



# CHARLOTTE FIRE DEPARTMENT

## FIRE MARSHAL'S OFFICE

### Fire Prevention Bureau

## CFD Regulation for Storage and Blending of Ethanol-Blended Fuels

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August 19, 2010

Effective immediately, in accordance with Chapter 34 of the North Carolina Fire Code, the Charlotte Fire Department will require, at a minimum, a semi-fixed foam fire protection system designed and installed in accordance with NFPA 11 as outlined below, for all newly constructed above ground storage tanks storing Class I or II liquids when such tanks, or group of tanks spaced less than 50 feet apart measured shell to shell, have a liquid surface area in excess of 1500 square feet (43' 8" diameter).

Any existing tank converted from storing Class II or III liquids to Class I liquids shall be required to be retro-fitted with, at a minimum, a semi-fixed foam fire protection system designed and installed in accordance with NFPA 11. This system shall be compatible with the chemical property of the product stored.

Any existing tank storing ethanol in concentrations greater than 10% by volume, regardless of whether the tank was new or converted to ethanol storage, shall be required to be retro-fitted with such protection. In addition, to the semi-fixed foam fire protection system, each tank storing *pure* ethanol (concentrations greater than 80% by volume), shall be fitted with an approved flame or heat detection system, installed in accordance with NFPA 72.

All existing and future covered truck racks which exceed 225 square feet in area at such facilities that engage in the operation of transferring ethanol/ethanol-blended fuels, shall be provided with an automatic fire detection and suppression system approved by the Charlotte Fire Department.

### **Type of System for Tanks:**

A "semi-fixed" system required for tank storage shall be one where the hazard is equipped with fixed discharge outlets connected to piping that terminates at a safe distance from the hazard protected. Inlet connections shall comply with one of the following:

- For systems that have a design pressure of less than 175psi, the inlet connection shall be a 5-inch STORZ connection.
- For systems that have a design pressure of greater than 175 psi, the inlet shall be a standard 2-1/2 inch Siamese connection.

The detection system required for storage of pure ethanol shall be designed with consideration of the engineering evaluation that includes potential size of fire to be detected, the radiant emissions or "signature" of the fire to be detected, field of view of the detection devices, etc. Activation of the detection system shall send an immediate audible alarm on the premises, and shall be monitored by a UL approved Central Station, unless the facility has on-site personnel 24 hours/day.

**Foam Type and Storage:**

A sufficient amount of alcohol-resistant foam (3X3 Thunderstorm) shall be stored as follows:

1. 1300 gallons on a foam engine/truck provided and maintained by the Charlotte Fire Department.
2. A collaborative agreement shall be maintained between the Paw Creek Terminal Operators Group and the Charlotte Fire Department to provide and maintain sufficient quantity of foam to protect a worst-case scenario incident.

**Plans Submittal and Review:**

Prior to any new storage, or conversion of existing tanks to ethanol storage, a set of plans shall be submitted to Mecklenburg County's Land Use and Environmental Services Administration (LEUSA) outlining all storage details, as well as all fire suppression and detection systems proposed.