

E Grade Denatured Fuel Ethanol Specifications

Specification Points	Test Method	Shipments	Deliveries ^{1/}
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 ^{2/} Volume %		2	

Corrosion Inhibitor Additive, one of the following is required:

<u>Minimum treat rate</u>	<u>Vendor</u>	<u>Additive</u>	<u>Minimum treat rate</u>	<u>Vendor</u>	<u>Additive</u>
6 lbs/1000 bbls	Ashland	Amergy ECI-6	20 lbs/1000 bbls.	Nalco	5403
20 lbs/1000 bbls.	Betz	ACN 13	5 lbs/1000 bbls.	NALCO	EC5624A Plus
20 lbs/1000 bbls.	G. E. Betz	Endcor GCC9711	20 lbs/1000 bbls.	Petrolite	Tolad 3222
3 lbs/1000 bbls.	G.E. Power & Water	8Q123ULS	13 lbs/1000 bbls.	Petrolite	Tolad 3224
6 lbs/1000 bbls.	Innospec	DCI-11 Plus	10 lbs/1000 bbls.	US Water Services	CorrPro 656X
3 lbs/1000 bbls.	Midcontinental	MCC5011PHE	13 lbs/1000 bbls.	US Water Services	CorrPro 656 or 656T
			5 lbs/1000 bbls.	US Water Services	CorrPro N or 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