



E-85 Operational Issues



Gilbarco facility – Greensboro NC







- UL Requirements
- Impact on Site Equipment
- Implementation Options









Regulations for Flex Fuel Dispensers

- UL 87 is currently in the review process adding new requirements for flex fuel dispensers
- Identified materials of concern
 - CopperBrassAluminum

 Certain elastomers
 Cork and rubber gaskets

• Proposed changes may require:



- Coating for metals other than cast iron and steel
- Use of Elastomers approved for flex fuel







- E-85, M?? and Bio-diesel are potentially corrosive and can degrade "piping" and elastomers ability to maintain a seal.
- Attack on materials is more severe when fuels are cycled between high and low concentrations of alcohol,
 - i.e. switching from regular gasoline to E85 and back to regular gasoline







- a) Gasoline;
- b) gasoline/ethanol blends \leq E15
- c) gasoline/methanol blends \leq M15
- d) diesel fuel,
- e) diesel/biodiesel blends \leq B20 ,
- f) Fuel oil;
- g) Lubricating oil; and Kerosene.
- h) Gasoline/ethanol blends > E15 ethanol
- i) Gasoline/Methanol blends > M15 methanol
- j) Diesel/biodiesel blends > B20 biodiesel



May require changes to dispenser i.e. New "Flex Fuels"



No changes required to dispensers. i.e. **Standard fuels**





Materials for Fluid confining parts



- Such as:
 - Meters
 - Inlet piping
 - Hose outlet castings
 - ➢ Nozzles
 - Swivels
 - Manifolds
- Shall be one of the following materials or the equivalent







Traditional fuel dispenser materials



- Aluminum (cast and rolled)
- Copper
- Brass
- Bronze
- Zinc
- Steel
- Leather
- Cork

- Shellac/Epoxy/Resins
- Elastomers
- Nylon
- Carbon
- Cast Iron
- Silver solder
- Other engineered
 thermoplastics









- a) Stainless steel, unplated steel, or carbon steel;
- b) Ductile iron –
- c) Ferritic Ductile Iron Castings
- d) Grade 60-40-18 or 65-45-12 Ductile Iron,
- e) Malleable iron.
- f) Class 40B or higher strength gray iron.
- g) Brass;
- h) Aluminum;
- i) Copper









- a) Iron, stainless steel, unplated steel, or carbon steel;
- **b)** anodized aluminum
- c) Nickel plated aluminum, with nickel plating at least 0.0002 inch thick.
- d) Nickel plated copper, with nickel plating at least 0.0002 inch thick.
- e) Nickel plated Brass with nickel plating at least 0.0002 inch thick









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Sealing Compounds



The specimens are to be exposed for 168 hours to saturated vapors of the following chemicals as applicable:

- a) ASTM Reference Fuel C;
- b) ASTM Reference Fuel A;
- **c)** IRM 903 Oil;
- d) 85 percent ASTM Reference Fuel C and 15 percent ethanol.
- e) 85 percent ASTM Reference Fuel C and 15 percent methanol.
- f) XX percent ethanol, and the remainder reference fuel C (covering manufacturer's rated ethanol blend amount).
- g) XX percent methanol, and the remainder reference fuel C (covering manufacturer's rated methanol blend amount).
- h) XX percent biodiesel and the remainder IRM 903 oil (covering manufacturer's rated biodiesel blend amount.









- No current regulatory guideline for validating the specification (in process at UL)
- Long-term dispenser impact:
 - Calibration frequency?
 - Filter change frequency?
 - Seasonal requirements?
 - Vapor recovery requirements?





Site Impact - Dispensers

Fuel Path

- Current materials used are being questioned
- Replaced with cast iron and steel or other materials
- Impacts piping, meter, valves, seals manifold
- 1 Micron Filter







Hanging Hardware

- Swivels, nozzles, breakaways
 - Specific approved components
- Hoses



85

Site Impact – General Guidelines



- STP and Gauges
- Fittings
 Stainless, black iron or nickel-plated
- No aluminum, brass or copper
- Piping
 Non-metallic
 Corrosion free pipe
- Tanks
 AW Steel or fiberglass
 No plated tanks











• First units will be 3-grade Non-Blenders

 Have concerns with single hose units or blenders.

• Not offering blenders at this point.









Current Gilbarco warranty is:
 >5% methanol
 >10% ethanol
 >15% MTBE







Compatible Hanging Hardware Suppliers



E85 Product Availability

Component Suppliers	Hoses	Nozzles	Swivels	Breakaways
OPW	Yes	Yes	Yes	Yes
HUSKY		Nov-06	Nov-06	Nov-06
Parker Hose Division (DAYCO)	Yes			
GOODYEAR	Yes			
VST	Nov-06	Nov-06		Nov-06
Emco Wheaton		No	No	No
Catlow		Yes	Yes	Yes
Parker Hose Division (DAYCO)	Yes			









E85 UL Approved Availability

Component Suppliers	Low Hose	<i>Single Grade H Frame</i>	3 + 1
Gilbarco Veeder-Root	Q3	Q3	Q3
Gasboy	Q3	na	na
Wayne	Q3	Q3	Q3









E85 UL Approved Availability

Component Suppliers	STP	ATG / Probes	Sensors
Gilbarco Veeder-Root	Yes	Yes	Yes
FE Petrol	Yes	N/A	N/A
Incon	N/A	Yes	Yes

If converting an existing system:

- Swap out probe with alternative fluids probe and float kit.
- Swap any interstitial and sump sensors with high alcohol sensors.
- TLS water detection alarms will not function with alternative fluids probe in E-85 applications.







Before converting your site:



- 1) Inform state and local authorities of your plans.
- 2) Assess your underground infrastructure for compatibility.
- 3) If converting tanks from standard fuel to E85 or Bio have tanks thoroughly cleaned to remove water and sediment.
- 4) Conduct a tightness test to ensure system is sealed to keep vapor in and water out.
- 5) Paint tank access cover in accordance with API RP 1637.
- 6) Fully label the dispenser. Use mandatory E85 sticker.
- 7) Conduct a precision tank test (0.1 gal/hr leak rate) with the ATG within 7 days to confirm the integrity of the system and equipment.







Designed Specifically For Ethanol Vehicles ONLY Look Inside Your Vechicle's Fuel Door For A Decal Indicating "E85" or Ethanol Fuel May Be Used

Mire dentre de su puerte del combestible de vehicule pero une colonneste que Indice "885" e el "rembestible de etenet"



