

I T E C
Refining and Marketing Company Ltd.



3 Porter School Road
 Barrington, IL 60010-2667 USA

Tel: 847-304 4700
 Fax: 847-304 4710
 E-mail: alcohol@itecref.com
 URL: www.itecref.com

REN INDUSTRIAL ETHYL ALCOHOL SPECIFICATIONS
(CORN FEEDSTOCK)

<u>Parameter</u>	<u>Limits</u>	<u>Method</u>
Ethanol, vol.% @ 15.56 Deg. C.	≥ 95.0	ASTM D 4052
Ethanol, wt.%	≥ 92.42	ASTM D 4052
Water Karl Fisher, wt.%	≤ 7.58	ASTM D 1364
Proof @ 15.56 Deg. C.	190.0 – 190.4	ASTM D 4052
Acidity, as acetic acid (% by weight)	≤ 0.0020	ASTM D 1613
Acetaldehyde	≤ 10 ppm	ASTM D 5501-MOD
Methanol	≤ 10 ppm	ASTM D 5501-MOD
I-Propanol	≤ 10 ppm	ASTM D 5501-MOD
N-Propanol	≤ 10 ppm	ASTM D 5501-MOD
Higher Alcohols (as I-Propanol, N-Propanol, I-Butanol, N-Butanol & I-Amyl)	≤ 30 ppm	ASTM D 5501-MOD
Esters (as Ethyl Acetate)	≤ 10 ppm	ASTM D 5501-MOD
Permanganate Test @ 15 Deg. C.	≥ 15 minutes	ASTM D 1363
Color	≤ 10 platinum cobalt	ASTM D 1209
Appearance	Clear, Bright	Visual
Odor	Free from foreign odors	ASTM D 1296
Hydrocarbons	Pass	ASTM D 1722
Benzene	< 1 ppm	ASTM D 5501-MOD
Toluene	< 1 ppm	ASTM D 5501-MOD
Xylene	< 1 ppm	ASTM D 5501-MOD
Cyclohexane	< 1 ppm	ASTM D 5501-MOD
Total Sulfur by UV Fluorescence	<1.0 mg/kg	ASTM D 5453
Total Sulfur by UV Fluorescence	<1.0 ppm-wt	ASTM D 5453
Inorganic Chlorides	< 1 ppm	ASTM D 7328
Crotonaldehyde	≤ 0.5 ppm	ASTM D 5501-MOD
Acetal	≤ 5 mg/100 mL	ASTM D 5501-MOD
Non volatile matter	≤ 1.5 mg/100 mL	ASTM D 1353
Alkalinity as ammonia	<0.0003 wt %	ASTM D 1614
1.4 Dioxane	≤ 0.01 mg/L	GLC/MS