

**I T E C**  
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**190 PROOF / INDUSTRIAL ETHANOL (REN) SPECIFICATION (CORN)**  
**(2011 Season)**

<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, 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
Methanol	≤ 10 ppm	ASTM D 5501
I-Propanol	≤ 10 ppm	ASTM D 5501
N-Propanol	≤ 10 ppm	ASTM D 5501
Higher Alcohols (Include I-Propanol, N-Propanol, I-Butanol, N-Butanol & I-Amyl)	≤ 30 ppm	ASTM D 5501
Esters (as Ethyl Acetate)	≤ 10 ppm	ASTM D 5501
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	Absent	ASTM D 1722
Benzene	Absent <sup>1</sup>	ASTM D 5501
Toluene	Absent <sup>1</sup>	ASTM D 5501
Xylene	Absent <sup>1</sup>	ASTM D 5501
Cyclohexane	Absent <sup>1</sup>	ASTM D 5501
Sulfur	Absent <sup>1</sup>	ASTM D 3120
Inorganic Chlorides	Absent <sup>1</sup>	ASTM D 7328
Crotonaldehyde	≤ 0.5 ppm	ASTM D 5501
Acetal	≤ 5 mg/100 mL	ASTM D 5501
Dry Extracts	≤ 1.5 mg/100 mL	ASTM D 1363
Alkalinity	Negative	ASTM D 1614
1,4 Dioxane	≤ 0.01 mg/L	GLC/MS

Note: <sup>1</sup> Below Detection Limit of 1 ppm