

**KOREA GRADE B - CRUDE BEVERAGE / INDUSTRIAL ETHANOL SPECIFICATION**  
**(2011 / 2012 Season)**

<u>Parameter</u>	<u>Units</u>	<u>Limits</u>	<u>Method</u>
Alcohol Strength at 15°C	% Vol.	Min. 95.2	ASTM D 4052
Alcohol Strength at 20°C	% Mass	Min. 92.7	ASTM D 4052
Aldehydes (as Acetaldehyde)	Mg/100 ml	Max. 10	GLC
Acidity (as Acetic Acid)	Mg/100 ml	Max. 3.0	ASTM D1613
Appearance	-	Clear <sup>(1)</sup>	Visual
Benzene	ppm	Absent <sup>(2)</sup>	UV/GLC
Chloride	ppm	Absent <sup>(4)</sup>	Turbidimetric
Crotonaldehyde	Mg/100 ml	Absent <sup>(3)</sup>	GLC / ASTM D 5501
Cyclohexane	ppm	Absent <sup>(2)</sup>	GLC / ASTM D 5501
Hydrocarbons	% vol.	Absent <sup>(6)</sup>	ASTM D 1722
Dry Extracts	Mg/100 ml	Max. 4.0	ASTM D 1353
Esters (as Ethyl Acetate)	Mg/100 ml	Max. 15.0	GLC
I-Propanol	Mg/100 ml	Max. 2.0	GLC
Higher Alcohols (I-Propanol, N-Propanol, I-Butanol, N-Butanol, I-Amyl)	Mg/100 ml	Max. 40	GLC
Methanol	Mg/100 ml	Max. 8.0	GLC
Permanganate time at 20°C	-	-	Not Specified
Alkalinity		Negative	ASTM D 1614
Xylene	ppm	Negative <sup>(2)</sup>	UV/GLC
Toluene	ppm	Negative <sup>(2)</sup>	ASTM D 5580
Acetal	Mg/100 ml	Max. 10	GLC
Color	-	-	Not Specified
MEG	Mg/L	Max. 1.0	GLC
DEG	Mg/L	Max. 1.0	GLC
1,4 Dioxane	Mg/L	<0.01 <sup>(5)</sup>	GLC/MS

- (1) Clear and free of suspended matter  
 (2) Detection limit of test method: 0.1 ppm  
 (3) Detection limit of test method: 0.5 ppm  
 (4) Detection limit of test method: 1.0 ppm  
 (5) Detection limit of test method: 0.01 Mg/L  
 (6) Detection limit of test method – ASTM D 1722