



**Certificate of Analysis**

<b>Vessel / Object:</b>	GAS FLAWLESS	<b>Job No:</b>	190-23-03879
<b>Location:</b>	Geismar, LA / Enlink (United States)	<b>Date Sampled:</b>	12/31/23
<b>Job Type:</b>	Load	<b>Date Tested:</b>	01/01/24
<b>Product Grade:</b>	LPG / HD5 Propane	<b>Version:</b>	1 / 01 Jan 2024 08:57
<b>Client Reference:</b>	Carib LPG Trading Ltd. / GAS FLAWLESS		

<b>Sample</b>	<b>Sample ID, Type &amp; Description</b>
190-23-03879-001	Gas Flawless Dock Pipeline Cylinder During Load

<u>Method</u>	<u>Test</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
ASTM D2598!!	LP-Gas Vapor Pressure @100°F		208	202	psig
ASTM D2598!!	Specific Gravity at 60/60°F			0.49800	
ASTM D2163!!	LPG Composition by GC				
	Methane			0.03	%vol
	Ethane			6.68	%vol
	Propane			91.64	%vol
	Propylene			< 0.01	%vol
	Cyclopropane			< 0.01	%vol
	Isobutane			1.48	%vol
	n-Butane			0.17	%vol
	Trans-2-Butene			< 0.01	%vol
	1-Butene			< 0.01	%vol
	Isobutylene			< 0.01	%vol
	cis-2-Butene			< 0.01	%vol
	Neopentane			< 0.01	%vol
	Isopentane			< 0.01	%vol
	n-Pentane			< 0.01	%vol
	1,3-Butadiene			< 0.01	%vol
	Other C5's			< 0.01	%vol
	C6+			< 0.01	%vol
	Butanes and Heavier		2.5	1.65	%vol
	Total Olefins			< 0.01	%vol
ASTM D1837	Volatility of LPG's				
	Temperature @ 95% Evaporation		-38.3	-39.1	°C
	Temperature @ 95% Evaporation		-37	-38.4	°F
ASTM D2158!!	Residues in LPG, (Oil Stain) (Weathering Test)				
	Solvent-Residue Mixture			1.5	mL
	Residue on Evaporation		0.05	< 0.05	mL
	Oil Stain	Pass		Pass	
ASTM D1838!!	Copper Corrosion Rating (1 hour @ 100°F)		1	1	
ASTM D6667-14(19)!!	Trace Sulfur in LPG by UV Fluorescence				
	Sulfur in LPG		123	4.8	mg/kg
	Instrument ID			BR-131	
ASTM D2713	Dryness of Propane	Pass		Pass	
ASTM D3588	Calculating Heat Value; Compressibility Factor; and Relative Density of Gaseous Fuels				
	Gross Heating Value			11,904	kcal/kg
	Gross Heating Value			47,207	Btu/kg
	Gross Heating Value			90,009	Btu/gal
	Net Heating Value			81,173	Btu/gal

AmSpec LLC - 1203 East Highway 30 - Gonzales - LA - 70737

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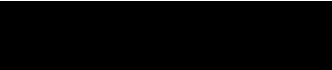
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Notes: !!Test Method performed and reported within scope of ISO 17025 accreditation. A2LA Cert # 4139.13



Redacted under Sec 23 (1) FOI Act (2021 Revision)

Laboratory Technician

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