

**LONE STAR NGL LLC**  
**PURITY PRODUCT SPECIFICATIONS**

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**UPDATED AS OF: MARCH 4, 2013**

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**ETHANE SPECIFICATION  
(PURITY ETHANE)**

<b>CHARACTERISTIC</b>	<b>PRODUCT SPECIFICATIONS</b>	<b>TEST METHOD</b>
Corrosion, copper strip, maximum	1	ASTM D-1838
Total Sulfur, PPM by weight, maximum	30	ASTM D-6667
Analysis, L.V. %: Methane, maximum Ethane, minimum Ethylene, maximum Propane & Heavier, maximum	3.0 95.0 1.0 3.5	ASTM D-2163
Free water	None	Visual Inspection
Carbon Dioxide, PPM by weight, maximum	1000	ASTM D-2504

**General Contaminants Note:** The product shall be commercially free from sand, dust, gums, gum-producing substances, oil, glycol, inhibitors, amine, caustics, chlorides, oxygenates, heavy metals, any other contaminants that make it unfit for its commonly used applications and any compound added to the product to enhance the ability to meet these specifications.

**Abbreviations:** **ASTM** = American Society for Testing and Materials, Standard Test Procedures; **L.V. %** = liquid volumes percent; **PPM** = Parts per Million.

*The aforementioned specifications may be modified from time to time in the sole discretion of the issuing entity.*

### PROPANE SPECIFICATION

CHARACTERISTIC	PRODUCT SPECIFICATIONS	TEST METHOD
Vapor Pressure (psig), maximum at 100° F	208	ASTM D-2598
Relative Density at 60° F /60° F Minimum Maximum	.500 .510	ASTM D-1657
Volatile Residue, temperature @ 95 L.V. % evaporated, maximum	-37° F	ASTM D-1837
Residual Matter: Residue on evaporation of 100 ml., maximum ml. Oil stain (Note 1)	0.05 Pass	ASTM D-2158
Corrosion, copper strip, maximum	1	ASTM D-1838
Total Sulfur, PPM by weight, maximum	123	ASTM D-6667
Fluorides, PPM by weight, maximum	1	ASTM D-7359
Analysis, L.V. % Propane, minimum Propylene, maximum Butanes and heavier, maximum	90.0 5.0 2.5	ASTM D-2163
Free water	None	Visual Inspection

**Note 1:** An acceptable product shall not yield a persistent oil ring when 0.3 ml of solvent residue is added in 0.1 increments, after examination in daylight after 2 minutes as described in ASTM D-2158.

**General Contaminants Note:** The product shall be commercially free from sand, dust, gums, gum-producing substances, oil, glycol, inhibitors, amine, caustics, chlorides, oxygenates, heavy metals, any other contaminants that make it unfit for its commonly used applications and any compound added to the product to enhance the ability to meet these specifications.

**Abbreviations:** ASTM = American Society for Testing and Materials, Standard Test Procedures; ° F = Degrees Fahrenheit; L.V. % = liquid volume percent; ml = milliliters; PPM = Parts per Million; psig = pounds per square inch gauge.

*The aforementioned specifications may be modified from time to time in the sole discretion of the issuing entity.*

### ISOBUTANE SPECIFICATION

CHARACTERISTIC	PRODUCT SPECIFICATIONS	TEST METHOD
Corrosion, copper, maximum	1	ASTM D-1838
Total Sulfur, PPM by weight, maximum	140	ASTM D-6667
Analysis, L.V. % propane, maximum isobutane, minimum	3.0 96.0	ASTM D-2163
Free water	None	Visual Inspection

**General Contaminants Note:** The product shall be commercially free from sand, dust, gums, gum-producing substances, oil, glycol, inhibitors, amine, caustics, chlorides, oxygenates, heavy metals, any other contaminants that make it unfit for its commonly used applications and any compound added to the product to enhance the ability to meet these specifications.

**Abbreviations:** **ASTM** = American Society for Testing and Materials, Standard Test Procedures; ° **F** = Degrees Fahrenheit; **L.V. %** = liquid volume percent; **PPM** = Parts per Million.

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**NORMAL BUTANE SPECIFICATION  
(ISOM GRADE)**

<b>CHARACTERISTIC</b>	<b>PRODUCT SPECIFICATIONS</b>	<b>TEST METHOD</b>
Corrosion, copper strip, maximum	1	ASTM D-1838
Total Sulfur, PPM by weight, maximum	140	ASTM D-6667
Volatile Residue, temperature @ 95 L.V. % evaporated, maximum	+36° F	ASTM D-1837
Fluorides, PPM by weight, maximum	1.4	ASTM D-7359
Analysis, L.V. %		
Propane, maximum	0.35	ASTM D-2163
Isobutane, maximum	6.0	
Normal Butane, minimum	94.0	
Pentanes and Heavier, maximum	1.5	
Butadiene, maximum	0.01	
Total Olefins, maximum	0.35	
Free water	None	Visual Inspection
Vapor Pressure, psig, maximum at 100 ° F	50	ASTM D-1267

**General Contaminants Note:** The product shall be commercially free from sand, dust, gums, gum-producing substances, oil, glycol, inhibitors, amine, caustics, chlorides, oxygenates, heavy metals, any other contaminants that make it unfit for its commonly used applications and any compound added to the product to enhance the ability to meet these specifications.

**Abbreviations:** **ASTM** = American Society for Testing and Materials, Standard Test Procedures; ° **F** = Degrees Fahrenheit; **L.V. %** = liquid volume percent; **PPM** = Parts per Million.

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### NATURAL GASOLINE SPECIFICATION

CHARACTERISTIC	PRODUCT SPECIFICATIONS	TEST METHOD
Gravity, API	Report	ASTM D-287
Vapor Pressure, psia, maximum	14.0	ASTM D-6378
Color, Saybolt, minimum	+25	ASTM D-156
Doctor Test	Negative	ASTM D-4952
Existent Gum, mg/100 ml maximum (washed)	4.0	ASTM D-381
Total Sulfur, wt. %, maximum	0.1	ASTM D-6667
Octane Numbers (Note 1) Research Motor (R+ M)/2	Report Report Report	ASTM D-2699 ASTM D-2700
Distillation, temperature 10%, evaporated 50% evaporated 70% evaporated, minimum 90% evaporated, maximum end point	Report Report 140° F 275° F 375° F	ASTM D-7344

**Note 1:** Lone Star NGL LLC and its subsidiaries (“LST”) reserves the right to refuse to receive, store or transport any natural gasoline if the octane of said natural gasoline is not consistent with that of the natural gasoline then in the storage/pipeline inventory in the LST systems.

**General Contaminants Note:** The product shall be commercially free from sand, dust, gums, gum-producing substances, oil, glycol, inhibitors, amine, caustics, chlorides, oxygenates, heavy metals, any other contaminants that make it unfit for its commonly used applications and any compound added to the product to enhance the ability to meet these specifications.

**Abbreviations:** ASTM = American Society for Testing and Materials, Standard Test Procedures; ° F = Degrees Fahrenheit; mg = milligrams; ml = milliliters; PPM = Parts per Million; psia = pounds per square inch absolute; wt. % = percentage by weight.

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**ETHANE-PROPANE MIX SPECIFICATION**

<b>CHARACTERISTIC</b>	<b>PRODUCT SPECIFICATIONS</b>	<b>TEST METHOD</b>
Corrosion, copper strip, maximum	1	ASTM D-1838
Total Sulfur, PPM by weight, maximum	123	ASTM D-6667
Analysis, L.V. %: Methane, maximum (Note 1) Ethane, maximum (Note 2) Propylene, maximum Butanes and Heavier, maximum Carbon Dioxide, maximum	1.5 75.0 5.0 2.5 0.2	ASTM D-2163
Free water	None	Visual Inspection

**Note 1:** 3.0 L.V. % allowed, provided total ethane (methane included) does not exceed 75.0 L.V. %

**Note 2:** 80.0 L.V. % maximum ethane allowed (methane included), provided the methane does not exceed 1.5 L.V. %.

**General Contaminants Note:** The product shall be commercially free from sand, dust, gums, gum-producing substances, oil, glycol, inhibitors, amine, caustics, chlorides, oxygenates, heavy metals, any other contaminants that make it unfit for its commonly used applications and any compound added to the product to enhance the ability to meet these specifications.

**Abbreviations:** **ASTM** = American Society for Testing and Materials, Standard Test Procedures; **L.V. %** = liquid volume percent; **PPM** = Parts per Million.

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**REFINERY GRADE BUTANE SPECIFICATION**

<b>CHARACTERISTIC</b>	<b>PRODUCT SPECIFICATIONS</b>	<b>TEST METHOD</b>
Corrosion, copper strip, maximum	1	ASTM D-1838
Total Sulfur, PPM by weight, maximum	140	ASTM D-6667
Volatile Residue, temperature @ 95 L.V. % evaporated, maximum	+36° F	ASTM D-1837
Fluorides, PPM by weight, maximum	150	ASTM D-7359
Analysis, L.V. %		
Propane, maximum	2.5	ASTM D-2163
Normal Butane, minimum	94.0	
Isobutane, maximum	6.0	
Pentanes and Heavier, maximum	2.0	
Free water	None	Visual Inspection

**General Contaminants Note:** The product shall be commercially free from sand, dust, gums, gum-producing substances, oil, glycol, inhibitors, amine, caustics, chlorides, oxygenates, heavy metals, any other contaminants that make it unfit for its commonly used applications and any compound added to the product to enhance the ability to meet these specifications.

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