

GUIDELINES FOR BLENDING FLEX FUELS

Below are listed guidelines for the blending of Flex Fuels. E10 and E85, whether blended or not, must meet the appropriate ASTM standards. Blends between E10 and E85 must be able to meet the content that is labeled.

The following requirements must be met:

1. Suitability of equipment.

- a) Device must have NTEP certificate.
- b) Must operate within flow rates established by manufacturer.
- c) Dispenser and meter must be compatible for flex fuel use.
- d) Dispenser and accessories must comply with all applicable requirements of NIST Handbooks 44 and 130.

2. Labeling of dispenser and storage tanks.

- a) All gasoline nozzles dispensing 10% or less ethanol content gasoline must be labeled with the correct octane rating label (yellow background). When dispensing less than 10% ethanol the ethanol % volume is not required to be disclosed on the product label.
- b) Flex fuel blends must be labeled with orange product identification labels and associated warning labels. Each product label is required to have a disclosure of the principal component (Ethanol), expressed as the percentage by volume and the text, "Use only in Flex Fuel Vehicles/May Harm Other Engines".
- c) Kansas regulation requires that dispensers be labeled for ethanol products by using a capital letter "E" followed by the % of ethanol and ending with the word "ethanol" if the volume of ethanol exceeds 10%. Using the terms E-20, E30, E40, etc. is acceptable when used in conjunction with flex fuel label examples below.
- d) E15, Flex fuels E20-E50, and E-85 are prohibited from having an octane rating label.
- e) Storage tanks must be permanently labeled identifying the fuel contained in the tank. This is completed by either a physical label at the storage fill port or via color coded sitemap key.
- f) If a single nozzle is used to dispense multiple types of ethanol blended fuels, then the dispenser must be labeled with a warning label stating "Minimum Fueling Volume 4 Gallons: Dispensing Less May Violate Federal Law".

3. Proper dispensing of fuels.

- a) E-100 should only be used as a blend stock for flex fuel but should not be offered as a fuel itself.
- b) E85 should not be used as a blend stock since the ethanol content of E85 is not consistent seasonally. This will make it very difficult to meet target ethanol levels on blended products, and your blends will likely be out of specification a large percentage of the time.
- c) E15 is defined as gasoline with 10.5% to 15% ethanol. Specific labeling is required for E15 indicating its compatibility with FFV's and 2001 or newer conventional vehicles.
- d) Flexible Fuels can be dispensed from a common hose. If a common hose configuration is used the dispenser is required to be labeled with a warning label indicating, "Minimum Fueling Volume 4 Gallons: Dispensing Less May Violate Federal Law".
- e) E85 requires an independent hose and the fuel must meet ASTM D5798 standards. Ethanol content can seasonally range from 51% to 83% by volume.
- f) All dispensers must be accurate and the blend ratios set correctly for product dispensed.

4. Ethanol Issues.


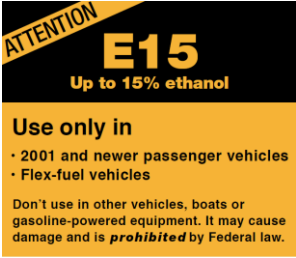

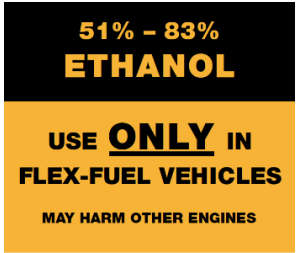
- a) Flex fuel dispensers must be equipped with an appropriately rated filter.
- b) Storage tanks and lines used to store E-100 or other high ethanol % products must be cleaned prior to start up and if needed retroactively fitted with proper ethanol resistant materials to be used in the fuel path.
- c) If you are blending to create your Flex Fuel then an IRS blender's license may be needed.

5. Fuel Quality Standards.

- a) Unleaded 87 octane and E-10, must meet ASTM standards, D-4814.
- b) E-85 must meet ASTM standards, D-5798.
- c) E100 must meet ASTM D-4806.
- d) Ethanol blends will be tested for percent of ethanol.
- e) E15 must adhere to the seasonal (June 1 to September 15) Reid Vapor Pressure requirements.

Stations will be inspected for accuracy and fuel quality.

Fuel Dispenser Labeling Chart and Examples

Ethanol Content	Requirements	Approved Label Example
0-10%	<p>-Octane posting required -Yellow label -KS does not require ethanol content below 10% to be disclosed on the dispenser face.</p>	
10.5-15%	<p>-No octane posting permitted -Orange label -Must include warning statement -KS regulation requires that dispensers be labeled for ethanol products by using a capital letter "E" followed by the % of ethanol and ending with the word "ethanol" if the volume of ethanol exceeds 10%.</p>	
16-50%	<p>-No octane posting permitted -Orange label -May post the exact ethanol % or round to the nearest increment of 10. -Must contain the statement "Use Only in Flex-Fuel Vehicles/May Harm Other Engines". -KS regulation requires that dispensers be labeled for ethanol products by using a capital letter "E" followed by the % of ethanol and ending with the word "ethanol" if the volume of ethanol exceeds 10%.</p>	 <p style="text-align: right;">*These common labels are acceptable</p>
51-83%	<p>-No octane posting permitted -Orange label -May post the exact ethanol % or round to the nearest increment of 10 or indicate that the fuel contains 51-83% ethanol. -Must contain the statement "Use Only in Flex-Fuel Vehicles/May Harm Other Engines". -KS regulation requires that dispensers be labeled for ethanol products by using a capital letter "E" followed by the % of ethanol and ending with the word "ethanol" if the volume of ethanol exceeds 10%. **E85, minimum 70% ethanol" label now prohibited.</p>	 <p style="text-align: right;">*This common label is acceptable</p>