

## E Grade Denatured Fuel Ethanol Specifications

<b>Specification Points</b>	<b>Test Method</b>	<b>Shipments</b>	<b>Deliveries<sup>1/</sup></b>
Apparent Proof, 60°F Or Density, 60°F	Hydrometer ASTM D-4052	Report Report	
Water, Volume %, Maximum	ASTM E-203 or E-1064	1.0	
Ethanol, Volume % Minimum	ASTM D-5501	93.5	93.0
Methanol, Volume %, Maximum	ASTM D-5501	0.5	
Sulfur, ppm (wt/wt), Maximum	ASTM D5453	10	
Solvent Washed Gum, mg/100mL Maximum	ASTM D-381 Air Jet Method	5.0	
Potential Sulfate, mass ppm Maximum	ASTM D7319	4	
Chloride, mg/L Maximum	ASTM D-7319	5	
Copper, mg/L Maximum	ASTM D-1688 Method A, Modified per D-4806	0.08	
Acidity (as acetic acid), Mass % Maximum	ASTM D-1613 or D-7795	0.007	
pHe Minimum Maximum	ASTM D-6423	6.5 9.0	
Appearance @ 60°F	Visual Examination	Visibly free of suspended or precipitated contaminants. Must be clear and bright.	
Denaturant Content and Type <sup>2/</sup> Volume %		2	
<b>Corrosion Inhibitor Additive,</b> One of the following is required:	<b>Minimum treat rate</b> 6 lbs./1000 bbls. 20 lbs./1000 bbls. 20 lbs./1000 bbls. 20 lbs./1000 bbls. 20 lbs./1000 bbls. 20 lbs./1000 bbls. 13 lbs./1000 bbls. 13 lbs./1000 bbls. 13 lbs./1000 bbls. 13 lbs./1000 bbls. 6 lbs./1000 bbls. 3 lbs./1000 bbls. 5 lbs./1000 bbls. 6 lbs./1000 bbls.	<b>Vendor</b> Innospec G. E. Betz Petrolite Nalco Betz Midcontinental Midcontinental Petrolite US Water Services US Water Services Ashland G.E. Power & Water NALCO US Water Services	<b>Additive</b> DCI-11 Plus Endcor GCC9711 Tolad 3222 5403 ACN 13 MCC5011E MCC5011PHE Tolad 3224 Corrpro 654 Corrpro 656 Amergy ECI-6 8Q123ULS EC5624A Plus Corrpro Pro NT

**E Grade Denatured Fuel Ethanol Specifications (continued)**

- 1/ Delivered products meets all applicable requirements at time and place of delivery.
- 2/ Only approved denaturants listed in D4806. The denaturant range must be within the guidelines provided for in IRS Notice 2009.06, which is 1.96% to no more than 2.5%.