

Certificate of Analysis

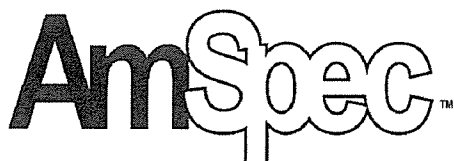
Vessel / Object: Maersk Katalin
Location: Buckeye - South Portland, ME
Job Type: Discharge
Product Grade: RBOB 6.0
Client Reference: IM10010

Job No: 42-15-00473
Date Sampled: 8/17/2015
Date Tested: 8/17/2015
Date Reported: 8/17/2015

Sample Number: 421500473-007 Sample ID & Desc: Vessel, 10% Ethanol Before Discharge
Sample Type: Composite

<u>Method</u>	<u>Test</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
ASTM D4052	API Gravity			55.2	°
ASTM D3606	Benzene		1.30	0.48	Vol%
ASTM D5599	Ethanol	9	10	9.91	Vol%
ASTM D5599	MTBE		0.25	<0.1	Vol%
ASTM D5599	TAME			<0.1	Vol%
ASTM D5599	ETBE			<0.1	Vol%
ASTM D5599	Methanol			<0.1	Vol%
ASTM D5599	t-Butanol			<0.1	Vol%
ASTM D5599	Oxygenates			9.91	Vol%
ASTM D5599	Oxygen Content	1.6	4.0	3.60	Wt%
ASTM D5191	DVPE @ 100°F, EPA			6.83	psi
ASTM D2622	Sulfur		80	38	ppm
ASTM D86	Distillation: IBP Evaporated			109.4	°F
ASTM D86	Distillation: 10% Evaporated		158	136.0	°F
ASTM D86	Distillation: 50% Evaporated	150	250	209.4	°F
ASTM D86	Distillation: 90% Evaporated		374	341.8	°F
ASTM D86	Distillation: FBP Evaporated		430	419.6	°F
ASTM D86	Distillation: Recovery			97.3	mL
ASTM D86	Distillation: Residue			1.1	mL
ASTM D86	Distillation: Loss			1.6	mL
ASTM D86	Distillation: E200	30	70	46.4	°F
ASTM D86	Distillation: E300	70	100	78.6	°F
ASTM D1319(Correlated)	Aromatics		50	24.0	Vol%
ASTM D1319	Olefins		25	16.8	Vol%
ASTM D2699	Research Octane Number			93.6	
ASTM D2700	Motor Octane Number			82.0	
ASTM D4814-04b	Octane (R+M)/2			87.8	
EPA Calculation	VOC - Reduction	23.4		27.1	%
EPA Calculation	TOX - Reduction			29.3	%
EPA Calculation	NOx - Reduction			8.1	%
NACE TM-0172	NACE Corrosion (Neat)	B+		A	

Reported By: Michael Holland
Title: Laboratory Manager



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Job No: 42-15-00473
Date Sampled: 8/17/2015
Date Tested: 8/17/2015
Date Reported: 8/18/2015

Sample Number: 421500473-009 Sample ID & Desc: 1P Before Discharge
Sample Type: Running

<u>Method</u>	<u>Test</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
ASTM D4052	API Gravity			56.0	°
ASTM D3606	Benzene			0.57	Vol%
ASTM D5191	DVPE @ 100°F, EPA			5.71	psi
ASTM D2622	Sulfur			40	ppm
ASTM D86	Distillation: E200			39.0	°F
ASTM D86	Distillation: E300			78.2	°F

Sample Number: 421500473-010 Sample ID & Desc: 1S Before Discharge
Sample Type: Running

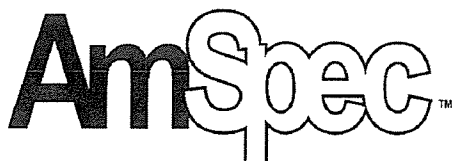
<u>Method</u>	<u>Test</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
ASTM D4052	API Gravity			55.9	°
ASTM D3606	Benzene			0.57	Vol%
ASTM D5191	DVPE @ 100°F, EPA			5.67	psi
ASTM D2622	Sulfur			41	ppm
ASTM D86	Distillation: E200			38.8	°F
ASTM D86	Distillation: E300			78.3	°F

Sample Number: 421500473-011 Sample ID & Desc: 2P Before Discharge
Sample Type: Running

<u>Method</u>	<u>Test</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
ASTM D4052	API Gravity			55.8	°
ASTM D3606	Benzene			0.57	Vol%
ASTM D5191	DVPE @ 100°F, EPA			5.63	psi
ASTM D2622	Sulfur			41	ppm
ASTM D86	Distillation: E200			38.4	°F
ASTM D86	Distillation: E300			78.4	°F

Sample Number: 421500473-012 Sample ID & Desc: 2S Before Discharge
Sample Type: Running

<u>Method</u>	<u>Test</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
ASTM D4052	API Gravity			56.0	°
ASTM D3606	Benzene			0.57	Vol%
ASTM D5191	DVPE @ 100°F, EPA			5.59	psi
ASTM D2622	Sulfur			41	ppm
ASTM D86	Distillation: E200			38.8	°F
ASTM D86	Distillation: E300			78.5	°F



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Location: Buckeye - South Portland, ME
Job Type: Discharge
Product Grade: RBOB 6.0
Client Reference: IM10010

Job No: 42-15-00473
Date Sampled: 8/17/2015
Date Tested: 8/17/2015
Date Reported: 8/18/2015

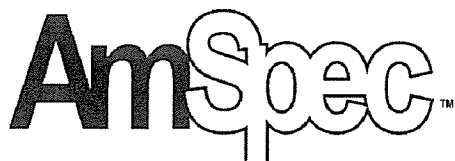
Sample Number: 421500473-013 Sample ID & Desc: Slop P Before Discharge
Sample Type: Running

<u>Method</u>	<u>Test</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
ASTM D4052	API Gravity			55.9	°
ASTM D3606	Benzene			0.57	Vol%
ASTM D5191	DVPE @ 100°F, EPA			5.60 ✓	psi
ASTM D2622	Sulfur			40	ppm
ASTM D86	Distillation: E200			38.8	°F
ASTM D86	Distillation: E300			78.4	°F

Sample Number: 421500473-014 Sample ID & Desc: Slop S Before Discharge
Sample Type: Running

<u>Method</u>	<u>Test</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
ASTM D4052	API Gravity			55.8	°
ASTM D3606	Benzene			0.57	Vol%
ASTM D5191	DVPE @ 100°F, EPA			5.59 ✓	psi
ASTM D2622	Sulfur			40	ppm
ASTM D86	Distillation: E200			38.1	°F
ASTM D86	Distillation: E300			77.9	°F

Reported By: Michael Holland
Title: Laboratory Manager



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Vessel / Object: Maersk Katalin
Location: Buckeye - South Portland, ME
Job Type: Discharge
Product Grade: RBOB 6.0
Client Reference: IM10010

Job No: 42-15-00473
Date Sampled: 8/17/2015
Date Tested: 8/17/2015
Date Reported: 8/17/2015

Sample Number: 421500473-008 Sample ID & Desc: Vessel, Neat Before Discharge
Sample Type: Composite

<u>Method</u>	<u>Test</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
ASTM D4052	API Gravity			55.9	°
ASTM D3606	Benzene			0.57	Vol%
ASTM D5599	Ethanol			<0.1	Vol%
ASTM D5599	MTBE		0.25	<0.1	Vol%
ASTM D5599	TAME			<0.1	Vol%
ASTM D5599	ETBE			<0.1	Vol%
ASTM D5599	Methanol			<0.1	Vol%
ASTM D5599	t-Butanol			<0.1	Vol%
ASTM D5599	Oxygenates			<0.1	Vol%
ASTM D5599	Oxygen Content			<0.1	Wt%
ASTM D5191	DVPE @ 100°F, EPA (Weighted Average)			5.63	psi
ASTM D2622	Sulfur			40	ppm
ASTM D86	Distillation: IBP Evaporated			107.7	°F
ASTM D86	Distillation: 10% Evaporated			150.1	°F
ASTM D86	Distillation: 50% Evaporated	170		227.4	°F
ASTM D86	Distillation: 90% Evaporated			344.8	°F
ASTM D86	Distillation: FBP Evaporated			423.4	°F
ASTM D86	Distillation: Recovery			98.7	mL
ASTM D86	Distillation: Residue			1.1	mL
ASTM D86	Distillation: Loss			0.2	mL
ASTM D86	Distillation: E200			37.7	°F
ASTM D86	Distillation: E300			77.8	°F
ASTM D1319(Correlated)	Aromatics			26.4	Vol%
ASTM D1319	Olefins			18.6	Vol%

Reported By: Michael Holland
Title: Laboratory Manager