

Ethanol Equipment Options

A service station consists of many interconnected pieces of refueling equipment necessary to fuel vehicles effectively and safely, including approximately 60 pieces of equipment designed to handle fuel and fuel vapor. The equipment that delivers fuel to a vehicle includes tanks, pipes, a submersible turbine pump, a dispenser, and hanging hardware. The remainder and majority of the service station refueling equipment is used to receive and store fuel and prevent, detect, and contain releases. This equipment includes an overfill protection device, a leak detection device, shear valves, fill and vapor caps and adaptors, containment sumps, and all associated fittings and accessories. Equipment that is compatible for use with ethanol blends above E10 is available in every category from multiple manufacturers. Above-ground equipment must be UL listed (<http://ul.com/marks/ul-listing-and-classification-marks/promotion-and-advertising-guidelines/specific-guidelines-and-rules/>) for the fuel dispensed. Below-ground equipment, which must be compliant with federal code, must either be UL listed (<http://ul.com/marks/ul-listing-and-classification-marks/promotion-and-advertising-guidelines/specific-guidelines-and-rules/>) for the fuel it dispenses or must have a letter from the manufacturer stating its compatibility with specific ethanol content. See the Handbook for Handling, Storing, and Dispensing E85 and Other Ethanol-Gasoline Blends ([/uploads/publication/ethanol_handbook.pdf](http://uploads/publication/ethanol_handbook.pdf)) for lists of compatible equipment and information about how to dispense blends above E10 at a station. If specific equipment is not listed, please contact the manufacturer directly as they regularly introduce and retire product lines and models.

Tanks

Several configurations of tanks exist for storing fuel at stations, including ethanol blends. These include:

- **Underground Tanks:** Most existing tanks are compatible with ethanol blends up to 100%. All existing companies that manufacture steel tanks to store transportation fuels have issued signed letters stating their compatibility to store ethanol blends up to E100, making them compliant with federal code. All steel tank manufacturers have a UL 58 listing for flammable fuels, which includes all transportation fuels. Fiberglass tank compatibility depends on the manufacturer, the year the tank was built, and the type of tank (single or double wall). Both existing fiberglass tank companies, Xerxes and Containment Solutions, have maintained a UL Standard 1316 listing for E100 for many years. Containment Solutions issued a letter stating that all tanks it has manufactured are compatible all ethanol blends. Xerxes and Owens Corning (which no longer manufactures tanks) have stated that compatibility depends on the tank wall type and the year it was manufactured. For more information, refer to Appendix A in the Handbook for Handling, Storing, and Dispensing E85 and Other Ethanol-Gasoline Blends ([/uploads/publication/ethanol_handbook.pdf](http://uploads/publication/ethanol_handbook.pdf)).
- **Above-Ground Tanks:** All above-ground tank manufacturers have provided statements of compatibility with all ethanol blends including E85.
- **Tank Preparation:** With an above or underground tank, it must be cleaned prior to storing any blend above E10, including E85. E85 will "clean out" and absorb contamination left behind by years of petroleum fuel storage. Converting diesel equipment might require more thorough cleaning. Incompatible tanks need to be replaced.

Other Underground Storage Tank Equipment

All existing pipe manufacturers have UL 971 listing for ethanol blends up to E100. To comply with federal code, other underground equipment manufacturers have either UL listed their equipment up to E85 or have stated approval in writing for specific model types with blends above E10. Other underground equipment includes overfill protection, leak detection, shear valves, fill and vapor caps, adaptors, containment sumps, and all associated fittings and accessories. For other underground storage equipment compatibility, please refer to Appendix B of the Handbook for Handling, Storing, and Dispensing E85 and Other Ethanol-Gasoline Blends ([/uploads/publication/ethanol_handbook.pdf](http://uploads/publication/ethanol_handbook.pdf)).

Above-Ground Dispensing Equipment

Equipment Compatibility and Availability

All existing tank and many associated underground storage tank (UST) equipment manufacturers have prepared letters stating compatibility to meet federal code.

Tank Manufacturer Compatibility with Ethanol Blends ([/pdfs/tank-manufacturer-compatibility.pdf](http://pdfs/tank-manufacturer-compatibility.pdf))



([/pdfs/tank-manufacturer-](http://pdfs/tank-manufacturer-compatibility.pdf)

[compatibility.pdf](http://pdfs/tank-manufacturer-compatibility.pdf))

Other Associated Equipment Compatibility with Ethanol Blends ([/pdfs/other-equipment-compatibility.pdf](http://pdfs/other-equipment-compatibility.pdf))



([/pdfs/other-equipment-](http://pdfs/other-equipment-compatibility.pdf)

[compatibility.pdf](http://pdfs/other-equipment-compatibility.pdf))

Dispenser, Hanging Hardware, Shear Valve, and Submersible Turbine Pump Manufacturer Compatibility ([/pdfs/dispensing-equipment.pdf](http://pdfs/dispensing-equipment.pdf))



([/pdfs/dispensing-equipment.pdf](http://pdfs/dispensing-equipment.pdf))

Several dispenser manufacturers offer products for blends above E10 including UL listed E25 and E85 dispensers with blender pump options.

Hanging hardware includes hoses, nozzles, breakaways, and swivels. Both Husky and OPW offer UL listed E25 and E85 nozzles, swivels, and breakaways. Veyance offers UL listed E25 and E85 hose.

Shear valves are an important piece of safety equipment that stop the flow of fuel from the underground storage tank to the dispenser. They prevent fuel release in the event of an accident dislodging the dispenser or a fire. UL listed E85 shear valves are available from Franklin Fueling and OPW.

Submersible turbine pumps draw fuel from the tank and into the piping that delivers the fuel to the dispenser. Both Veeder-Root and Franklin Fueling offer UL listed E85 pumps.

Wayne Fueling Systems' standard dispenser is UL listed for E25. Wayne also offers E85 dispensers as an option on multiple models. Gilbarco offers both UL listed E25 and E85 dispensers, and Bennett offers UL listed E85 dispensers.

For lists of UL E10+ listed dispensers, hanging hardware, shear valves, and submersible turbine pumps, please refer to Appendix C of the [Handbook for Handling, Storing, and Dispensing E85 and Other Ethanol-Gasoline Blends](#) [\(./uploads/publication/ethanol_handbook.pdf\)](#).



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Appendix C: Dispenser, Hanging Hardware, Shear Valve, and Submersible Turbine Pump Manufacturer Compatibility

Table C. Dispenser, Hanging Hardware, Shear Valve, and Submersible Turbine Pump Manufacturer Compatibility			
Manufacturers introduce and discontinue models over time. If you do not see your equipment on this list please contact the manufacturer.			
Manufacturer	Product	Model	Ethanol Compatibility
UL E25 and E85 Listed Equipment			
Gilbarco	Dispenser	An option on remote control dispenser Models NAO, NA1, NA2, NA3, NG1, NG6, NLO, NL1, NL2, and NL3. Models NG1, NG6, and NLO-NL3 are X+1 configurations where X is a number of blendable grades running through one hose on each side and the +1 indicates a dedicated, independent, set of hydraulics. E25 may only be on the +1 side (no ethanol blending). For such split-type dispensers, the independent non-E25 hydraulics may be constructed.	E0-E25
Gilbarco	Dispenser	An option on remote control dispenser Models NAO, NA1, NA2, NA3, NNO, NN1, NN2, NN3, G1, G6, LO, L1, L2, and L3 and NJ4. Models NG1, NG6, and NLO-NL3 are X+1 configurations where X is a number of blendable grades running through one hose on each side. Model NJ4 is a 3+2 grade (double blender) with two distinct fuel trees as described above, and the +1 indicates a dedicated, independent, set of hydraulics. Hydraulics trees marked as suitable for E85 are suitable for blending mid-level grades.	E0-E85
Wayne	Dispenser	Ovation2 B12//9 and B23//9	E0-E25
Wayne	Dispenser	Ovation 2 EB23/4, EB23/5/M Dual Blender, EB23/5/M5 Double Dual Blender; Helix 3-1-1 H(W/LU)43-43E, 3-1-1 H(W/LU)45-43E/M5 Dual Blender, 3-1-1 H(W/LU)35-33E Double Dual Blender	E0-E85
Franklin Fueling	Shear valve	Franklin has third-party certified shear valves compatible with up to E85. Contact manufacturer for specific part numbers.	E0-E85
Franklin Fueling	Submersible turbine pump	Franklin has third-party certified STPs compatible with up to E85. Contact manufacturer for specific part numbers.	E0-E85
Husky	Nozzle	X E25, X E25 Cold Weather, XS E25, XS E25 Cold Weather	E0-E25
Husky	Nozzle	X E85, X E85 Cold Weather, XS E85, XS E85 Cold Weather	E0-E85
Husky	Breakaway	E25 Safe-T-Breaks	E0-E25
Husky	Breakaway	E85 Safe-T-Breaks	E0-E85

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Appendix C: Dispenser, Hanging Hardware, Shear Valve, and Submersible Turbine Pump Manufacturer Compatibility

Table C (continued). Dispenser, Hanging Hardware, Shear Valve, and Submersible Turbine Pump Manufacturer Compatibility			
Manufacturers introduce and discontinue models over time. If you do not see your equipment on this list please contact the manufacturer.			
Manufacturer	Product	Model	Ethanol Compatibility
UL E25 and E85 Listed Equipment			
OPW	Balance Adaptor	28CS	E0-E25
OPW	Breakaway	66V-0492	E0-E85
OPW	Breakaway	66V-030RF	E0-E25
OPW	Nozzle	11BP*E85	E0-E85
OPW	Nozzle	11AP*E25 and 11BP*E25 Series Nozzles	E25
OPW	Swivel	241TPS-75RF	E25
OPW	Swivel	241TPS-0492	E0-E85
OPW	Shear valve	10 series	E0-E100
OPW	Shear valve vapor	60VS	E0-E100
Manufacturer approved; equipment is not UL listed for blends above E10			
Veyance	Hose	Flexsteel Futura Ethan-ALL	E0-E85
Husky	Swivel	E85	E0-E85
IRPCO	Hose dispenser	Steelflex Ultra Hardwall, Softwall (2 Braid, 4SP), Marina	E0-E15
IRPCO	Hose transfer	Kanapower ST, RED FLEXTRA, FLEXWING Versafuel	E0-E15
Veeder-Root	Submersible turbine pump	Redjacket Maxxum 410763-XXX (MXP300JX-XXX or MXP500JX-XXX)	E0-E20
Veeder-Root	Submersible turbine pump	Redjacket AG models	E0-E100
Veyance	Hose dispenser	Flexsteel Futura	E0-E15

Appendix B: Pipe and Associated UST Manufacturer Compatibility

Table B1. Pipe Manufacturer Compatibility with Ethanol Blends			
Manufacturer	Product	Model	Ethanol Compatibility
<i>Piping—All Companies have UL 971 listing for E100</i>			
Advantage Earth Products	Piping	1.5", 2", 3", 4"	E0-E100
Brugg	Piping	FLEXWELL-HL, SECON-X, NITROFLEX, LPG	E0-E100
Franklin Fueling	Piping	Franklin has third-party certified piping compatible with up to E85. Contact manufacturer for specific part numbers.	E0-E85
OPW	Piping	FlexWorks, KPS, Pisces (discontinued)	E0-E100
NOV Fiberglass	Piping	RedThread IIA, Ameron Dualoy	E0-E100
NUPI	Piping	Smartflex	E0-E100
OMEGAFLEX	Piping	DoubleTrac (brass and stainless steel fittings)	E0-E100

Letters stating compability:

Petroleum Equipment Institute

www.pei.org/ust-component-compatibility-library

Appendix B: Pipe and Associated UST Manufacturer Compatibility

Table B2. Associated UST Manufacturer Compatibility with Ethanol Blends			
Manufacturers introduce and discontinue models over time. If you do not see your equipment on this list please contact the manufacturer. Note X in these lists can be substituted for any value.			
Federal code requires compatibility of this equipment with specific fuels. This is achieved through either third-party listing or a letter from the manufacturer stating compatibility. Husky has UL listing for E85. The following companies have issued letters stating compatibility: Bravo, Morrison Brothers, Vaporless Manufacturing, Veeder-Root, and Western Fiberglass. Please contact other manufacturers for a compatibility letter or to inquire if they have UL E85 listed products. Compatibility letters are available at: www.pei.org/ust-component-compatibility-library			
Manufacturer	Product	Model	Ethanol Compatibility
Bravo Systems	Fiberglass fittings	Series F, FF, FPE, FR, Retrofit-S, D-BLR-S, D-INR-S, FLX, FLX-INR, FPS, TBF	E0-E100
Bravo Systems	Spill buckets	B3XX	E0-E100
Bravo Systems	Tank sumps & covers	B4XX	E0-E100
Bravo Systems	Transition sumps	B5XX, B6XX, B7XX, B8XX	E0-E100

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Appendix B: Pipe and Associated UST Manufacturer Compatibility

Table B2 (continued). Pipe Manufacturer Compatibility with Ethanol Blends			
Manufacturer	Product	Model	Ethanol Compatibility
Bravo Systems	Under dispenser containment sumps	B1XXX, 7XXX, B8XXX, B9XXX	E0-E100
Cimtek	Filter	300MB-10, 300MB-30, 400MB-10, 400MB-30, 475XLMB-10	E0-E15
Cimtek	Filter	300BHA-01, 400BHA-01, 400BHA-05, 800BHA-01	E0-E85
Clay and Bailey	AST emergency vent	354, 365, 366, 367, 368, 369, 370	E0-E85
Clay and Bailey	AST manhole	API-650	E0-E85
Clay and Bailey	AST overflow prevention valve	1228	E0-E85
Clay and Bailey	AST spill containment	all	E0-E85
Clay and Bailey	Fill cap	94, 232, 233, 234, 235, 254	E0-E85
Franklin Fueling	All	Franklin has third-party certified equipment compatible with up to E85. Contact manufacturer for specific part numbers.	
Husky	Pressure vacuum vents	4620, 4885, 5885, 11730, 11735, 11740	E0-E85
Morrison Bros	Anodized farm nozzle	200S	E0-E85
Morrison Bros	Anti-syphon valve	912	E0-E85
Morrison Bros	AST adaptor	927	E0-E85
Morrison Bros	Ball valves	691BSS	E0-E85
Morrison Bros	Caps	305C	E0-E85
Morrison Bros	Clock gauge with alarm	918	E0-E85
Morrison Bros	Clock gauges	818	E0-E85
Morrison Bros	Combination vent/ overflow alarm	922	E0-E85
Morrison Bros	Diffuser	539TO, 539TC	E0-E85
Morrison Bros	Double tap bushing	184	E0-E85
Morrison Bros	Drop tubes	419A	E0-E85
Morrison Bros	Emergency vents	244	E0-E85

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Appendix B: Pipe and Associated UST Manufacturer Compatibility

Table B2 (continued). Pipe Manufacturer Compatibility with Ethanol Blends			
Manufacturer	Product	Model	Ethanol Compatibility
OPW	Fill adaptor-top	633T, 633TC	E0-E100
OPW	Fill Cap	634TT-7085-EVR, 634LPC, 634TT-4000	E0-E100
OPW	Fill cap-side	62TT	E0-E100
OPW	Fill-swivel adaptor	61SALP-MA, 61SALP-1020-EVR	E0-E100
OPW	Flexible connectors	FCxx	E0-E100
OPW	Float kit	61SOK-0001	E0-E15
OPW	Jack screw	61JSK, 71JSK	E0-E100
OPW	Manhole	Conquistador, Fiberlite, 104A, 104FG, 104C, 6110,6120	E0-E100
OPW	Monitoring well cap kit	634TTM	E0-E100
OPW	Monitoring well probe cap	62M, 116M, 62M-MA	E0-E100
OPW	Multi-port spill containment	6511, 6421, 6511, 6521, 6561, 6571, Fiberlite	E0-E100
OPW	Overfill prevention valve	71SOM, 61SOM, 61SOCM-4000	E0-E100
OPW	Overfill prevention valve	71SO, 71SO-C, 71SO-CT, 61SOC, 61SOP, 61SOR	E0-E15
OPW	Pressure vacuum vent	523V, 623V	E0-E100
OPW	Spill container (bucket)	1-2100, 1SC-2100, 1C-2100,1C-2200, EDGE, '1-2105, 101-BG2100	E0-E100
OPW	Tank bottom protectors	6111, 61TP	E0-E15
OPW	Tank sumps & accessories	Fiberlite, FlexWorks	E0-E100
OPW	Transition sumps & accessories	FlexWorks	E0-E100
OPW	Vapor adaptor	1611AV, 1611AVB	E0-E100
OPW	Vapor Cap	1711T-7085-EVR, 1711LPC	E0-E100
OPW	Vapor-swivel adaptor	61VSA-MA, 61VSA-1020-EVR	E0-E100
Vaporless Manufacturing	Leak detector	99LD-2000/2200/3000 without stainless steel tubing/fittings	E0-E20
Vaporless Manufacturing	Leak detector	99LD-2000/2200/3000 with stainless steel tubing/fittings	E0-E100

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Appendix B: Pipe and Associated UST Manufacturer Compatibility

Table B2 (continued). Pipe Manufacturer Compatibility with Ethanol Blends			
Manufacturer	Product	Model	Ethanol Compatibility
OPW	Fill adaptor-top	633T, 633TC	E0-E100
Vaporless Manufacturing	Overfill prevention valve	OPF-2/3 with stainless steel tubing/fittings	E0-E100
Veeder-Root	Continuous interstitial tank system	P/N 857280-100, 857280-200, 857280-30X	E0-E15
Veeder-Root	Electronic line leak detector	Series 8484, 8590	E0-E15
Veeder-Root	Ground water monitoring	P/N 794380-621, 794380-622, 794380-624	E0-E15
Veeder-Root	Interstitial and secondary containment monitoring	P/N 794380-XXX, 794390-XXX, 847990-00X, 857080-XXX	E0-E15
Veeder-Root	Interstitial and secondary containment monitoring	P/N 794380-321, 794380-323, 794380-333, 794380-344, 794380-345, 794380-351, 794380-430	E0-E85
Veeder-Root	Magnetostrictive probe	Mag Plus Series 8463XX, Mag Series 8473XX	E0-E15
Veeder-Root	Tall tank probe	Mag-FLEX 889560-XXX, MAGXL-XXX	E0-E90
Veeder-Root	Vapor monitoring	P/N 394390-700	E0-E15
Western Fiberglass	Co-flex piping	all	E0-E100
Western Fiberglass	Cuff fittings	all	E0-E100
Western Fiberglass	Sumps (dispenser, tank, transition, vapor, vent)	all	E0-E100
Western Fiberglass	Co-flow hydrostatic monitoring systems	all	E0-E100

Letters stating compability:

Petroleum Equipment Institute

www.pei.org/ust-component-compatibility-library

Appendix A: Tank Manufacturer Compatibility

Table A1: Tank Manufacturer Compatibility with Ethanol Blends					
	E10	E100		E10	E100
Manufacturer	✓	✓	<i>Continued from below</i>		
FIBERGLASS^a			Highland Tank	✓	✓
Containment Solutions	✓	✓	J.L. Houston Co.	✓	✓
Owens Corning (single wall 1965-1994)	✓	✗	Kennedy Tank and Manufacturing Co., Inc.	✓	✓
Owens Corning (double wall 1965-July 1, 1990)	✓	✗	Lancaster Tanks and Steel Products	✓	✓
Owens Corning (double wall July 2, 1990-December 31, 1994)	✓	✓	Lannon Tank Corporation	✓	✓
Xerxes (single wall prior to February 1981)	✗	✗	Mass Tank Sales Corp.	✓	✓
Xerxes (single wall February 1981-June 2005)	✓	✗	Metal Products Company	✓	✓
Xerxes (single wall since July 2005)	✓	✓	Mid-South Steel Products, Inc.	✓	✓
Xerxes (double wall prior to April 1990)	✓	✗	Modern Welding Company	✓	✓
Xerxes (double wall April 1990 and after)	✓	✓	Newberry Tanks & Equipment, LLC	✓	✓
STEEL^b			Plasteela	✓	✓
Acterra Group Inc.	✓	✓	Service Welding & Machine Company	✓	✓
Caribbean Tank Technologies Inc.	✓	✓	Southern Tank & Manufacturing Co., Inc.	✓	✓
Eaton Sales & Service LLC	✓	✓	Stanwade Metal Products	✓	✓
General Industries	✓	✓	Talleres Industriales Potosinos, S.A. de C.V.	✓	✓
Greer Steel, Inc.	✓	✓	Tanques Antillanos C. x A.	✓	✓
Hall Tank Co.	✓	✓	Watco Tanks, Inc.	✓	✓
Hamilton Tanks	✓	✓	We-Mac Manufacturing Company	✓	✓

Letters stating compability:

a. Petroleum Equipment Institute

www.pei.org/ust-component-compatibility-library

b. Steel Tank Institute

www.steeltank.com/FabricatedSteelProducts/ShopFabricatedTanks/SteelandAlternativeFuels/tabid/465/Default.aspx