

FMC Hydrogen Peroxide Rail Car Unloading Guidelines

SAFETY CONSIDERATIONS

1. Chemical unloaders must be fully trained in the safe handling of Hydrogen Peroxide and be knowledgeable in the safety requirements as listed on the MSDS for the product being handled.
2. Rail cars, although vented, may be under internal pressure. Always exercise caution when unbolting manways or the 3” off-loading flange – assume they are under pressure!
3. The Hydrogen Peroxide as shipped in rail cars is damaging to eye tissue – **always wear your monogoggles.**
4. The minimum approved safety equipment to be worn for rail car unloading includes:
 - ♦ approved hard hat,
 - ♦ full body protection made of non-oxidizable, peroxide-impervious materials such as rubber, vinyl or Gore-Tex® protective suit or pants & jacket,
 - ♦ Impact-resistant monogoggles or monogoggles over safety glasses,
 - ♦ face shield (optional),
 - ♦ rubber steel-toed [NIOSH/CSA-approved] boots, and
 - ♦ gauntlet-style rubber or vinyl gloves.
5. Have a running water hose available if at all possible during the unloading operation. All fittings used in the procedure shall be flushed with water before and after use. While in storage the open ends of adapters & hoses must be protected with vented [1/8” diameter hole] dust caps/plugs to avoid contamination & pressure buildup.
6. Regularly inspect peroxide hoses & equipment. Unloading equipment must be dedicated for peroxide service and be properly degreased & passivated before first use. FMC recommends pressure testing peroxide hoses once/year.
7. Never use compressed air to initially pad a rail car – self-priming pumps must be used for offloading. If a pump prime cannot be established first check all gasket connections & the condition of the pump’s mechanical seal. If priming still cannot be established then run filtered dilution water through the pump inlet drain connection back to the rail car. Report any priming problems on the Rail Car Inspection Sheet and Fax the form to FMC Distribution.
8. Ensure that any loose items [tools, pens, etc.] are removed from your clothing before opening or viewing the peroxide through the manway.

THE UNLOADING OPERATION

1. Visually inspect tank cars upon arrival at site. Should any visual damage be observed immediately report it to the railroad & FMC Distribution.
2. Match the bill of lading to the rail car number – complete Inbound Section of H₂O₂ Rail Car Inspection Report.
3. Make sure wheels are chocked and brake is set on car.
4. Set up “Tank Car Connected” sign and activate derail [mandatory in Canadian locations].
5. Do a final inspection of the unloading area to ensure there are no combustibles present.
6. Put on safety gear & proceed onto rail car.
7. Verify that all car seals on rail car are in tact.
8. Remove all manway cover bolts except “keeper (safety) bolts.” Normally, these bolts are the two bolts opposite from the manway cover. The last two bolts to be loosened are these two opposite the manway cover hinge, since these can apply the most resisting torque against any residual pressure that may try to lift the manway cover. **NOTE: DO NOT USE AN AIR IMPACT WRENCH TO LOOSEN OR TIGHTEN MANWAY COVER BOLTS.**

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9. Loosen "keeper (safety) bolts" slowly & lift the manway cover while "keeper (safety) bolts" are engaged to test for possible residual pressure. If car is under pressure notify supervision at once – this is an indication of a restricted breather vent or an unusually high rate of peroxide decomposition. Notify FMC Distribution.
10. Fully open the manway & visually inspect the condition of the peroxide – if debris or active bubbling is present on the liquid surface **DO NOT UNLOAD THE PRODUCT – CONTACT FMC** using the emergency number listed on the Bill of Lading.
11. Lower the manway & fold one of the "keeper (safety) bolts" under the manway cover to keep it open. **DO NOT UNLOAD THE CAR UNLESS THE MANWAY IS SLIGHTLY OPEN.**
12. Slowly loosen the (4) 3" unloading flange bolts. Remove the bolts farthest away from you first, and then remove the remaining bolts. **NOTE: THE DIP PIPE WILL BE UNDER PRESSURE. QUICKLY REMOVING UNLOADING FLANGE CAN LEAD TO SPLASHING OF HYDROGEN PEROXIDE.**
13. Inspect the gasket on the unloading flange for cuts or gashes – replace if damaged with a new 1/8"thick 3"-150#full-face gasket. The gasket must be Garlock 'Gylon Blue', Garlock 'Gylon Fawn', Gore-Tex®, Viton-A or virgin Teflon® - **NOTE: A SOFTER GASKET, (i.e. PP363 VINYL) SHOULD BE USED TO HELP SEAL THE RAILCAR ADAPTER FITTING TO THE CAR. THE SOFT GASKET MUST BE REMOVED WHEN UNLOADING IS COMPLETED AND REPLACED WITH THE ORIGINAL GASKET PRIOR TO RELEASING THE RAILCAR.**
14. Connect the off-loading adapter fitting to the unloading flange on the car & torque the (4) bolts to 40 ft.-lbs.
15. Visually inspect the condition of the offloading hose [camlock gasket & condition of the braids & cover] & connect it to the offloading adapter fitting.
16. Proceed with site-specific unloading procedures for your location. Before unloading starts, always ensure that:
 - ♦ all sample & drain valves in the system are closed;
 - ♦ there is room for the product & dilution water [if required];
 - ♦ all required valves leading into & from the unloading pump through to the storage tank are open.
17. Start the unloading pump – flow should be established in one to two minutes.
18. Immediately trace lines from the tank car to storage tank - ensure there is no leakage.
19. Remain in the immediate area during the transfer (unless remote surveillance & emergency shut off have been provided) to check for leaks. Regularly check tank level. **NOTE. DO NOT LOAD TANK TO MORE THAN 95% OF ITS RATED CAPACITY.**
20. When the transfer process is completed, shut off the pump.
21. Open the manway fully & inspect car for remaining heel of product. **Note:** occasionally a damaged dip pipe may prevent complete unloading of the contents of the car. A portable dip pipe may be used to pump the remaining product – please consult FMC Engineering Services before attempting this procedure.
22. Prior to disconnecting the car, clear the unloading line by either opening the vacuum break valve [if installed] – or purging the line with nitrogen.
23. When using nitrogen, never blow it through the pump – [the priming chamber will be emptied]. Be sure to cycle the N₂ on & off several times. N₂ padding pressure must not exceed 30 psig. Ensure all hose & fittings must be compatible with H₂O₂ service [ex: 316SS hoses, vented 316SS ball valves, SS check valves].

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24. Remove & rinse the loading adapter fitting with water. Replace the dust plug in the offloading hose.
25. Reinstall the 3" blind flange, original gasket, and bolts, tightening to 40 ft.-lbs.
26. Close manway cover & tighten cover bolts to 100 NM OR 80 FT- LBS.
NOTE: DO NOT USE AN AIR IMPACT WRENCH TO LOOSEN OR TIGHTEN MANWAY COVER BOLTS.
27. Rinse off all wrenches & work gloves. Place offloading adapter & wrenches in dedicated plastic or stainless parts box.
28. Remove "Tank Car Connected" sign, chocks and derail & complete the Outbound portion of the enclosed report form.
29. Report any problems to FMC Distribution.

EMERGENCY PROCEDURES

1. If contacted with peroxide rinse the affected areas with large amounts of water as soon as possible – see the MSDS.
2. Keep any spills from contacting creosote-treated wooden rail ties.
3. Any spills should be flushed with large quantities of water and kept from spreading – use sand to make containment berms.
4. Never use absorbents on spilled peroxide.
5. Never attempt to recover spilled peroxide into any container – the peroxide will be contaminated and a significant explosion hazard would exist.
6. Fires involving peroxide should be extinguished with water fog – never use foams to fight peroxide fires. CO₂ may be used when fighting electrical fires involving peroxide. Nomex® turnout gear may be used when fighting peroxide fires.

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INBOUND REPORT

Tank Car Number: _____ Date: _____

Inspection Performed By: _____

REVIEW OF CAR EXTERIOR:

✓

- No apparent structural damage to the car _____
- Hand holds, foot holds, ladders & railings are secure _____
- Brake shoes present & sufficient _____
- All springs are present _____
- Trucks, wheels & flanges are free of damage _____
- Brake piping, tanks, valves & hoses are free of damage _____
- All placards are in place & match product in bill of lading _____
- Tank car number matches bill of lading & product _____
- All stenciling & markings are legible _____
- Warning labels in place & legible on manway, offloading flange, & filter vent cover _____
- Rupture disk, filter vent stone assembly in tact _____

ACCEPTIONS NOTED: _____

PRIOR TO UNLOADING THE CAR, PLEASE CHECK THE FOLLOWING

✓

Manway security seals – are they present? _____

Off loading flange seals – are they present? _____

WHEN PREPARING TO UNLOAD PLEASE CHECK TO MAKE SURE OF THE FOLLOWING:

✓

- | | | | | |
|---|------|-------|-----|-------|
| Manway bolts were tight: | yes | _____ | no | _____ |
| Manway Gasket: | good | _____ | bad | _____ |
| Manway bolts and nuts: | good | _____ | bad | _____ |
| Unload flange bolts were tight: | yes | _____ | no | _____ |
| Manway opened in preparation for unloading: | yes | _____ | no | _____ |
| Unload flange gasket condition: | good | _____ | bad | _____ |

Inspection Performed by: _____

Date: _____

Should a serious deficiency be noted, please notify FMC Distribution immediately.

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Outbound Report

NO PERSON MAY OFFER FOR TRANSPORTATION A TANK CAR CONTAINING A HAZARDOUS MATERIAL OR A RESIDUE OF A HAZARDOUS MATERIAL UNLESS THAT PERSON DETERMINES THAT THE TANK CAR IS IN PROPER CONDITION AND SAFE FOR TRANSPORTATION. AS A MINIMUM, EACH PERSON OFFERING A TANK CAR FOR TRANSPORTATION MUST PERFORM AN EXTERNAL VISUAL INSPECTION THAT INCLUDES:

The tank interior is empty or has a residue and that no foreign matter is present	Completed	✓ _____
The unloading flange is in place & bolts tightened (40 FT-LBS):	Completed	_____
The manway cover is closed & bolts were tightened (80 Ft-LBS):	Completed	_____
The rupture disk was inspected for any corrosion or damage:	Completed	_____
The breather vent cap is secured and sealed:	Completed	_____
Placards (4) are in place	Completed	_____
The periodic inspection & test dates are current		_____
All stenciling & markings are legible		_____
THIS RAIL CAR IS DEEMED SAFE TO OFFER FOR TRANSIT	Y/N	_____

NAME: _____ DATE: _____

COMPANY: _____ LOCATION: _____

Should a serious deficiency be noted, please notify FMC Distribution immediately.

Location	Phone Number	Fax
Engineering Services –Canada & USA	716 879-0494	716 879-0496
Distribution – Prince George, BC	250 561-4247	250 561-4218
Distribution – Bayport, TX	281 474-8720	281-474-8760

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