

UST System Compatibility With Biofuels: A How-To Guide for Meeting the Regulatory Requirement

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Compatibility of underground storage tank (UST) systems with the substances they store has always been required since the 1988 federal UST regulation. The adoption of the 2015 federal UST Rules ushered in additional compatibility requirements for owners and operators of UST systems wanting to store fuels containing greater than 10 percent ethanol, greater than 20 percent biodiesel, or any other substance identified by the implementing agency.

Beginning with the 2015 UST regulation, owners and operators storing any of those fuels now must demonstrate and then keep records showing their UST systems are compatible with these blends. This requires demonstrating compatibility of the tank, piping, containment sumps, pumping equipment, release detection equipment, spill equipment, and overflow equipment. Implementing agencies may allow alternatives to demonstrating compatibility if they are no less protective of human health and the environment.

Demonstrating compatibility for these components can be accomplished by obtaining written manufacturer approval or certification from nationally-recognized, independent testing laboratories (NRTLs) that the component is compatible with the substance to be stored.

Finding and documenting this information is a multi-step process. Owners and operators must first identify their equipment manufacturer and model numbers, and then find compatibility verification information.

This poster presents a real world example of going through part of the compatibility determination process.

The Situation



Pony Express, Winnebago, Nebraska

Special Thanks to Danielle Gutierrez, Director of Retail Operations, Ho Chunk, Inc.

The facility received funding from the Nebraska Energy Office to install blender dispensers, and funding from of the U.S. Department of Agriculture Biofuel Infrastructure Partnership to convert a tank to E85 Service to fuel the blender dispenser.

This presented a situation in which existing UST equipment had to be evaluated for compatibility with E85.

Step 1: Identify a Checklist

Checklist For Determining And Documenting UST System Compatibility

Instructions: Complete all sections. This will help ensure you have the required information to demonstrate compatibility of an UST system with blends containing more than 10 percent ethanol or more than 20 percent biodiesel.

Facility Name: Pony Express Winnebago
Facility's Street Address, City, State, Zip Code: 137 Highway 77 Winnebago, NE 68701

Facility Number: EPA-62 UST Fac. 05-626

UST System: Type: E85 Blend Of Registered Substances
UST Capacity by Gallons: 10,000
Release Date: E85

Complete the checklist below, listing compatibility determination, method, and description. All answers must be Yes and supported with a sufficient description or documentation for your system to be demonstrated compatible with the blend.

UST System Components	Documentation Demonstrating Compatibility With The Substance Listed Above?	Method A, B, or C?	Description (Of Component Type, Model Number, And National Laboratory Certification, Listing Or Manufacturer Approval)
Tank	Yes	B	None. Manufacturer approval (attached)?

This sample checklist in Appendix 2, Page A-2, of **UST System Compatibility With Biofuels** (see "Selected Resources") provided a good starting point for completing compatibility determinations.

Step 2: Check Tank

The screenshot above shows the form filer identifying that the tank is compatible, and demonstrating it using "Method B."

On this form, **Method B** is the equipment or component manufacturer approval. It must be in writing, indicate an affirmative statement of compatibility, specify the range of biofuel blends the component is compatible with, and be from the equipment or component manufacturer.

To find this information, the form filer used items from "Selected Resources" to look for a manufacturer approval letter.

Petroleum Equipment Institute
UST Component Compatibility Library



Disclaimer:

- The use of organization, company, and product names is for example purposes only and does not constitute endorsement by U.S. EPA

Step 3: Check Piping

The screenshot below shows the form filer identifying the piping model, but not if it is compatible. The filer checks using "Method A."

Pipe	Yes	No	A	Description (Of Component Type, Model Number, And National Laboratory Certification, Listing Or Manufacturer Approval)
		Yes		02W Nylon double wall piping, Model Number 01, Listing attached?
		Yes		02W Blue Valve # 108P-050, Manufacturer approval attached?
		Yes		02W 100' Tank Sump # 108P-050C, Manufacturer approval attached?
		Yes		02W 100' Dispenser Sump # 108P-100, Manufacturer approval attached?
Containment Sump	Yes	Yes	B	02W Double Contain Sump Dry Bulk # 108P-070, Manufacturer approval attached?
	Yes	Yes	B	02W Dispenser Sump Sump # 108P-050, Manufacturer approval attached?

On this form, **Method A** is the certification or listing of UST system equipment or components by a nationally recognized, independent testing laboratory (NRTL) for use with the regulated substance stored.

To find this information, the form filer used items from "Selected Resources" to look for an NRTL approval of the piping for use with the substance stored.



Petroleum Equipment Institute

- Current UL 971 Listings for Piping
- <https://www.pei.org/state-survey-ul-971>

Manufacturer	Model	Component	UL	Year	Material	Rated For Fuel	Material	Material	Supporting Test Data & Documents Attached?
CPW	UL 971 Tanks	UL 971 Tanks	UL 971	2010	Steel	Yes	UL 971	UL 971	Yes
CPW	UL 971 Tanks	UL 971 Tanks	UL 971	2010	Steel	Yes	UL 971	UL 971	Yes
CPW	UL 971 Tanks	UL 971 Tanks	UL 971	2010	Steel	Yes	UL 971	UL 971	Yes
CPW	UL 971 Tanks	UL 971 Tanks	UL 971	2010	Steel	Yes	UL 971	UL 971	Yes

Checking the requirements for the NRTL piping standard:

- Look for Concentrated (CT) and High Blend (HT) Listings
- Problem - Model Number not yet identified

Step 3: Continued

This screenshot shows the form filer identifying the shear valve as compatible, demonstrating it using "Method B."

The filer cannot find a manufacturer statement on the first resource, so he/she checks another option on the "Selected Resources" list:

Filer Checks California State Water Resources Control Board (CSWRCB) (screenshots below)



California State Water Resources Control Board (CSWRCB) Compatibility Listings by Manufacturer

Ethanol

Manufacturer	Model	Component	UL	Year	Material	Rated For Fuel	Material	Material	Supporting Test Data & Documents Attached?
CPW	UL 971 Tanks	UL 971 Tanks	UL 971	2010	Steel	Yes	UL 971	UL 971	Yes
CPW	UL 971 Tanks	UL 971 Tanks	UL 971	2010	Steel	Yes	UL 971	UL 971	Yes
CPW	UL 971 Tanks	UL 971 Tanks	UL 971	2010	Steel	Yes	UL 971	UL 971	Yes
CPW	UL 971 Tanks	UL 971 Tanks	UL 971	2010	Steel	Yes	UL 971	UL 971	Yes

Manufacturer: CPW PLS
Company: 2000 Crabtree Dr. Business West, Scottsdale, AZ 85257
Address: 2000 Crabtree Dr. Business West, Scottsdale, AZ 85257
Phone: 602.994.2790
Email: info@cpw.com

I declare, to the best of my knowledge and belief, that this affirmative statement of compatibility, and the information contained herein is true, correct, and complete.

Checked List: [Signature]
Print Name: [Signature]
Project Manager: [Signature]
Title: [Signature]
Date: 7/19/12

Manufacturer's Affirmative Statements of Compatibility from the CSWRCB was also used to demonstrate compatibility for Containment Sumps and fittings.

More complete and other EPA's Copy Bookings of the UST Rules - <https://www.epa.gov/ust>

Step 4: Repeat for Remaining Components

Pumping Equipment by Method A

Pumping Equipment	Yes	No	A	Description (Of Component Type, Model Number, And National Laboratory Certification, Listing Or Manufacturer Approval)
		Yes		Franklin Fueling Systems, Inc. F E Pumps STP # 4 STP150W Model 006 (A00) compatible "P" Ring R/L, UL Listing

Release Detection Equipment

UST System Components	Documentation Demonstrating Compatibility With The Substance Listed Above?	Method A, B, or C?	Description (Of Component Type, Model Number, And National Laboratory Certification, Listing Or Manufacturer Approval)
Release Detection Equipment	Yes	B	Voober Roof Easy Probe # 84000-101, Manufacturer listing attached? None. #84000-101 is listed as being compatible with 0-100% ethanol.
	Yes	B	Voober Roof #84600-000 Fuel Kit, Manufacturer listing attached? None. #84600-000 is listed as being compatible with 0-100% ethanol.
	Yes	B	Voober Roof Electronic Line Leak Detector PLD model # 84600-001, Manufacturer listing attached?
	Yes	B	Voober-Roof STP Sump Sensor - model # model

Finding compatibility information for the release detection equipment as installed required both identifying the model number and searching the manufacturer website for compatibility information.



There, the filer found compatibility listings for components, but the manufacturer statement lacked some elements required to meet the requirements of the federal compatibility regulation.

Magnetostrictive Probes for Alternative Fluids

Manufacturer	Model	Component	UL	Year	Material	Rated For Fuel	Material	Material	Supporting Test Data & Documents Attached?
CPW	UL 971 Tanks	UL 971 Tanks	UL 971	2010	Steel	Yes	UL 971	UL 971	Yes
CPW	UL 971 Tanks	UL 971 Tanks	UL 971	2010	Steel	Yes	UL 971	UL 971	Yes
CPW	UL 971 Tanks	UL 971 Tanks	UL 971	2010	Steel	Yes	UL 971	UL 971	Yes
CPW	UL 971 Tanks	UL 971 Tanks	UL 971	2010	Steel	Yes	UL 971	UL 971	Yes

Want to find out how this Compatibility Determination worked out? Please contact Michael Pomes for copies of the presentation, "Biofuels Compatibility Determination - What, Why, and a Hands-on Exercise," and associated handouts.

Selected Resources for Determining Compatibility

- Petroleum Equipment Institute (PEI) UST Component Compatibility Library
- Affirmative Statements of Compatibility by Manufacturer posted by the California State Water Resources Control Board
- UL Online Certifications Directory
- Coming soon: ASTSWMO Emerging Fuels Task Force Compatibility Toolkit
- More resources are listed in the document **UST System Compatibility with Biofuels**

U.S. Environmental Protection Agency, Office of Underground Storage Tanks, EPA 510-K-15-002, November 2015



Key Notes to Remember

- Here are some key takeaways for owners and operators who are demonstrating compatibility following the 2015 UST Rules or equivalent state or local regulations:
- Models and manufacturers of equipment must be known for compatibility determinations.
- NRTL listings for compatibility with biofuel blends may be different from NRTL listings for general performance standards.
- Some components have no NRTL listings for compatibility.
- You may need to contact the manufacturer directly for a manufacturer statement of compatibility if you can't find an NRTL approval.
- Manufacturer listings do not always meet the federal requirements for a written statement of compatibility.

Additional information may be found on the EPA Office of Underground Storage Tanks website: <https://www.epa.gov/ust>