



STATE OF NEW HAMPSHIRE DEPARTMENT OF SAFETY

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Technical Bulletin 2010-02

Re: E85 fuel storage and dispensing systems

This bulletin is intended to address issues concerning the listing and safety certification requirements for E85 motor fuel dispensing devices, including the field conversion of UL Listed fuel dispensing devices from traditional fuels to E85 fuel blends. E85 is an ethanol based fuel greater than 15% ethanol by volume blended with gasoline.

Existing fuel storage and dispensing systems may not be compatible for use with the E85 fuel. The compatibility of the fuel with the equipment is critical to public safety, the environment and property protection from an uncontrolled release due to system degradation.

The concern about the conversion of existing dispensing devices to E85 fuel is that at the time of this writing, there is no UL Listing of such equipment, although Underwriters Laboratories Inc. has listed some new E85 fuel dispensing devices.

A UL Listing Mark on a product is always composed of four elements: (1) the "UL" in a circle mark; (2) the word "LISTED" in capital letters; (3) an alphanumeric control number; and (4) the product name (e.g., "toaster"). In some cases the company's UL file number is used as the company identification. According to UL, the UL Listing Mark on a product is the manufacturer's representation that samples of that complete product have been tested by UL to nationally recognized Safety Standards and found to be free from reasonably foreseeable risk of fire, electronic shock and related hazards; and that the product was manufactured under UL's Follow-Up Services program. A listed system is acceptable pursuant to the fire codes adopted in New Hampshire for public safety.

In addition, the Handbook for Handling, Storing and Dispensing E85 (April 2006) prepared by the U.S. Department of Energy acknowledges that E85 does not have the same compatibility characteristics of conventional fuels when it comes to storage and dispensing. Soft metals such as zinc, brass, lead and aluminum, which are commonly found in conventional fuel storage and dispensing systems, will degrade over time and are not compatible with E85. Some nonmetallic materials that degrade when in contact with ethanol include natural rubber, polyurethane, cork gasket material, leather, polyvinyl chloride (PVC), polyamides, methyl-methacrylate plastics, certain thermoplastic and thermoset polymers and adhesives (used in older fiberglass piping.)

All E-85 dispensing systems in New Hampshire shall be listed and follow the requirements listed below:

1. To the extent possible, E85 should be sold from a dedicated dispenser *and*
2. Be clearly marked as E85 etc *and*
3. The station owner/operator shall establish procedures for ensuring that only flex-fuel vehicles be fueled with E85 fuel *and*
4. All components from the storage to the final dispensing device shall be compatible for use with E-85 *and*
5. All pumps shall be listed by a recognized national testing laboratory *and*
6. Provide a long term maintenance/inspection plan to verify system is not leaking and in proper working order that is approved by the third party NH licensed professional engineer *and*
7. Provide training and assistance to local fire and hazardous materials responders to ensure they have the proper fire suppression capabilities and training to handle a fire involving E-85 fuel.

Other than a completely code compliant listed system any other installation new or conversion of existing systems shall follow items 1 through 7 listed above for listed systems and require a variance from the State Fire Code using the following engineered solution for designing and installing systems in New Hampshire to store and dispense E85 fuel as listed below:

1. Shall be certified by the manufacturer as E85 compatible *and*
2. Certified by a third party NH Licensed professional engineer (experienced in fuel tanks and fuel facility installations) that the system components are E85 compatible *and*
3. Installed according to all other NH laws and regulations *and*
4. Provide verification that the E85 dispenser meets the U.S. workplace safety standard for OSHA of 1910.303(a)'s requirement to use only "approved" equipment in the workplace *or* a variance to their requirement and