



FRONTIER OIL & REFINING COMPANY
 CHEYENNE REFINERY
 P O BOX 1588
 CHEYENNE, WYOMING 82003

RODUCT SPECIFICATIONS - EMC Terminal/Rocky Mtn Pipeline Terminal
 PRODUCT NAME: E-85 (NL85)

<u>ASTM PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>SPECIFICATION Value for Class</u>		
ASTM volatility Class	N/A	1	2	3
Ethanol, Plus higher alcohols (minimum volume %)	ASTM D5501	79	74	70
Hydrocarbons (including Denaturant)(volume %)	ASTM D4815	17-21	17-26	17-30
Vapor pressure at 37.8°C- kPa	ASTM D4953, D5190, D5191	38-59	48-65	66-83
psi		5.5-8.5	7.0-9.5	9.5-12.0
Lead (maximum, mg/l)	ASTM D5059	2.6	2.6	3.9
Phosphorus (maximum, mg/L	ASTM D3231	0.3	0.3	0.4
Sulfur (maximum, mg/kg)	ASTM D3120, D1266, D2622	210	260	300
Methanol (maximum, volume%)	-	-	0.5	N/A
Higher aliphatic alcohols C3-C8 (maximum volume %)	N/A	-	2	-
Water (maximum, mass%)	ASTM E203	-	1.0	-
Acidity as acetic acid (maximum, mg/kg)	ASTM D1613	-	50	-
Inorganic chloride (maximum, mg/kg)	ASTM D512, D7988	-	1	-
Total Chlorine as chlorides (maximum, mg/kg)	ASTM D4929	-	2	-
Gum, unwashed (maximum, mg/100ml)	ASTM D381	-	20	-
Gum, solvent washed (maximum, mg/100ml)	ASTM D381	-	5.0	-
Copper (maximum, mg/100ml)	ASTM D1688	-	0.07	-
Distillation end point	ASTM D86	-	437°F	-
Oxidation Stability	ASTM D525	-	240 minutes	-
Copper Strip Corrosion	ASTM D130	-	1B Max	-
Denaturent	ASTM D4806	Meets all requirements for method		
Appearance	Appearance determined at Ambient temperature or 21°C (70°F), whichever is higher.	Product shall be visibly free of suspended or precipitated contaminants (shall be clear and bright)		