



# Gasoline/Ethanol Blend Fuel Dispensing

What code authorities need to know



As the motoring public continues to utilize gasoline/ethanol blend fuels, UL has achieved a major milestone by certifying (Listing) dispensing equipment and components intended for use with gasoline/ethanol blends with a nominal ethanol concentration greater than 10 percent (such as E85, E25 and other blends). This is a welcome development for system designers, operators and code authorities who, for the past several years, had to design alternate protection features and approve installations using dispensing equipment that was not specifically investigated and not Listed for use with the gasoline/ethanol blends being dispensed.

## Corrosion concerns

High concentrations of ethanol or other alcohols within blended fuels make these fuels significantly more corrosive than traditional gasoline and gasohol (10 percent ethanol or E10). This

could result in the fuel chemically degrading the materials used in fuel-dispenser components, which could ultimately affect the dispenser's ability to contain the fuel.

## Subject 87A Outline of Investigation

In 2006 UL engineers began actively reviewing and conducting alcohol blend research while also meeting with industry and government experts to gather the information required to draft the revised certification requirements. In October 2007 UL published the initial Subject 87A Outline of Investigation, and offered to investigate power operated dispensing devices for use with motor fuels defined as gasoline/ethanol blends with ethanol content greater than 10 percent by volume. Investigations could also cover individual components of a dispensing device, such as pumps, meters, strainers, electrically operated valves, hose nozzle valves, shear valves,



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hose assemblies, breakaway couplings, gaskets, seals and swivel connectors.

Between 2007 and 2010 the Outline of Investigation was updated five times as a result of additional technical findings and developments. The sixth edition of Subject 87A is currently titled Outline for Power-Operated Dispensing Devices for Gasoline and Gasoline/Ethanol Blends with Nominal Ethanol Concentrations up to 85 Percent (E0 - E85), which better reflects its scope.

### Certifications

UL has certified dispensers and dispensing system components for use with gasoline/ethanol blend fuels with concentrations above 10 percent ethanol under the following product categories. Information on the product categories, and the products certified under these categories can be found in the UL Online Certifications Directory at [www.ul.com/database](http://www.ul.com/database).

- Power operated flammable liquid dispensing devices (EWTV) are investigated in accordance with UL 87, the Standard for Safety for Power-Operated Dispensing Devices for Petroleum Products, when used with ethanol concentrations of 10 percent or less (E10). Dispensing devices intended for use with gasoline/ethanol blends with a nominal ethanol concentration greater than 10 percent are additionally investigated in accordance with the Subject 87A Outline of Investigation.
- Emergency breakaway couplings (ERBY) and swivel connectors (ERLV) are investigated in accordance with UL 567, the Standard for Safety for Emergency Breakaway Fittings, Swivel Connectors, and Pipe Connection Fittings for Petroleum Products and LP-Gas, along with Subject 87A (for ethanol concentrations greater than 10 percent).
- Flammable liquid hose nozzle valves (ETAZ) are investigated in accordance with UL 842, the Standard for Safety for Valves for Flammable Fluids, or UL 2586, the Standard for Safety for Hose Nozzle Valves, along with Subject 87A (for ethanol concentrations greater than 10 percent).
- Emergency shutoff valves (EUCV) are investigated in accordance with UL 842 the Standard for Safety for Valves for Flammable Fluids, along with Subject 87A (for ethanol concentrations greater than 10 percent).
- Miscellaneous dispensing device accessories (EUQT) can be investigated in accordance with several different flammable liquid related standards, along with Subject 87A (for ethanol concentrations greater than 10 percent).
- Strainers (VXYV) for flammable liquids are investigated in accordance UL 331, the Standard for Safety for Strainers for Flammable Fluids and Anhydrous Ammonia, along with Subject 87A (for ethanol concentrations greater than 10 percent).





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### Identifying certified products

UL Certified flammable liquid dispensing devices and components all bear a UL Mark that includes the UL symbol together with the word “LISTED,” a control number, and the product name (for example, “Dispensing Device Accessory”, “Hose Nozzle Valve for Flammable Liquids”, etc.). These Marks are described in more detail in the guide information for the individual product categories.

The Subject 87A Outline of Investigation requires dispensing devices rated for a particular concentration of ethanol greater than 10 percent (E10) to include additional markings. Dispensing devices rated for gasoline/ethanol blends with nominal ethanol concentrations up to 25 percent are also marked with the warning, “Use only with E25 rated hanging hardware”. Dispensing devices rated for gasoline/ethanol blends with nominal ethanol concentrations above 25 percent and up to 85 percent are marked with the wording “Use only the following:” and the brand names and specific model designations of permitted combinations of hose assemblies, breakaway couplings, swivel connectors, and hose nozzle valves to be used. The marking must be located where it will be seen by the responsible personnel when performing the intended assembly or replacement of hanging hardware. As part of

their certification, the identified components are rated for the same ethanol concentration as the dispenser as part of their certification. Products must also include a marking indicating that they must be used with hanging hardware with the same ethanol concentration. Dispensing device components must also be marked with the fuel rating it is intended for use with, for example, Gasoline, “E25”, or “E85”, as applicable.

### Installation considerations

In order to provide a safe, code compliant installation for gasoline/methanol fuel dispensing systems code authorities are encouraged to (1) identify the fuel mixture(s) to be dispensed, (2) verify that the installations comply with applicable code requirements, (3) utilize UL Listed dispensing devices and components that are marked as being suitable for use with the fuels being dispensed, (4) verify that components intended to be installed on the dispensing equipment are so identified on the dispenser markings and (5) inspect and maintain the equipment as outlined in the fire code.



### Certifications on [www.ul.com/database](http://www.ul.com/database)

- Power operated flammable liquid dispensing devices (EWTV)
- Emergency breakaway couplings (ERBY) and swivel connectors (ERLV)
- Flammable liquid hose nozzle valves (ETAZ)
- Emergency shutoff valves (EUCV)
- Miscellaneous dispensing device accessories (EUQT)
- Strainers (VXYV)