning Practices

A number of shipowners have also provided some examples of their MarineLine® cleaning practices through the years, which APC shares in this Technical Report. These include practices when switching cargoes as shown on the following pages. **APC is not responsible for the success of these suggestions, but cleaning suggestions are given in good faith, based on their experiences.** Results may vary depending on tank cleaning machine capability and operations, cargo tank configurations and portable tank cleaning machines used for cleaning lower areas of bulkheads, shadow areas of fixed machines and between bands of fixed machine pitch.



Advanced Polymer Coatings
Avon Ohio 44011 U.S.A.
www.adv-polymer.com

+01 440-937-6218 Phone
+01 440-937-5046 Fax
800-334-7193 Toll-Free in USA & Canada

© 2017 0207

TECHNICAL REPORT

MarineLine® General Tank Cleaning Suggestions

As provided by shipowners, here are some general tank cleaning suggestions for Palm Oil, Palm Fatty Acid, (also for Palmitic/Stearic/Oleic Acids), MEG, Methanol, BTX, and CPP Cargoes. There are industry tank cleaning guides that are available with cleaning guidelines for various cargoes.

- Machine cycles and drops to be increased or decreased according to ship's experience. Spot cleaning of heating coils, clamps, angle bars, and pumps to be carried out as required.
- Save fuel by using distilled water or di water for rinsing the tank to reduce chloride instead of steaming the tanks.
- **Avoid steaming of cargo tanks as far as possible. If steaming is inevitable, then suggest to keep to a minimum. Steam for about 2-4 hours keeping ambient temperature inside cargo tanks to maximum 60°C during steaming.**
- After steaming, cargo tanks are to be ventilated and kept dry, especially tank top, before the loading of methanol cargoes.
- **After discharge of methanol do not steam the**

Note "A"

For each cargo tank, cargo lines, stripping lines, super stripping lines, drop lines, heating coils, clamps, manifolds, and drains shall also likewise be washed with water washing, chemical recirculation, freshwater washing, steam blowing and air blowing as appropriate.

- **tanks.** Ventilate cargo tanks with dehumidified air (RH less than 80%) for at least 24 hours after the discharge of methanol.
- Marpol and Safety procedures, PPE use as per Company's SMS and ICS Chemical Tanker Safety Guide.

Example MarineLine® Cleaning For Sequenced Cargoes

Palm Oil to Methanol/MEG/DEG/BTX

SEE
"A"

- 1) Hot freshwater wash (at maximum discharge temperature plus 20°C) for 1 (one) cycle using portable machines at mid drop after empty tank certificate is obtained. Avoid steaming as much as possible.
- 2) Hot seawater wash 3 (three) cycles at each drop using portable machines and bottom drop 4 (four) cycles at discharge temperature plus 20°C. (Take wall wash, if required, then go to Step 3 or otherwise to go Step 5.)
- 3) Alkaline detergent/Accell recirculation using portable machines for 2 (two) cycles each drop and 4 (four) cycles at bottom drop or spray as required. If white powder is present, recirculate with 5% phosphoric acid based detergent using portable machines as above or spray otherwise go to Step 4.

- 4) Ambient seawater wash using portable machines for 1 (one) cycle each drop and 2 (two) cycles bottom drop.
 - 5) Spot clean, freshwater wash.
 - 6) Di water wash/ steam if required.
 - 7) Educt, mop, ventilate dry 24 hours.
- Alkaline detergents (mostly pH 11 and above) tend to form white powder. Accell clean pH 7.5 does not form white powder and also improves color.
- If the next cargo is not a wall wash cargo, suggest Steps 1, 2, 5, and 7.

Palm Fatty Acid to Methanol/MEG/DEG/BTX**SEE
"A"**

- 1) Hot freshwater wash (at maximum discharge temperature plus 20°C) for 1 (one) cycle using portable machines at mid drop after empty tank certificate is obtained. Avoid steaming as much as possible.
 - 2) Hot seawater wash 3 (three) cycles at each drop using portable machines and bottom drop 4 (four) cycles at discharge temperature plus 20°C. (Take wall wash, if required, go to Step 3 or otherwise to go Step 5.)
 - 3) Alkaline detergent/Accell recirculation using portable machines for 2 (two) cycles each drop and 4 (four) cycles at bottom drop or spray as required. If white powder is present, recirculate with 5% phosphoric acid based detergent using portable machines as above or spray, otherwise go to Step 4.
 - 4) Ambient seawater wash using portable machines for 1 (one) cycle each drop and 2 (two) cycles bottom drop.
 - 5) If white powder is present, recirculate with 5% phosphoric acid based detergent using portable machines for 2 (two) cycles each drop and 4 (four) cycles at bottom drop, or spray as required, otherwise go to Step 7.
 - 6) Ambient seawater wash using portable machines for 1 (one) cycle each drop and 2 (two) cycles bottom drop.
 - 7) Spot clean, freshwater wash.
 - 8) Di water wash/ steam if required.
 - 9) Educt, mop, ventilate dry 24 hours.
- If the next cargo is not a wall wash cargo, suggest Steps 1-7, and 9.

CPP to Methanol/MEG/DEG/BTX**SEE
"A"**

- 1) Ambient seawater wash (30°C) for 2 (two) cycles using fixed machines at coarse pitch (Close cycle Annex I washing). Collect in slop tank. Strip tanks dry and drain all to Slop P.
 - 2) Hot seawater wash 75°C for 2 (two) cycles at each drop using portable machines and bottom drop 4 (four) cycles. (Take wall wash and, if required, got to Step 3, otherwise go to Step 5.)
 - 3) Detergent/Accell recirculation using portable machines for 2 (two) cycles each drop and 4 (four) cycles at bottom drop or spray as required. Detergent using portable machines as above or spray, otherwise go to Step 4.
- If dyed cargo, then recirculate with 2% dye out (Bleach with chlorine content about 12-15%) with portable machines as above, as required.
- 4) Ambient seawater wash using portable machines for 1 cycle each drop and 2 cycles bottom drop.
 - 5) Freshwater wash.
 - 6) Di water wash/ steam, if required.
 - 7) Educt, mop, ventilate dry 24 hours.
- If the next cargo is not a wall wash cargo, suggest Steps 1,2, (3 as required), 4,5 and 7.

Benzene/Toluene/Xylene (BTX) to Methanol/MEG/DEG**SEE
"A"**

- 1) Ambient wash (30°C) for 2 (two) cycles using fixed machines at coarse pitch.
- 2) Hot seawater wash 65°C for 2 (two) cycles at each drop using portable machines and bottom drop 4 (four) cycles. (Take wall wash and, if required, go to Step 3, otherwise go to Step 5).
- 3) Detergent/Accell recirculation using portable machines for 2 (two) cycles each drop and 4 (four) cycles at bottom drop or spray as required. Or spray otherwise go to Step 4.

- 4) Ambient seawater wash (30°C) using portable machines for 1 (one) cycle each drop and 2 (two) cycles bottom drop.

- 5) Freshwater wash.
- 6) Di water wash/ steam, if required.
- 7) Educt, mop, ventilate dry 24 hours.

If the next cargo is not a wall wash cargo suggest Steps 1,2,5 and 7

MEG/DEG/BTX to Palm Oil/Palm Fatty Acid**SEE
"A"**

- 1) Ambient wash 4 (four) cycles.
- 2) Hot wash 65°C for 4 (four) cycles.

- 3) Freshwater wash.
- 4) Educt, mop, ventilate, dry.

Methanol to Palm Oil/MEG/DEG/BTX**SEE
"A"**

- 1) Ventilate 24 hours.
- 2) Freshwater rinse.

- 3) Educt, mop, ventilate dry for 24 hours.

Methanol to CPP**SEE
"A"**

- 1) Ventilate 24 hours.
- 2) Dry pump sump and lines.

- 3) Inert tanks.

Contact APC

If you have more questions on the importance of proper cargo tank cleaning, contact your Advanced Polymer Coatings' representative to see why MarineLine® 784 is unique in the maritime industry.