



Certificate of Analysis

PHILLIPS CHEMICAL COMPANY
 A DIVISION OF PHILLIPS PETROLEUM COMPANY
 SPECIALTY CHEMICALS
 P.O. BOX 968
 BORGER, TX 79008-0968

DATE OF SHIPMENT
 03-06-98

CUSTOMER ORDER NO.
 98BO-1

INV./REQN. NO.
 480659

TRLR #380

OXYGENATED TEST GAS
LOT D-340

<u>TESTS</u>	<u>RESULTS</u>	<u>SPECIFICATIONS</u>	<u>METHOD</u>
API Gravity	61.85	Report	ASTM D-1298
Specific Gravity, 60/60	0.7318	Report	ASTM D-4052
Sulfur ppm	298	285 - 335	ASTM D-2622
MTBE, LV%	11.7	11.0 - 12.0	ASTM D-4815
Reid Vapor Pressure	12.8	12.3 - 13.3	ASTM D-323
Benzene Content, LV%	0.98	0.6 - 1.0	

DISTILLATION, D-86 °F

ASTM D-86

IBP	86.2	
5%	96.7	
10%	106.5	100 - 120
20%	122.6	
30%	143.3	
40%	164.8	
50%	190.3	190 - 210
60%	222.1	
70%	257.1	
80%	291.5	
90%	331.3	305 - 335
95%	367.9	
EP	409.3	
Loss	1.7	
Residue	0.9	

HYDROCARBON TYPE, VOL. %

ASTM D-1319

		<u>SPEC</u>
Aromatics	23.85	22 - 24
*Olefins	10.5	11 - 13

*this will be modified for future shipments.

Research Octane Number	95.5	Report	ASTM D-2699
Motor Octane Number	85.9	Report	ASTM D-2700
Antiknock Index	90.7	Report	

DGD:jam
 03/18/98
 MF6500



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SPECIALTY CHEMICALS
P.O. BOX 968
BORGER, TX 79008-0968

DATE OF SHIPMENT
03-06-98

CUSTOMER ORDER NO.
98EG-1

INV./REQN. NO.
480740

TRLR #334

OXYGENATED TEST GAS
LOT D-368

<u>TESTS</u>	<u>RESULTS</u>	<u>SPECIFICATIONS</u>	<u>METHOD</u>
API Gravity	59.6	Report	ASTM D-1298
Specific Gravity, 60/60	0.7406	Report	ASTM D-4052
Sulfur ppm	309	275 - 325	ASTM D-4294
Ethanol, LV%	9.74	9.5 - 10.5	Chromatography
Reid Vapor Pressure	13.1	12.8 - 13.8	ASTM D-323
Benzene Content, LV%	0.999	0.6 - 1.0	

DISTILLATION, D-86 °F

ASTM D-86

IBP	88.7	
5%	101.6	
10%	110.4	100 - 120
20%	128.3	
30%	145.2	
40%	155.4	
50%	182.7	180 - 200
60%	236.9	
70%	266.5	
80%	298.6	
90%	335.3	305 - 335
95%	374.4	
EP	411.6	
Loss	1.7	
Residue	1.0	

HYDROCARBON TYPE, VOL. %

ASTM D-1319

		<u>SPEC</u>
Aromatics	25.2	24 - 26
Olefins	11.0	11 - 13
Saturates		
Research Octane Number	95.25	Report
Motor Octane Number	85.1	Report
Antiknock Index	90.2	Report

ASTM D-2699
ASTM D-2700

DGD:jam
03/18/98
MF6500



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SPECIALTY CHEMICALS
P.O. BOX 968
BORGER, TX 79008-0968

DATE OF SHIPMENT

CUSTOMER ORDER NO.

INV./REQN. NO.

MFG DATE: 05-29-98

OXYGENATED TEST GAS
LOT D-517 (AMENDED)

<u>TESTS</u>	<u>RESULTS</u>	<u>SPECIFICATIONS</u>	<u>METHOD</u>
API Gravity	59.4	Report	ASTM D-1298
Specific Gravity, 60/60	0.7414	Report	ASTM D-4052
Sulfur, ppm	155	125 - 175	ASTM D-2622
MTBE, v%	11.2	11 - 12	ASTM D-4815
Reid Vapor Pressure	6.8	6.4 - 6.8	ASTM D-323
Benzene Content, v%	1.0	0.6 - 1.0	

DISTILLATION, D-86 °F

IBP	105.0	
5%	129.2	
10%	139.7	125 - 145
20%	154.6	
30%	169.4	
40%	186.1	
50%	205.7	190 - 210
60%	228.7	
70%	252.1	
80%	279.5	
90%	312.5	305 - 335
95%	343.2	
EP	388.7	
Loss	1.4	
Residue	0.9	

ASTM D-86

HYDROCARBON TYPE, VOL. %

Aromatics	24.5	23 - 25
Olefins	12	10 - 12
Saturates	-	

ASTM D-1319

Research Octane Number	96.2	Report	ASTM D-2699
Motor Octane Number	85.7	Report	ASTM D-2700

DGD:jam
06/29/98
MF6500



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 SPECIALTY CHEMICALS
 P.O. BOX 968
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DATE OF SHIPMENT
 CUSTOMER ORDER NO.
 INV./REQN. NO.

OXYGENATED TEST GAS (EPA #2)
LOT D-628

<u>TESTS</u>	<u>RESULTS</u>	<u>SPECIFICATIONS</u>	<u>METHOD</u>
API Gravity	60.18	Report	ASTM D-1298
Specific Gravity, 60/60	0.7382	Report	ASTM D-4052
Sulfur ppm	169	125 - 175	ASTM D-2622
MTBE, LV%	10.81	8 - 10	ASTM D-4815
TAME, LB%	3.288	2 - 4	
Oxygen Content	2.4	Report	Chromatography
Oxidation Stability(min)	1440+	1440 min	ASTM D-525
Existent Gums (mg/100ml)	.6	<5 washed	ASTM D-381
Reid Vapor Pressure	6.75	6.3 - 6.9	ASTM D-323
TEL (ml/gal)	0.001	0.005 Max.	ASTM D-3237
Benzene Content, LV%	1.0	0.6 - 1.0	

DISTILLATION, D-86 °F

ASTM D-86

IBP	103.6	
5%	130.0	
10%	138.5	123 - 143
20%	150.4	
30%	161.9	
40%	175.1	
50%	192.7	186 - 206
60%	215.2	
70%	242.0	
80%	271.8	
90%	308.2	305 - 335
95%	335.8	
EP	382.3	
Loss	0.4	
Residue	1.0	

HYDROCARBON TYPE, VOL. %

ASTM D-1319

Aromatics	23.5	22 - 25
Olefins	13.0	10 - 13
Research Octane Number	96.3	Report
Motor Octane Number	85.7	Report
Antiknock Index	91	>87

DGD:teh
 08/03/98
 MF6500