

Tank Truck Product Integrity Protection Guidelines

for

**Styrene
Cyclohexane
Polyalphaolefins
Normal Alpha Olefins**

**Issued by:
Motor Carrier and Terminal Operations
and
Aromatics Customer Technical Service**

**Chevron Phillips Chemical Company LP
The Woodlands, TX**

Service Provider:

Chevron Phillips Chemical Company has developed Product Integrity Protection (PIP) Guidelines as part of our continuing efforts to protect the product integrity of Styrene, Cyclohexane, Normal Alpha Olefins and Polyalphaolefins when shipped by tank truck. At the same time, this will limit the liability of those entities involved in the loading and tank truck delivery of these products for Chevron Phillips Chemical Company.

The PIP Guidelines are applicable to both single and multi-compartment MC 307 and MC 407 trailers. The Guidelines are applicable to all motor carriers, terminals, and plants except for the dedicated transportation fleet that operates out of Chevron Phillips Chemical's Cedar Bayou and Borger plants.

The PIP Guidelines are not legal standards, and are not intended to, and do not replace procedures already in place for tank truck cleaning facilities, motor carriers, terminals or plants. Further, the PIP Guidelines do not amend or supplement any contract that you may have entered with Chevron Phillips Chemical. The PIP Guidelines are being provided to supplement existing procedures and highlight those tasks found to be the most important to prevent product contamination. The Guidelines are based on our experience including those times when product contamination has occurred. Since product contamination incidents often result in significant dollar value product losses and claims, it is in the best interest of all parties to take every reasonable step to avoid these kinds of events.

Motor carriers and tank truck wash facilities should note that Chevron Phillips Chemical regards stains on the inner walls of stainless steel tanks as the joint responsibility of both of them. Chevron Phillips Chemical expects them to ensure that stains are non-transferable and that stains are not a potential source for product contamination.

A revision history is on the last page of this document.

Tank Truck Wash Facilities – General Guidelines

Chevron Phillips Chemical Company LP

Scope: MC 307 and MC 407 trailers; both single and multi-compartment being loaded with Styrene, Cyclohexane, Normal Alpha Olefins (NAO) and Polyalphaolefins (PAO).

Purpose: to reduce losses due to product contamination and the associated cost to all parties.

Note: This procedure is supplemental to existing procedures and is not intended to replace existing procedures.

Establish and maintain documented processes for the following activities:

Arrival

- Verify upon arrival the trailer identity and prior cargo.
- Review the intended cargo for the trailer, if provided by the motor carrier, to determine any restrictions associated with the prior load.
- Review the current MSDS for the prior cargo.
- Determine the method to be employed to clean the trailer and ensure compliance with any established Chevron Phillips Chemical, motor carrier, and/or customer requirements (e. g. exterior washing, valve cleaning, hose cleaning, gasket replacement, etc.).

Cleaning

- Clean the interior of the trailer, vapor return line, external piping, valves and hoses as per established procedures. Replace gaskets as necessary and refer to the attached gasket selection guide.
- Ensure all cleaning materials are completely rinsed from the trailer barrel, associated piping and hoses. Residual detergents, caustics and deodorizers may contaminate the products referred to in this guide thereby rendering them unsuitable for customers to process.
- A double rinse is required for trailers that haul PAO products.
- Perform all other related work (e.g., exterior washing, hose cleaning, gasket replacement, etc.) per instructions from Chevron Phillips Chemical or the motor carrier, or requirements of the customer.
- Completely dry the interior of the trailer, vapor return line, external piping, valves, pump and hoses.
- Document the cleaning and work performed.

Inspection

- Inspect the interior and exterior of the trailer, per procedure, according to instructions from Chevron Phillips Chemical or the motor carrier, or requirements of the customer.
- Inspect the vapor return line, external piping, valves and hoses.
- Re-clean the trailer, or take corrective action, if the inspection indicates the trailer or related items are not clean, dry and odor-free. Re-inspect.
- Document the inspection performed and certify the trailer is clean, dry, odor-free and that **no transferable stains** are visible inside the barrel or compartments of the trailer. **If a stain is visible, ensure the stain is non-transferable and document as such on the certificate.**
- Provide the driver with certificate that shows the trailer is clean, dry and odor-free, and keep a copy. This certificate must indicate the prior cargo.

Carriers – General Guidelines

Chevron Phillips Chemical Company LP

Scope: MC 307 and MC 407 trailers; both single and multi-compartment being loaded with Styrene, Cyclohexane, Normal Alpha Olefins (NAO) and Polyalphaolefins (PAO).

Purpose: to reduce losses due to product contamination and the associated cost to all parties.

Note: This procedure is supplemental to existing procedures and is not intended to replace existing procedures.

Establish and maintain documented processes for the following activities:

Trailer Assignment

- Review the attached Unacceptable Prior Cargo list if the next load is to be Styrene, Cyclohexane, Normal Alpha Olefins or Polyalphaolefins, and assign trailer accordingly.

Trailer Pickup from Tank Truck Wash Facilities

- Obtain and review the certificate that shows that the trailer and any related equipment have been cleaned pursuant to applicable procedure and/or as requested, and is certified to be clean, dry and odor-free. Ensure the wash ticket indicates the prior cargo.

Inspection

- Ensure through inspection the trailer barrel/compartments, external piping, valves, pump (if applicable) and hoses are clean, dry, odor-free and that **no transferable stains** are visible inside the barrel or compartments of the trailer. If stains are visible, ensure they have been documented on the certificate from the tank truck wash facility as non-transferable.
- Inspect gaskets for good working condition, and that the gaskets are appropriate for the intended product. Refer to the attached gasket selection guide, if necessary.
- Verify the readiness of the trailer by ensuring all hatches, caps and valves are properly closed and secured.
- If potential problems are discovered related to the trailer, including whether the trailer has been properly prepared for the cargo, discuss any issues with the wash facility manager and remedy the issues before departure.

Dispatch to a Plant or Terminal for Loading

- Review documentation supplied by the tank wash facility to ensure that the appropriate wash procedure was followed. Also ensure the wash ticket indicates the prior cargo and that it is presented at the loading facility.
- Ensure the trailer temperature gauge is in good working order and that the gauge indicates a temperature below 90° F. Note: If the intended cargo is Styrene, terminals will reject trailers that arrive for loading above this temperature.
- If ambient temperature is above 90° F, then trailer temperature is acceptable so long as it does not exceed ambient temperature.

Terminals & Plants – General Guidelines

Chevron Phillips Chemical Company LP

Scope: MC 307 and MC 407 trailers; both single and multi-compartment being loaded with Styrene, Cyclohexane, Normal Alpha Olefins (NAO) and Polyalphaolefins (PAO).

Purpose: to reduce losses due to product contamination and the associated cost to all parties.

Note: This procedure is supplemental to existing procedures and is not intended to replace existing procedures.

Establish and maintain documented processes for the following activities:

Arrival

- Ensure the trailer temperature gauge is in good working order and that the gauge indicates a temperature below 90° F. If the intended cargo is Styrene, reject trailers that arrive for loading above this temperature.
- If ambient temperature is above 90 F, then trailer temperature is acceptable if it does not exceed ambient temperature.
- Verify upon arrival the trailer identity and intended cargo for the shipment.
- Review the wash ticket and determine if the prior cargo is listed on the attached Unacceptable Prior Cargo list for the product to be loaded. If so, immediately reject the trailer.
- Ensure necessary paperwork is in hand for the shipment to be made (e.g. Bill of Lading, MSDS, etc.).
- Document the inspection performed and certify the trailer is clean, dry, odor-free and that **no transferable stains** are visible inside the barrel or compartments of the trailer.

Inspection

- Inspect the trailer per established procedures and ensure it is clean, dry and odor-free – this includes trailers that have come from the tank truck wash facility and are Kosher certified.
- If stains are visible, ensure they have been documented on the certificate from the tank truck wash facility as non-transferable.
- Verify the integrity of the dome lid gasket before loading and replace if necessary.
- Work in conjunction with the motor carrier driver to ensure no liquid is in the unloading line before loading.
 - If trailer originated from a wash facility and wash certificate is presented, open internal and rear valves to ensure the trailer is free of water.
 - If a wash certificate is not presented, internal and rear valves should not be opened for inspection because of the potential for spills. Note: residual material may contaminate the product and make it unsuitable for the customer's process.
 - If trailer is in dedicated service, inspection of the internal and rear valves is not necessary.

Loading

- Load the product per established procedures.
- Verify the readiness of the trailer to be transported by ensuring hatches and valves are secured, and that all other equipment is secured properly.

Terminals & Plants – General Guidelines
Chevron Phillips Chemical Company LP

- Ensure the vehicle is ready to be dispatched such that the integrity of the product that is loaded is not compromised.
- Provide the driver with applicable placard and all necessary documentation for the shipment.

TABLE 1 – STYRENE

**Chevron Phillips Chemical Company LP
Prior Cargo List Restrictions for Styrene Tank Truck Shipments**

Unacceptable Prior Cargo List – Specific Chemicals

Commercial Name	Examples
Caustic	Bases (such as Sodium Hydroxide, etc)

Unacceptable Prior Cargo List – General Materials or Types of Chemicals

General Name or Type	Examples
Adhesives	All adhesives
Animal oil	Beef Tallow, Sheep Tallow, etc.
Crude Oil	All Crude Oil, Including oil field waste
Dark Colored Products	Asphalt, Tars, Dyes, Inks, etc
High Sulfur Organic Chemicals	Sulfides or Mercaptans (such as Dimethyl Sulfide, Methyl Mercaptan, etc)
Latex	All latex, Including paints
Lube oil	All grades, brands, and end use (motor, diesel, any lubricant)
Naphtha	All naphthas
Natural Resin	Rosin, Balsam, Linseed Oil
Paint	Latex, oil and water-based
Strong odor	Naphthalene, p-Dichlorobenzene
Synthetic Resin (<i>not water soluble</i>)	Synthetic Rubber, Silicones
Vegetable oil	Sunflower, Olive, Cottonseed, Canola, Palm, etc
Waxes	Synthetic and petroleum based

The following materials are acceptable as a prior cargo, but may have detrimental effects on Chevron Phillips Chemical Products. Residue from the prior load may contaminate the product and make it unsuitable for the customer's process.

Aviation fuel	All grades(such as Jet A-1, Jet A, etc)
Diesel fuel	All grades, including low sulfur
Fuel oil	Marine Bunker Fuels (such as NO. 2, No. 6, etc)
Gasoline	All Grades, regular to premium
Inorganic Acids	Mineral Acids (such as Hydrochloric Acid, Sulfuric Acid, etc)
Organic Acids	Such as Glacial Acetic Acid, Vinegar, etc
Oxygenates	Alcohols, Ketones, Glycols etc.(such as Isopropyl Alcohol, Acetone, Ethylene Glycol, etc)
Synthetic Resin (<i>water soluble</i>)	Water-based Acrylics or Epoxies

**Call Customer Tech Service if a question arises: 800-852-5531
(Monday-Friday from 8 AM to 4 PM Central Time) or contact your Chevron Phillips
Chemical Customer Account Coordinator**

TABLE 2 – CYCLOHEXANE	
Chevron Phillips Chemical Company LP	
Prior Cargo List Restrictions for Cyclohexane Tank Truck Shipments	
Unacceptable Prior Cargo List – General Materials or Types of Chemicals	
General Name or Type	Examples
Adhesives	All adhesives
Animal oil	Beef Tallow, Sheep Tallow, etc.
Crude Oil	All Crude Oil, Including oil field waste
Dark Colored Products	Asphalt, Tars, Dyes, Inks, etc
High Sulfur Organic Chemicals	Sulfides or Mercaptans (such as Dimethyl Sulfide, Methyl Mercaptan, etc)
Latex	All latex, Including paints
Lube oil	All grades, brands, and end use (motor, diesel, any lubricant)
Naphtha	All naphthas
Natural Resin	Rosin, Balsam, Linseed Oil
Paint	Latex, oil and water-based
Strong odor	Naphthalene, p-Dichlorobenzene
Synthetic Resin (<i>not water soluble</i>)	Synthetic Rubber, Silicones
Vegetable oil	Sunflower, Olive, Cottonseed, Canola, Palm, etc
Waxes	Synthetic and petroleum based
The following materials are acceptable as a prior cargo, but may have detrimental effects on Chevron Phillips Chemical Products. Residue from the prior load may contaminate the product and make it unsuitable for the customer's process.	
Aviation fuel	All grades (such as Jet A-1, Jet A, etc)
Caustic	Bases (such as Sodium Hydroxide, Ammonium Hydroxide, etc.)
Diesel fuel	All grades, including low sulfur
Fuel oil	Marine Bunker Fuels (such as NO. 2, No. 6, etc)
Gasoline	All Grades, regular to premium
Inorganic Acids	Mineral Acids (such as Hydrochloric Acid, Sulfuric Acid, etc)
Organic Acids	Such as Glacial Acetic Acid, Vinegar, etc
Oxygenates	Alcohols, Ketones, Glycols etc. (such as Isopropyl Alcohol, Acetone, Ethylene Glycol, etc)
Synthetic Resin (<i>water soluble</i>)	Water-based Acrylics or Epoxies
Call Customer Tech Service if a question arises: 800-852-5531 (Monday-Friday from 8 AM to 4 PM Central Time) or contact your Chevron Phillips Chemical Customer Account Coordinator	

TABLE 3 – NORMAL ALPHA OLEFINS (NAO) and POLYALPHAOLEFINS (PAO)	
Chevron Phillips Chemical Company LP	
Prior Cargo List Restrictions for NAO and PAO Tank Truck Shipments	
Unacceptable Prior Cargo List – General Materials or Types of Chemicals	
General Material or Type	Examples
Adhesives	All adhesives
Animal oil	Beef Tallow, Sheep Tallow, etc.
Crude Oil	All Crude Oil, including oil field waste
Dark Colored Products	Asphalt, Tars, Dyes, Inks, etc
High Sulfur Organic Chemicals	Sulfides or Mercaptans (such as Dimethyl Sulfide, Methyl Mercaptan, etc)
Latex	All latex, Including paints
Lube oil	All grades, brands, and end use (motor, diesel, any lubricant)
Naphtha	All naphthas
Natural Resin	Rosin, Balsam, Linseed Oil
Oxygenates	Alcohols, Ketones, Glycols etc. (such as Isopropyl Alcohol, Acetone, Ethylene Glycol, etc)
Paint	Latex, oil and water-based
Strong odor	Naphthalene, p-Dichlorobenzene
Synthetic Resin (<i>not water soluble</i>)	Synthetic Rubber, Silicones
Vegetable oil	Sunflower, Olive, Cottonseed, Canola, Palm, etc
Waxes (except Chevron Phillips Chemical waxes)	Synthetic and petroleum based
The following materials are acceptable as a prior cargo, but may have detrimental effects on Chevron Phillips Chemical Products. Residue from the prior load may contaminate the product and make it unsuitable for the customer's process.	
Aviation fuel	All grades (such as Jet A-1, Jet A, etc)
Caustic	Bases (such as Sodium Hydroxide, Ammonium Hydroxide, etc.)
Diesel fuel	All grades, including low sulfur
Fuel oil	Marine Bunker Fuels (such as NO. 2, No. 6, etc)
Gasoline	All Grades, regular to premium
Inorganic Acids	Mineral Acids (such as Hydrochloric Acid, Sulfuric Acid, etc)
Organic Acids	Such as Glacial Acetic Acid, Vinegar, etc
Oxygenates	Alcohols, Ketones, Glycols etc. (such as Isopropyl Alcohol, Acetone, Ethylene Glycol, etc)
Synthetic Resin (<i>water soluble</i>)	Water-based Acrylics or Epoxies
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TABLE 4 – GASKET SELECTION GUIDE

	Teflon®	Viton®	Vitron®	Garlock® No.70201	White Canadian Asbestos	Grafoil®	Durable Nitrile®	Reinforced graphite composite
Cyclohexane	✓ ⁽¹⁾		✓	✓		✓	✓	✓
Styrene	✓	✓		✓		✓	✓	✓
Polyalphaolefins	✓	✓						
Alpha Olefins C6 and C8 ⁽²⁾	✓							
Alpha Olefins C10 and C12	✓	✓			✓			
Alpha Olefins C14, C16, C18, C20-24, C24- 28, C26-28, C30+, and C30+HA	✓	✓						

NOTES:

(1) “✓” means recommended use

(2) Viton is not recommended for use with 1-Hexene or 1-Octene. Viton will absorb gases and vapors causing it to swell, making the material incompatible for couplings and connections.

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Revision History

Rev #	Date	Description
0	1/7/2004	Original version
1 – 8	Various	Development, internal review, and approval of document
9	7/14/2005	First published version
10	9/28/05	Updated Styrene, Cyclohexane, and NAO/PAO tables
11	12/6/05	Updated Styrene, Cyclohexane, and NAO/PAO tables
12	2/20/08	<ol style="list-style-type: none">1. Revised Cleaning section in “Tank Truck Wash Facilities”2. Revised Inspection section in “Terminals & Plants”3. Revised Styrene, Cyclohexane, and NAO/PAO tables