

E85 Specifications

The American Society of Testing and Materials (ASTM) has developed E85 fuel specifications to ensure proper starting, operation, and safety. Please refer to the [table below](#) for *ASTM D5798-99 Standard Specification for Fuel Ethanol for Automotive Spark-Ignition Engines*. This table of minimum commercial standards is also found on page 10 of the Handbook for Handling, Storing, and Dispensing E85 ([PDF 3 MB](#)). Please ensure the fuel delivered to your storage tank is guaranteed by your supplier to meet these standards.

E85, like gasoline and diesel fuels, is seasonally adjusted to ensure proper starting and performance in different geographic locations. For example, E85 sold during colder months must contain 70% ethanol and 30% petroleum to produce the necessary vapor pressure for starting in cold temperatures. An E85 fueling site operator cannot carry over summer-blend E85, but rather must "blend down" any remaining summer fuel to make an E70 mixture. This may be done with relative ease by adding additional gasoline to the storage tank. There is no concern with carrying over winter-blend E70 into warmer months as flexible fuel vehicles operate on any blend of E85 and gasoline in during warmer times. For retail service stations, seasonal fuel adjustments are handled automatically at the wholesale fuel terminal.

Please refer to the Handbook for Handling, Storing, and Dispensing E85, Table 3 (p. 10) and Appendix A (pg. 22-23), for seasonal blending requirements in your area. In Table 3, the Value of Class refers to the Volatility Class by Month found in Appendix A. We encourage you to provide a copy of this reference guide to your personnel, equipment, or fuel suppliers or any prospective service station that will be working with E85.

Property	Value of Class			Test Method
ASTM volatility class	1	2	3	N/A
Ethanol, plus higher alcohols (minimum volume %)	79	74	70	ASTM D 5501
Hydrocarbons (including denaturant) (volume %)	17-21	17-26	17-30	ASTM D 4815
Vapor pressure at 37.8°C kPa psi	38-59 5.5-8.5	48-65 7.0-9.5	66-83 9.5-12.0	ASTM D 4953 D 5190 D 5191
Lead (maximum, mg/L)	2.6	2.6	3.9	ASTM D 5059
Phosphorus (maximum, mg/L)	0.3	0.3	0.4	ASTM D 3231
Sulfur (maximum, mg/kg)	210	260	300	ASTM D 3120 D 1266 D 2622
Methanol (maximum, volume %)		0.5	N/A	
Higher aliphatic alcohols, C3-C8 (maximum volume %)		2		N/A
Water (maximum, mass %)		1.0		ASTM E 203
Acidity as acetic acid (maximum, mg/kg)		50		ASTM D 1613

Inorganic chloride (maximum, mg/kg)		1		ASTM D 512 D 7988
Total chlorine as chlorides (maximum, mg/kg)		2		ASTM D 4929
Gum, unwashed (maximum, mg/100 mL)		20		ASTM D 381
Gum, solvent-washed (maximum, mg/100 mL)		5.0		ASTM D 381
Copper (maximum, mg/100 mL)		0.07		ASTM D 1688
Appearance	Product shall be visibly free of suspended or precipitated contaminants (shall be clear and bright).			Appearance determined at ambient temperature or 21°C (70°F), whichever is higher.
N/A = Not applicable				