ITEC
Refining and Marketing Company Ltd.

3 Porter School Road
Barrington, IL 60010-2667 USA

Tel: +1 847-304 4700
Fax: +1 847-304 4710
E-mail: alcohol@itecref.com
URL: www.itecref.com

COUNTRY COMPARISON ANALYSIS
SPECIFICATIONS FOR ANHYDROUS FUEL ETHANOL

Specification	Unit		BRAZIL ANP Reg # 19 April 15, 2015	USA ASTM D-4806-16a 2016	EUROPE EN 15376: 2014 (E) Sept. 6, 2014	CHINA GB 18350-2013
Specific mass @ 20ºC	kg/m^3	Max.	791.5	-	-	-
Alcohol strength @ 20ºC	mass %	Min.	99.3	-	-	-
Ethanol @ 60ºF (15.56ºC)	v/v %	Min.	-	92.1	-	92.1
Ethanol @ 20ºC	mass %	Min.	98.0	-	98.7(1)	-
Water (Karl Fischer)	v/v %	Max.	-	1.0	-	0.8
Water	m/m %	Max.	0.7	-	0.300	-
Total acidity (as acetic acid)	mg/L, (mass %), [mg/kg]	Max.	30	56 (0.0070) [70]	(0.007)	56
Electrical conductivity	µS/m	Max.	300	-	-	-
pHe	-		-	6.5 ~ 9.0	-	6.5 ~ 9.0
Copper	mg/kg	Max.	0.07	0.1	0.100	0.08
Inorganic chloride	mg/kg (mg/L)	Max.	1	6.7 (5)	1.5	(8)
Solvent-washed gum	mg/100 mL	Max.	-	5.0	-	5
Methanol	v/v %	Max.	0.5	0.5	-	0.5
Methanol	m/m %	Max.	-	-	1.0	-
Higher saturated mono-alcohols-C3-C5 max.	m/m %	Max.	-	-	2.0	-
Sulfur	mass %, ppm (mg/kg)	Max.	Report	30.	-	(30)
Total sulfate	mg/kg	Max.	4	4	3.0	-
Phosphorus content	mg/L	Max.	-	-	0.15	-
Non-volatile material	mg/100mL	Max.	5	-	(2)	-
Denaturant content	vol. %	Max.	3	1.96 ~ 2.5	-	0.99 ~ 4.76
Iron	mg/kg	Max.	5	-	-	-
Sodium	mg/kg	Max.	2	-	-	-
Aspect	-		Clear (3)	Clear (3)	Clear (3)	

(1) Ethanol + higher saturated alcohols.
(2) The concentration is at the discretion of the National Authorities and should not be in contradiction with EN 228 requirements.
(3) Clear, bright and visibly free of suspended or precipitated contaminants.