

DISPENSER COMPATIBILITY WITH ETHANOL

Warranties on higher blends of ethanol are increasingly important as blender pumps and ethanol dispensers are installed across the country to give consumers more choice at the filling station. Gilbarco dispensers have been compatible for E15 since around 2008, while Wayne dispensers have always been E15 compatible.

According to a March 31, 2010 press release, Gilbarco-Veeder Root upgraded the warranty on its standard fuel dispensers to cover use of fuels with an ethanol content of 15%, known as E15.



**GILBARCO
VEEDER-ROOT**

"We are pleased to lead the market with the expansion of our current warranty from E10 to E15, ensuring that our customers are covered if the current E10 standard is broadened to E15," said Richard Browne, vice president of marketing for North America at Gilbarco Veeder-Root. "Our customers can be confident that Gilbarco and Gasboy will honor warranty claims and otherwise support the dispensers they have recently purchased or are considering, should the blending standards change to E15." The standard fuel dispenser models - currently UL listed to 10 percent ethanol - will now carry a warranty for up to 15 percent ethanol. The change is retroactive to Gilbarco dispensers manufactured or commissioned in North America since April 1, 2008, and models include the Gilbarco Encore and Legacy series dispensers, as well as the Gasboy Atlas product line.

Wayne
FUELING SYSTEMS

On May 19, 2010, Dresser Wayne announced that all of their standard dispensers have always, and will continue to, cover the use of ethanol blends up to 15 percent ethanol.

In a letter to their partners, Scott Negley, Director, Alternative Fuel Products for Dresser Wayne said, "You may have heard recent industry announcements regarding warranty coverage on E10 and E15 dispensers. Based on some of the questions we have been receiving it is apparent that this announcement is creating some confusion in the market place. . . One of the most important points that I would like to make is that all standard Dresser Wayne dispensers have always been warranted up to E15. That said, we understand that navigating the Underwriters Laboratory (UL) approvals and dispenser warranty is supported up to E15, the UL approval only applies to E10. Nothing has changed there. It is unknown whether UL will change their position to reflect the increased ethanol allowance for standard equipment which is expected to be announced by the EPA this summer."

TANK & PIPE COMPATIBILITY WITH ETHANOL

FAQ: For many decades, underground storage tank (UST) manufacturers have approved their tanks for blends up to 100% ethanol (E100). For example, all steel tanks and double-walled fiberglass tanks have been approved for up to E100 since 1990. (1)

FAQ: For those tanks with lower ethanol blend certifications, the U.S. Environmental Protection Agency's (EPA's) Office of Underground Storage Tanks (OUST) issued Guidance in 2001: Compatibility of UST Systems with Biofuels Blends, to enable alternative compliance with federal code as UST systems are typically in use for decades. This guidance allowed tank manufacturers to issue letters stating the compatibility of their tanks with specific ethanol blends. ALL existing tank manufacturers have issued such letters, and the majority of installed tanks are compatible with ethanol up to 15% (E15).(1)

FAQ: All existing pipe manufacturers have Underwriters Laboratories (UL) listing for E100. (1)

FAQ: The U.S. Department of Energy's National Renewable Energy Laboratory (NREL) conducted a literature review of the past 15 years to determine if there were any negative impacts during the multi-year deployment of 10% ethanol (E10) nationwide. The review concluded that there were no incidents of E10 causing releases (also referred to as leaks) from UST. None of the reviewed literature noted any association between E10 and any specific UST release whatsoever. The EPA OUST's Performance Measures' data on UST releases was also reviewed, and as E10 was deployed nationwide, the trend was in fact fewer UST releases. Anecdotal input solicited from infrastructure industry experts said that they knew of no published reports of releases caused by E10 (1)

FAQ: In states where private insurance is the dominant financial responsibility mechanism, insurance underwriting criteria - which include profitability and risk considerations - may become a trigger for removal or replacement of high-risk UST systems. Specifically, increased premiums or cancellation notices may trigger UST closure or replacement. These States have observed the following factors as significant in insurers' underwriting decisions: (2)

- Installation dates
- Tank and piping construction
- Retrofit dates,
- Presence of historical contamination
- Bulk rating and credits when more than one tank or site is underwritten

Sources:

1. National Renewable Energy Laboratory "Strategic Partnership Project Report NREL/TP-5400-64156 May 2015"
https://www.afdc.energy.gov/uploads/publication/e15_infrastructure.pdf
2. ASTSWMO - The Association of State and Territorial Solid Waste Management Officials, Inc. "Aging tank report"
<http://www.astswmo.org/files/policies/Tanks/2015-10-ASTSWMOAgingTanks%20Report-Final.pdf>

TANK COMPATIBILITY WITH ETHANOL

Tank Manufacturer Compatibility with Ethanol Blends			Manufacturer	E10	E100
Manufacturer	E10	E100			
FIBERGLASS¹			Kennedy Tank and Manufacturing Co., Inc.	✓	✓
Containment Solutions	✓	✓	Lancaster Tanks and Steel Products	✓	✓
Owens Corning (single wall between 1965-1994)	✓	✗	Lannon Tank Corporation	✓	✓
Owens Corning (double wall 1965-7/1/1990)	✓	✗	Mass Tank Sales Corp.	✓	✓
Owens Corning (double wall 7/2/1990-12/31/1994)	✓	✓	Metal Products Company	✓	✓
Xerxes (single wall prior to 2/1981)	✗	✗	Mid-South Steel Products, Inc.	✓	✓
Xerxes (single wall prior 2/1981-6/2005)	✓	✗	Modern Welding Company	✓	✓
Xerxes (single wall prior since 7/2005)	✓	✓	Newberry Tanks & Equipment, LLC	✓	✓
Xerxes (double wall prior to 4/1990)	✓	✗	Plasteel ¹	✓	✓
Xerxes (double wall since 4/1990)	✓	✓	Service Welding & Machine Company	✓	✓
STEEL²			Southern Tank & Manufacturing Co., Inc.	✓	✓
Acterra Group Inc.	✓	✓	Stanwade Metal Products	✓	✓
Caribbean Tank Technologies Inc.	✓	✓	Talleres Industriales Potosinos, S.A. de C.V.	✓	✓
Eaton Sales & Service LLC	✓	✓	Tanques Antillanos C. x A.	✓	✓
General Industries	✓	✓	Watco Tanks, Inc.	✓	✓
Greer Steel, Inc.	✓	✓	We-Mac Manufacturing Company	✓	✓
Hall Tank Co.	✓	✓	Letters stating compatibility		
Hamilton Tanks	✓	✓	1 PEI		
Highland Tank	✓	✓	http://www.pei.org/PublicationsResources/ComplianceFunding/USTComponentCompatibilityLibrary/tabid/882/Default.aspx		
J.L. Houston Co.	✓	✓	2 STI		
			http://www.steeltank.com/Publications/E85BioDieselandAlternativeFuels/ManufacturerStatementsOfCompatibility/tabid/468/Default.aspx		

Pipe Compatibility						
Manufacturer	Product	Model	E%	UL Listed	UL for specific fuel	Other Approval
Advantage Earth Products	Pipe	1.5", 2", 3", 4"	E100	yes	yes	
Brugg Pipesystems	Pipe	FLEXWELL-HL, SECON-X, NIROFLEX, LPG	E100	yes	yes	
Franklin Fueling	Pipe	XP, UPP	E100	yes	yes	
Franklin Fueling	Pipe ducting	APT, UPP	E100	yes	yes	
Franklin Fueling	Pipe fittings	XP stainless steel (ELB-XP-150, ELB-XP- 175, ELB-XP-200, GSHP-150, GSHP-200, MS-XP-150-150SS, MS-XP-175-200SS, MS- XP-200-200SS, MS-100-100SS, MS-XP- 150-150, MS-XP-SW-175-200, MS-XP-SW-200-200, QRS-XP-150-200, QRS-XP-175-200, QRS-XP-200-200, SSC-150, SSC-200, SSE90-150, SSE90-200, SSE90-150, SST- 150, SST-200, SSU-150, SSSHP-150, TEE- XP-150, TEE-XP-175, TEE-XP-200) UPP stainless fittings	E85	yes	yes	
NOV Fiberglass	Red Thread IIA	fiberglass	E100	yes	yes	
NUPI	Smartflex	flexible plastic	E100	yes	yes	
OMEGAFLEX	DoubleTrac	flexible plastic (must use stainless steel fittings)	E100	yes	yes	
OPW	Pipe	FlexWorks, Pisces (discontinued)	E100	yes	yes	
OPW	Pipe adaptors, couplers, fittings	FlexWorks, Pisces (discontinued)	E100	yes	yes	

Tank Compatibility	
Fiberglass (1)	
Containment Solutions	Tanks manufactured after January 1, 1995 are all compatible with ethanol blends up to 100% (E100) (UL Listed)
Owens Corning	
Single Wall	Tanks manufactured between 1965 and 1994 are approved to store up to 10% ethanol (E10)
Double Wall	Tanks manufactured between 1965 and July 1, 1990 are approved to store up to 10% ethanol (E10) . Tanks manufactured between July 2, 1990 and December 31, 1994 were warranted to store any ethanol blend.
Xerxes	
Single Wall	Tanks manufactured prior to 1981 are not compatible with ethanol blends Tanks manufactured from 2/1981 through 6/2005 are designed for the storage of ethanol fuel up to a 10% blend (UL) Tanks manufactured from July 2005 to date are designed for the storage of ethanol fuel blends up to 100% (E100) (UL LISTED)
Double Wall	Tanks manufactured prior to April 1990 were designed for the storage of ethanol fuel up to a 10% blend (E10) Tanks manufactured from April 1990 to date are designed for the storage of ethanol fuel blends up to 100% (E100)(UL listed)
Steel (2)	
Acterra Group Inc.	Compatible with all blends up to 100% (E100)
Caribbean Tank Technologies Inc.	Compatible with all blends up to 100% (E100)
Eaton Sales & Service LLC	Compatible with all blends up to 100% (E100)
General Industries	Compatible with all blends up to 100% (E100)
Greer Steel, Inc.	Compatible with all blends up to 100% (E100)
Hall Tank Co.	Compatible with all blends up to 100% (E100)
Hamilton Tanks	Compatible with all blends up to 100% (E100)
Highland Tank	Compatible with all blends up to 100% (E100)
J.L. Houston Co.	Compatible with all blends up to 100% (E100)
Kennedy Tank and Manufacturing Co.	Compatible with all blends up to 100% (E100)
Lancaster Tanks and Steel Products	Compatible with all blends up to 100% (E100)
Lannon Tank Corporation	Compatible with all blends up to 100% (E100)
Mass Tank Sales Corp.	Compatible with all blends up to 100% (E100)
Metal Products Company	Compatible with all blends up to 100% (E100)
Mid-South Steel Products, Inc	Compatible with all blends up to 100% (E100)
Modern Welding Company	Compatible with all blends up to 100% (E100)
Newberry Tanks & Equipment, LLC	Compatible with all blends up to 100% (E100)
Plasteel1	Compatible with all blends up to 100% (E100)
Service Welding & Machine Company	Compatible with all blends up to 100% (E100)
Southern Tank & Manufacturing Co., Inc.	Compatible with all blends up to 100% (E100)
Stanwade Metal Products	Compatible with all blends up to 100% (E100)
Talleres Industriales Potosinos	Compatible with all blends up to 100% (E100)
Tanques Antillanos C. x A.	Compatible with all blends up to 100% (E100)
Watco Tanks, Inc.	Compatible with all blends up to 100% (E100)
We-Mac Manufacturing Company	Compatible with all blends up to 100% (E100)
Letters stating compability 1 PEI http://www.pei.org/PublicationsResources/ComplianceFunding/USTComponentCompatibilityLibrary/tabid/882/Default.aspx 2 STI http://www.steeltank.com/Publications/E85BioDieselandAlternativeFuels/ManufacturerStatementsofCompatibility/tabid/468/Default.aspx	

Other UST Equipment Compatibility						
Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
Clay and Bailey	AST anti-siphon valve	405	E10	no		
Clay and Bailey	AST manhole	API-650	E85	no		
Clay and Bailey	AST alarm	1400	E10	no		
Clay and Bailey	AST overfill prevention valve	1228	E85	yes	no	
Clay and Bailey	AST pressure vacuum vent	88	E10	no		
Clay and Bailey	AST spill containment	all	E85	no		
Clay and Bailey	AST emergency vent	354, 365, 366, 367, 368, 369, 370	E85	yes	no	
Clay and Bailey	Manholes	all	E10	no		
Clay and Bailey	Ball valve	736	E10	no		
Clay and Bailey	Fill cap	94, 232, 233, 234, 235, 254	E85	no		
Clay and Bailey	Vent-upflow	395	E10	no		
Cimtek	Filter	300, 400, 450, 475	E15	yes	no	
Cimtek	Filter	800	E85	yes	no	
EMCO Wheaton	Nozzle-balance VR	A4005-002E, A4015-002E	E85	yes	no	CARB EVR
EMCO Wheaton	Nozzle-balance VR	A4005-002, A4005-004, A4015-002, A4015-004	E15	yes	no	CARB EVR
EMCO Wheaton	Breakaway	A4119-020E	E85	no		
EMCO Wheaton	Breakaway	A2119, A2219, A3019, A3219, A4119EVR	E15	yes	no	CARB EVR (A4119 only)
EMCO Wheaton	Swivel	A0360, A4110EVR	E15	yes (EVR only)	no	CARB EVR (A4110 only)
EMCO Wheaton	Hose	ALL	E15	yes	no	
EMCO Wheaton	Adaptors	A0030, A0030-142, A0076, A0076-142S A0089, A0096	E15	no		CARB EVR (both A0030 and A0076)
EMCO Wheaton	Ball float	A0075E, A0078E	E85	no		CARB EVR (A0078)
EMCO Wheaton	Ball float	A0075, A0078	E15	no		CARB EVR (A0078)

Other UST Equipment Compatibility continued

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
EMCO Wheaton	Caps	A0097-005, A0097-004LP, A0097-010, A0099-002, A0099-004LP	E15	no		CARB EVR (A0097-005, A0099-02)
EMCO Wheaton	Drop tube	A0020-004E, A0020-005E, A0020-007E	E15	no		CARB EVR (A0020, A0088)
EMCO Wheaton	Drop tube	A0020-004, A0020-005, A0020-007, A0020-008, A0020-021, A0020-133, A0020-144, A0070, A0088	E15	no		CARB EVR (A0020, A0088)
EMCO Wheaton	Extractor fittings	A0079	E85	yes	no	CARB EVR
EMCO Wheaton	Overfill prevention valve	A1100-010E, A1100-056SE, A1100-055SERF, A1100-056SERF, A1100EVR-057E, A1100-067E, A1100-087E	E85	no		CARB EVR
EMCO Wheaton	Overfill prevention valve	A1100-010, A1100-011, A1100-054S, A1100-054SC, A1100-054SCN, A1100-055SRF, A1100-056SRF, A1100-053S, A1100-055S, A1100EVR-055, A1100-056S, A1100EVR-056, A1100-057S, A1100EVR-057, A1100-058S, A1100EVR-058, A1100-065S, A1100-066S, A1100-067S, A1100-085S, A1100-087S, A1100-087S	E15	no		CARB EVR (only models with EVR in model no.)
EMCO Wheaton	Ball valve	A0750	E15	no		
EMCO Wheaton	Check valve	A0066, A0732	E15	no		
EMCO Wheaton	Shear valve	A0060 w /stainless steel body	E85	yes	no	
EMCO Wheaton	Shear valve	A0060 with cast iron body, A0063	E15	yes	no	
EMCO Wheaton	Vent	A0084, A0085, A4103, A0785	E15	yes (A4103 only)	no	
Husky	Pressure Vacuum Vents	A0084, A0085, A4103, A0785	E15	yes (A4103 only)	no	

STP Equipment

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
Franklin Fueling	Mechanical line leak detector	MLD+AG	E85	yes	?	
Franklin Fueling	Mechanical line leak detector	STP-MLD	E10	yes	yes	
Franklin Fueling	Shear valve (emergency shear	662 models	E85	yes (66250 2902)	yes	
Franklin Fueling	Shear valve-vapor	362 models	UN	no	no	
Franklin Fueling	Submersible pump controller	MagVFC IST,	E85	yes	yes	
Franklin Fueling	Submersible turbine pump	STP	E10	yes	yes	
Franklin Fueling	Submersible turbine pump	FE Petro STPAG, IST	E85	yes	yes	

Fill Equipment

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
Franklin Fueling	Ball float vent valve	308 models	E85	no		EVR CARB
Franklin Fueling	Drop tube	306 and 708 models, 782-204-30-2, 782- 204-32-2, 782-202-12, 782-203-12, 782- 204-10-2, 782-204-12-2, 782-204-15-2	E85	no		
Franklin Fueling	Extractor vent valve (tee)	300 series models	E85	no		
Franklin Fueling	Fill adaptor-side	776-300-01, 776-300-31	E85	no		
Franklin Fueling	Fill adaptor-swivel	SWF-100-SS, SWFV-PKGSS	E85	no		EVR CARB
Franklin Fueling	Fill adaptor-swivel	SWFV-PKG, 705-412-01, 705-412-02	E85	no		
Franklin Fueling	Fill adaptor-top	778-301-05	E85	no		EVR CARB
Franklin Fueling	Fill adaptor-top	776-300-01, 776-300-31, 778-301-01, 778-301-02, 778-301-06, 778-301-32, 778-301-01, 778-302-31, 778-303-02, 778-303-32, 780-200-01	E85	no		
Franklin Fueling	Fill cap-side	775 series	E85	no		
Franklin Fueling	Fill cap-top	777-201-02	E85	no		EVR CARB
Franklin Fueling	Fill cap-top	777-202-01, 777-202-02, 779-200-01, 774-202-03	E85	no		
Franklin Fueling	Vapor cap	304-301-03	E85	no		EVR CARB
Franklin Fueling	Vapor cap	304-200-01, 304-200-02, 304-301-01, 304-301-02	E10	no		EVR CARB (301-01 ONLY)
Franklin Fueling	Vapor pipe adaptor	SWV-101-SS, SWFV-PKGSS	E85	no		EVR CARB
Franklin Fueling	Vapor pipe adaptor	SWV-101-B, SWFV-PKG, 705-413-01, 705-413-02	E10	no		
Franklin Fueling	Overfill prevention valve	708-491-31, 708-491-32, 708-492-21, 708-492-22, 708-492-31, 708-492-32, 708-498-11	E85	yes	?	EVR CARB (ENDING IN 11 or 12)
Franklin Fueling	Overfill prevention valve	708-491-01, 708-491-02, 708-491-11, 708-491-12, 708, 491-21, 708-492-01, 708-492-02, 708-498-11, 708-493-03, 708-493-04, 708-493-23, 708-493-24, 708-340-901, 708-494-02, 708-494-03, 708-494-04, 708-498-01, 708-498-02, 708-498-03	E10	yes	?	EVR CARB
Franklin Fueling	Probe cap and adaptor kit	90037-E	E85	no		
Franklin Fueling	Spill container (bucket)	702, 703, 705, 715	E10	yes		yes (705 and 715 only)
Franklin Fueling	Spill container (bucket)	Phil-Tite series, Defender Series	E85	yes	?	EVR CARB
Franklin Fueling	Tank bottom protector	TBP-3516-E	E85	no		
Franklin Fueling	Tank bottom protector	785-200-02	E10	no		
Franklin Fueling	Vent valve (pressure/vacuum)	PV-ZERO models	E85	yes	?	EVR CARB
Franklin Fueling	API adaptor	880-500-04	E85	no		
Franklin Fueling	Automatic tank gauge	TSP	E10	yes	yes	

Fill Equipment

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
Franklin Fueling	Ball valve (for pipe)	FLEX-ING	E85	yes	no	CSA
Franklin Fueling	Check valve	622-300-01, 65, 515, 516, 615, 635, 650	E10	no		
Franklin Fueling	Dispensing cutoff system	DC400	E10	no		
Franklin Fueling	Flexible connectors	FLEX-ING	E10			
Franklin Fueling	Flexible connectors	FIREFLEX	E85	yes	no	
Franklin Fueling	Float kit	TSP-IGF4P	E15	no		
Franklin Fueling	Float kit	TSP-IGF4D3, TSP-IGF4D	E85	no		
Franklin Fueling	Foot valve	50-201, 320	E10	no		
Franklin Fueling	Interstitial sensor	TSP-HIS, TSP-DIS, TSP-EIS, TSP-HFS	E85	no		
Franklin Fueling	Level sensor	TSP-HLS	E85	no		
Franklin Fueling	Magnostriuctive probe	Moorman	E85	no		
Franklin Fueling	Manhole	14U, 20UR, 780, 781, 789, 808, 810, 814, 987, Defender, SSQ, SR series	E10	no		
Franklin Fueling	Monitoring test well	772, 773, 808, 810	E10	no		
Franklin Fueling	Monitoring well cap	TSP-KW4	E10	no		
Franklin Fueling	Monitoring well sensor	TSP-MWS	E0	no		
Franklin Fueling	Probe installation kit	FFS	E10	no		
Franklin Fueling	Pipe fittings	GC-150, GC-200, GE90-150, GE90-200, GE90-215, GE90-252, GHB-200-150, GT- 150, GT-200, GT-215, GT-252, GU-150, GU-200, GHB-200-150, GSHP-150, GSHP-200, XP brass (MS-XP-150-150, MS-XP-175-200, MS-XP-200-200)	E10	yes	yes	
Franklin Fueling	Sumps	2400, 4542 (UL), 4736, APT, AST, LM, TS, UPP (UL) models	E85	yes	no	
Franklin Fueling	Sump accessories, fittings, boots	APT	E85	yes	no	

Above-ground Equipment

AST Equipment

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
Franklin Fueling	Nozzle	400, 600, 708, 709, 800, 900 series (all vapor recovery II)	E10	no		EVR CARB (400, 600, 900)
Franklin Fueling	Breakaway	697, 698, ACCUBREAK, SAFETY-SEVER	E10	yes	yes	
Franklin Fueling	Hoses	FLEX-ING	E10	no		
Franklin Fueling	Hoses	FLEX-ON	E15	yes	no	
Franklin Fueling	Swivel	465	E10	no		
Franklin Fueling	Swivel	FLEX-ING multi-plane	E10	no		

AST Equipment continued

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
Franklin Fueling	Anti-siphon valve	636-300-11, 636-300-12	E85	no		
Franklin Fueling	Anti-siphon valve	605-300-01, 606-300-01, 616-300-01, 616-300-02, 616-300-03	E10	no		API/RP 2000
Franklin Fueling	AST emergency vent	803	E10	yes		
Franklin Fueling	AST fill cap	751, 770	E10	no		
Franklin Fueling	AST overfill prevention valve	709	E10	no		
Franklin Fueling	AST Pressure regulator valve	620, 621, 622, 644	E10	yes		API/RP 2000
Franklin Fueling	AST pressure vacuum vent	802	E10	no		
Franklin Fueling	AST spill container (bucket)	706	E10	no		
Franklin Fueling	AST tank vent	800	E10	no		
Morrison Bros	Adaptor-coaxial	605	UN	no		
Morrison Bros	Anodized Farm Nozzle	200S	E85	no		
Morrison Bros	Anti-Syphon Valve	912	E85	no		
Morrison Bros	AST adaptor	927	E85	no		EVR CARB (some)
Morrison Bros	AST adaptor	926, 927B	UN	no		
Morrison Bros	AST clock gauge	818, 818C, 818F, 818MET, 818MEF, 918F, 918FT, 918MEF, 918MET, 918T, 1018GM, 8181	UN	no		EVR CARBa(some)
Morrison Bros	Ball Valves	691BSS	E85	no		
Morrison Bros	Cap relief	779	UN	no		
Morrison Bros	Caps	305C	E85	no		EVR CARBa(some)
Morrison Bros	Caps-monitoring well	305XP, 305XPU	UN	yes(XPU)		EVR CARBa(some)
Morrison Bros	Cap-test well	178XAT, 178XB, 178XA, 305XA, 678XA	UN	no		
Morrison Bros	Clock Gauge with Alarm	918	E85	no		
Morrison Bros	Clock Gauges	818	E85	no		
Morrison Bros	Combination Vent/Overfill Alarm	922	E85	no		
Morrison Bros	Diffuser	539TO, 539TC	E85	no		EVR CARBa(some)
Morrison Bros	Diffuser	539, 539EXT, 539TC, 539TO	UN	no		EVR CARBa(some)
Morrison Bros	Double Tap Bushing	184	E85	no		
Morrison Bros	Drop Tubes	419A	E85	no		
Morrison Bros	Drop tubes	275, 419, 419SOS	UN	no		EVR CARBa(some)
Morrison Bros	Emergency Vents	244	E85	yes	yes	
Morrison Bros	Expansion Relief Valve	076DI, 078DI	E85	no		
Morrison Bros	External Emergency Valves	346DI, 346FDI, 346SS, 346FSS	E85	no		

AST Equipment continued

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
Morrison Bros	Extractor pipe cap	578, 578P	UN	no		
Morrison Bros	Extractors	560/561/562/563	E85	no		
Morrison Bros	Fill cap	178, 178DT, 179, 179CI, 179M, 179MCI, 180M, 305CU, 379, 405C	UN	no		EVR CARBa(some)
Morrison Bros	Fill cap and adaptor	307	UN	no		
Morrison Bros	Fill swivel adaptor	305SA	UN	no		
Morrison Bros	Flame Arrester	351S	E85	no		
Morrison Bros	Float Vent Valves	317	E85	no		
Morrison Bros	Frost Proof Drain Valve	128DIS	E85	no		
Morrison Bros	Indicator paste	490G, 490W, SAR-GEL	UN	no		
Morrison Bros	In-Line Check Valve	958	E85	no		
Morrison Bros	Internal Emergency Valves	272DI, 72HDI	E85	no		
Morrison Bros	Interstitial sensor	918TCPS, 924LS	UN	no		
Morrison Bros	Manholes	318, 318L, 318TM, 318VR, 318XA, 418, 418L, 418TM, 418XA, 418XAP, 418XAH, 418XAW, 418LC, 424, 519, 524, 524H	UN	no		
Morrison Bros	Mechanical gauge	1018GM	UN	no		
Morrison Bros	Overfill Alarm	918TCP	E85	no		
Morrison Bros	Overfill Prevention Valve	9095A-AV, 9095SS	E85	no		
Morrison Bros	Overfill Prevention Valve	9095AA, 9095GBT	E85	no		
Morrison Bros	Pressure Vacuum Vent	948A	E85	yes	yes	
Morrison Bros	Probe cap and adaptor	307P	UN	no		
Morrison Bros	Solenoid Valves (3" Must be all Teflon version)	710SS	E85	no		
Morrison Bros	Spill Containers	515/516/517/518	E85	no		EVR CARBa (516)
Morrison Bros	Strainer	285	E85	no		
Morrison Bros	Strainer	284B, 284S, 285AL, 285DI, 285FDI, 286, 286FDI, 286U	UN	no		
Morrison Bros	Swing Check Valves	246ADI, 246DRF	E85	no		
Morrison Bros	Tank gauge	618	UN	no		
Morrison Bros	Tank Monitor Adaptor and Cap	305XPA	E85	no		
Morrison Bros	Vapor Recovery Adaptor	323	E85	no		EVR CARB
Morrison Bros	Vapor Recovery Caps	323C	E85	no		
Morrison Bros	Vent-double outlet (small UST)	155	E85	no		
Morrison Bros	Vent-double outlet (small UST)	155S, 155FA	UN	no		
Morrison Bros	Vent-pressure vacuum	548, 748, 749	E85	no		
Morrison Bros	Vent-updraft	354	E85	no		

AST Equipment continued

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
Morrison Bros	Vent-updraft	354T	UN	no		
Morrison Bros		571, 571P	UN	no		
National Environmental Fiberglass	Sumps-tank	All	E85	yes	no	EVR CARB
National Environmental Fiberglass	Sumps-transition	All	E85	yes	no	EVR CARB
National Environmental Fiberglass	Sumps-dispenser	All	E85	yes	no	EVR CARB
OPW	Balance Adaptor	28CS	E25	no		
OPW	Breakaway	66V-0492	E85	yes	yes	
OPW	Breakaway	66V-030RF	E25	yes	yes	
OPW	Breakaway	66V-0300, 66RB-2000, 68EZR-7575, 66REC-1000, 66SB-7575, 66SB-1010, 66CAS-0300, 66ISU-5100, 66ISB-5100, MFVA, 66CLP-5100, 66CSU-5200	E10	yes	yes	
OPW	Nozzle	21GE-0992	E85	yes	yes	
OPW	Nozzle	11AP-0100-E25, 11AP-0300-E25, 11AP-0400-E25, 11AP-0900-E25, 11BP-0100-E25, 11BP-0300-E25, 11BP-0400-E25, 11BP-0900-E25	E25	yes	yes	
OPW	Nozzle	11AP / 11BP Series	E10	yes	yes	
OPW	Swivel	241TPS-75RF	E25	yes	yes	
OPW	Swivel	36S series, 241TPS series, 20S series, 45 series	E10	yes	yes	
OPW	Swivel	241TPS-0492	E85	yes	yes	
OPW	Emergency shear valve	10 series	E100	yes	no	
OPW	Vapor shear valve	60VS	E100	yes	no	EVR CARB
OPW	AST anti-siphon valve	199ASV	E85	yes	no	
OPW	AST ball valve	21BV SS	E85	yes	no	
OPW	AST check valve	175, 1175	E85	no	no	
OPW	Drop tube	61FT	E25	no	no	EVR CARB
OPW	AST emergency shut off valve	178S	E85	no	no	
OPW	AST emergency vent	201, 202	E85	yes	no	
OPW	AST emergency vent	301	E86	yes	no	EVR CARB
OPW	AST mechanical gauge	200TG	E85	yes	no	EVR CARB
OPW	AST overfill prevention valve	61fSTOP A or M versions	E85	yes	no	EVR CARB
OPW	AST overfill prevention valve	61fSTOP	E25	yes	no	
OPW	AST pressure vacuum vent	523V, 623V	E100	yes	no	

AST Equipment continued

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
OPW	AST solenoid valve	821	E25	yes	no	
OPW	AST spill container	211-RMOT, 331, 332	E85	yes (ulc	no	EVR CARB
OPW	AST swing check valve	all	E85	no	no	
OPW	AST tank alarm	444TA	E85	no (ETL	no	
OPW	AST vapor adaptor	1611AVB-1625	E85	no		
OPW	AST vapor cap	1711T-7085-EVR, 1711LPC- 0300	E85	no		

UST Equipment

Caps and adaptors

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
OPW	Fill adaptor-top	633T, 633TC	?	yes	no	
OPW	Fill-swivel adaptor	61SALP-MA, 61SALP-1020-EVR	E85	yes	no	EVR CARB
OPW	Vapor swivel adaptor	61VSA	?	yes	no	EVR CARB
OPW	Fill-swivel adaptor (vapor)	61VSA-MA, 61VSA-1020-EVR	E85	yes	no	EVR CARB
OPW	Fill cap-side	62TT	?	yes	no	
OPW	Fill adaptor-side	61AS	?	yes	no	
OPW	Vapor adaptor	1611AV, 1611AVB	E100	yes	no	EVR CARB
OPW	Vapor Cap	1711T	E85	yes	no	EVR CARB
OPW	Monitoring well probe cap	62M, 116M	E100	yes	no	
OPW	Monitoring well probe cap	62M-MA	E85	yes	no	EVR CARB
OPW	Monitoring well cap kit	634TTM, 62PMC	?	yes	no	
OPW	Monitoring test well	61SPVC	?	no		

Extractors, Manholes, Multi-ports

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
OPW	Extractor fittings and plug	233, 233VP	E85	no		EVR CARB
OPW	Multi-port spill containment	411, 511, 521, Fiberlite,	E100	no		EVR CARB
OPW	Jack screw	71JSK	E85	no		
OPW	Jack screw	61JSK	?	no		
OPW	Face seal adaptor	FSA-400	?	no		EVR CARB
OPW	Manhole	Conquistador, Fiberlite, 104AOW-1200, 104C,	?	no		

Overfill Prevention						
Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
OPW	Overfill prevention valve	61SOM-412C-EVR, 61SOCM-4000, 71SO, 71SO-T, 71SOM	E85	no		EVR CARB
OPW	Overfill prevention valve	61SOC-4001, 61SOC-4011, 61SOP-4002, 61SOP-4012	E10	no		
OPW	Float kit	61SOK-0001	E10	no		
OPW	Ball float vent valve	21BV, 53VML, 30MV	E85	no		
OPW	Drop tube	61T, 61TC, 61TCP	E10	no		
OPW	Drop tube	61TSS	E85	no		EVR CARB
OPW	Spill container (bucket)	1-2100, 1SC-2100, EDGE	E100	yes	no	EVR CARB
OPW	Spill container (bucket)	1-2105, 1-2200, 101-BG2100	E100	yes	no	
OPW	Tank bottom protectors	6111, 61TP	E10	no		
Check Valve, Flexible Connectors, Vents						
Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
OPW	Flexible connectors	All	E100	yes	no	SA
OPW	Check valve	70, 70S	E85	yes	no	
OPW	Pressure vacuum vent	523V, 623V	E85	yes	no	
OPW	Pressure vacuum vent	23	?	yes		
OPW	Vent	514, 515	?	?		
Sumps and associated equipment						
Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
OPW	Dispenser sumps	FlexWorks	E85	yes	no	
OPW	Tank sumps	Fiberlite, FlexWorks	E85	yes	no	
OPW	Transition sumps	FlexWorks	E85	yes	no	
OPW	Sump accessories	FlexWorks	E85	yes	no	
Petroleum Containment	Sump-dispenser	CLE, DCL, EZ-PLUMB, MVR	?	no		
Petroleum Containment	Sump-tank	4200	E100	no		
Petroleum Containment	Sump-transition	all	?	no		
Pneumercator	Magnetostrictive probe	MP450S, MP451S, MP452S, MP461S, MP462S, MP463S, MP464SD MP550S, MP551S, MP552S, MP561S, MP562S, MP563S, MP564S	E100	yes	no	
Pneumercator	Leak sensors	ES825-100F, ES825-100XF, ES825- 100CF, ES825-200F, ES825-200XFD ES825-300F, ES825-300XF, ES825- 300CF, ES825-400F, ES825-400XFD HS100D, HS100NDD LS600LD, LS600S, LS610D RSU800-2, RSU801F, RSU810	E100	yes	no	

Sumps and associated equipment continued

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
Pneumercator	Single/Multi-Point Level/D Sensors	LS600, LS600F4, LS600M, LS600W, LS600X	E100	yes	no	
Pneumercator	Mechanical Gauges	DR-1-10, P5, P14	E100	no	no	
S. Bravo Systems	Fiberglass Fittings	Series F, FF, FPE, FR, Retrofit-S, D- INR-S, FLX, FLX-INR, FPS, TBF	E100	yes	no	
S. Bravo Systems	Spill Buckets	B3XX	E100	yes	no	
S. Bravo Systems	Tank Sumps & Covers	B4XX	E100	yes	no	
S. Bravo Systems	Transition Sumps	B5XX, B6XX, B7XX, B8XX	E100	yes	no	
S. Bravo Systems	Under Dispenser Containment Sumps	B1XXX, 7XXX, B8XXX, B9XXX	E100	yes	no	
Vaporless Manufacturing	Leak detector	99LD-2000/2200/3000 without stainless steel tubing/fittings	E20	yes	no	
Vaporless Manufacturing	Leak detector	99LD-2000/2200/3000 with stainless steel tubing/fittings	E100	yes	no	
Vaporless Manufacturing	Overfill prevention valve	OPF-2/3 without stainless steel tubing/fittings	E20	yes	no	
Vaporless Manufacturing	Overfill prevention valve	OPF-2/3 with stainless steel	E100	yes	no	
Veeder-Root	AST probe	Mag-FLEX	E15	yes	no	
Veeder-Root	Float kit	846400	E15	yes	no	
Veeder-Root	Magnostriuctive probes	Mag Plus Probe for Alternative Fluids with Water Detection P/N 846391-1xx or -2xx, Inventory Only Mag Plus Probe for Alternative Fluids with Water Detection P/N 846391-3xx	E20	yes	no	
Veeder-Root	Magnostriuctive probes	Mag Plus Probe for Alternative Fluids without Water Detection P/N 846391-4xx or -5xx, Mag Plus Probe for Alternative Fluids without Water Detection P/N 846391-6xx	E100	yes	no	
Veeder-Root	Magnostriuctive probes	Mag-D Density Probe, MagPlus Leak Detection Probe, MagPlus Inventory Measurement Probe	E15	yes	no	
Veeder-Root	Mechanical line leak detect	Red Jacket FXV	E100	yes	no	
Veeder-Root	Phase separation float	Phase-2	E15	yes	no	
Veeder-Root	Sensor-dispenser and sump	Discriminating and Non Discriminating Dispenser Pans and Containment Sensors, Sump sensor (piping), Mag Sump Sensor, Stand-alone Dispenser Pan Sensor	E15	yes	no	
Veeder-Root	Sensor-dispenser and sump	Position Sensitive Interstitial Sensor	E85	yes	no	
Veeder-Root	Sensor-groundwater	Groundwater Sensor	E15	yes	no	
Veeder-Root	Sensor-tank	Discriminating Interstitial Sensor Double Wall Fiberglass, Interstitial Sensors for Fiberglass Tanks, Interstitial Sensors for Steel Tanks	E15	yes	no	

Sumps and associated equipment continued

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
Veeder-Root	Sensor-tank	Discriminating Interstitial Sensor Double Wall Fiberglass, Interstitial Sensors for Fiberglass Tanks-High Alcohol, Interstitial Sensors for Steel Tanks-High Alcohol, MicroSensor (steel tanks, fill riser)	E85	yes	no	
Veeder-Root	Sensor-vapor	Vapor Sensor	E15	yes	no	
Western Fiberglass	Co-Flex piping	all	E100	yes	no	
Western Fiberglass	Cuff fittings	all	E100	no		
Western Fiberglass	Sumps (tank, dispenser, transition, vapor, vent)	all	E100	yes	no	
Western Fiberglass	co-flow hydrostatic Monitoring systems	all	E100	no		

Aboveground Compatibility

Dispensers

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
Gilbarco	Dispensers	All retail fuel models since April 2008	E15	yes to 10%	no / UL to 10%	
Gilbarco	Dispenser, Retrofit Kit	E25 option on any dispenser; E25 retrofit kit	E25	yes	yes	
Gilbarco	Dispenser	Encore Flex Fuel	E85	yes	yes	
Wayne	Dispensers	All retail fuel dispensers	E15	yes to 10%	no / UL to 10%	
Wayne	Dispenser	E25 option on any dispenser; E25 retrofit kit	E25	yes	yes	
Wayne	Dispenser	Ovation E85, Helix E85	E85	yes	yes	

Aboveground associated equipment

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
Franklin Fueling	Shear valve	662 models (UL listing for #662502902)	E85	yes	yes	
Franklin Fueling	Submersible turbine pump	FE Petro STPAG, IST	E85	yes	yes	
EMCO Wheaton	Breakaway	A2119, A2219, A3019, A3219, A4119EVR	E15	yes	no	
EMCO Wheaton	Breakaway	A4119-020E	E85	no		
EMCO Wheaton	Hose	all	E15	yes	no	
EMCO Wheaton	Nozzle	A4005-002, A4005-004, A4015-002, A4015-004	E15	yes	no	
EMCO Wheaton	Nozzle-balance vapor recov	A4005-002E, A4015-002E	E85	yes	no	
EMCO Wheaton	Swivel	A0360 (not listed), A4110EVR (UL listing)	E15	yes	no	
Husky	Nozzle	X E25, X E25, XSE25	E25	yes	yes	
Husky	Nozzle	X E85, X E85 Cold Weather, XS E85, XS E85 Cold Weather	E85	yes	yes	
IRPCO	Hose-dispenser	Steelflex Ultra Hardwall, Softwall (2 Braid, 4SP), Marina	E15	yes	no	

Aboveground associated equipment continued

Manufacturer	Product	Model	E%	UL Listed	UL listed for this fuel	Other Approval
OPW	Breakaway	66V-0300	E25	yes	yes	
OPW	Breakaway	66V-0492	E85	yes	yes	
OPW	Nozzle	21GE, 21GE-A	E85	yes	yes	
OPW	Swivel	241TPS-0492	E85			
OPW	Swivel	241TPS-0241, 241TPS-1000, 241TPW-0492	E25	yes	yes	
OPW	Shear valve	10P-0142E85, 10-P-4152E85	E85	yes	yes	
Veeder-Root	Submersible turbine pump	Redjacket, Redjacket AG,	E100	yes	no	
Veyance	Hose	Flexsteel Futura Ethan-all	E85	yes	yes	
Veyance	Hose	Flexsteel Futura	E15	yes	no	

Note: "UN" in the E% column indicates the manufacturer does not know if it is compatible with ethanol blends. ? = waiting on information from OEM