

SPECIFICATION FOR DENATURED FUEL ETHANOL FOR BLENDING WITH GASOLINE ¹

PRODUCT PROPERTY	ASTM TEST METHOD ²	MIN	MAX	NOTE
Specific Gravity (or API Gravity)	D1298, D4052		Report	
Ethanol, % by volume	D5501	92.1		
Methanol, % by volume	D5501		0.5	
Solvent Washed Gum, mg/100 mL	D381		5.0	
Water Content, % by volume	D7923, E203, E1064		1.0	3
Denaturant, % by volume	Calculated	1.96	2.49 3.0	4
Inorganic Chloride, mg/kg (mg/L)	D7319, D7328		6.7 (5)	
Copper Content, mg/kg	D1688 (Method A)		0.1	5
Acidity (as acetic acid), % by mass (mg/L)	D7795		0.0070 (56)	
pHe	D6423	6.5	9.0	
Sulfur, mg/kg	D2622, D3120, D5453, D7039		10.	
Existent Sulfate, mg/kg	D7318, D7319 or D7328		4	
Appearance	D4176 (Procedure 1)	C & B		

NOTE 1 – This specification shall meet the latest version of ASTM D4806. It covers nominally anhydrous denatured fuel ethanol intended to be blended with unleaded gasoline at 1 % to 15 % by 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 - Unless specifically noted or stated, all test methods use the latest version of that method.

NOTE 3 - High water content in ethanol can cause phase separation of a gasoline-ethanol blend at very low temperatures. This specification is meant to allow for an historical slight increase in water content during transportation and product transfer, as well as the storage tanks, as a result of moisture being absorbed from the atmosphere. The water content is measured at the time of delivery and may only be waived if agreed upon between interested and affected parties.

NOTE 4 – The only denaturants used for fuel ethanol shall be natural gasoline, gasoline blendstocks, or unleaded gasoline at a minimum concentration of two parts by volume per 100 parts by volume of ethanol. Refer to latest version of ASTM D4806 specifications regarding allowable 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.

NOTE 5 – See ASTM D4806 section 8 for modification to this test method.