Sunoco Logistics

SPECIFICATION FOR DENATURED FUEL ETHANOL FOR BLENDING WITH GASOLINE [1]

PROPERTY	ASTM TEST METHOD	RESULT	NOTE
Specific Gravity (or API Gravity)	D-891 or D-4052	Report	
Ethanol, Vol. %, MIN	D-5501	92.1	
Methanol, Vol. %, MAX	D-5501	0.5	
Solvent Washed Gum, mg/100mL, MAX	D-381	5.0	
Water Content, Vol. %, MAX	E-203 orE-1064	1.00	2
Denaturant, Vol. %, MIN - MAX		1.96 to 2.49	3
Inorganic Chloride Content, Mass ppm (mg/L) , MAX	D-7319 or D-7328	10. (8)	
Copper Content, mg/kg, MAX.	D-1688	0.1	
Acidity (as acetic acid), mass % (mg/L), MAX	D-1613	.007 (56)	4
pHe	D-6423	6.5 to 9.0	
Sulfur, mass ppm, MAX	D-2622, D-3120 or D-5453	30.	
Sulfate, mass ppm, MAX	D-7318, D-7319 or D-7328	4	
Appearance	D-4176	Clear & Bright	5

NOTE 1 –This specification covers nominally anhydrous denatured fuel ethanol intended to be blended with unleaded gasoline at 1 to 10% volume % for use as a spark-ignition automotive engine fuel. If denatured fuel ethanol is prepared by the addition of denaturants to undenatured fuel ethanol after it has been produced rather than during the dehydration process, the 15.56/15.56°C (60/60°F) specific gravity in air of the undenatured fuel ethanol shall be in the range from 0.7937–0.7977.

NOTE 2- In some cases, a lower water content may be necessary to avoid phase separation of a gasoline-ethanol blend at very low temperatures. This reduced water content, measured at the time of delivery, shall be agreed upon between the supplier and purchaser.

NOTE 3 - The only denaturants used for fuel ethanol shall be natural gasoline, gasoline components, or unleaded gasoline at a minimum concentration of two parts by volume per 100 parts by volume of fuel ethanol. Refer to most current ASTM D-4806 specifications regarding permitted and prohibited denaturants. Denaturant is added in the specified range to comply with federal regulations. The content is set by volumetric addition during the denaturing process. There is no standardized test procedure to directly determine the denaturant content in fuel ethanol. Current analytical procedures only provide a calculated estimate of the denaturant content, which is not sufficiently accurate for determining compliance.

NOTE 4 - Denatured fuel ethanol may contain additives, such as corrosion inhibitors and detergents that may affect the titratable acidity (acidity as acetic acid) of the finished fuel ethanol. Although the base fuel ethanol may meet the acidity specification, the effect of these additives may produce an apparent high titratable acidity of the finished product. This may affect the titratable acidity of the denatured fuel ethanol.

NOTE 5 - Product must be free of suspended or precipitated contaminants (clear and bright).