

Crude Oil Assays

Gippsland Blend	Whole crude	Butane & Lighter	Light Naphtha	Heavy Naphtha	Kerosene	Diesel	Vacuum Gas Oil	Vacuum Residue
Distillation Range, F	-200 to 1499	-200 to 60	60 to 165	165 to 330	330 to 480	480 to 650	650 to 1000	1000 to 1499
Cut volume, %	100.00	0.44	6.32	35.80	27.68	20.07	9.19	0.49
API Gravity,	49.00	117.28	79.57	60.34	47.73	35.53	25.39	-0.08
Specific Gravity (60/60F),	0.7839	0.5688	0.6704	0.7376	0.7895	0.8472	0.9019	1.0767
Carbon, wt %		82.56	83.66	84.73	85.50	86.56	87.27	
Hydrogen, wt %		17.44	16.34	15.27	14.50	13.42	12.59	
Pour point, F	-65.00				-55.00	13.00	88.00	109.00
Neutralization number (TAN), MG/GM	0.0500					0.0540	0.0510	0.1060
Sulfur, wt%	0.0140			0.0000	0.0006	0.0185	0.1054	0.4991
Viscosity at 20C/68F, cSt	1.65	0.35	0.41	0.73	2.01	6.82	76.33	2.18E+08
Viscosity at 40C/104F, cSt	1.30	0.30	0.35	0.60	1.45	3.90	27.33	3.18E+06
Viscosity at 50C/122F, cSt	1.17	0.28	0.32	0.55	1.26	3.12	18.20	5.96E+05
Mercaptan sulfur, ppm	0.00			0.10	0.70			
Nitrogen, ppm	57.00	0.00	0.00	0.00	0.20	9.70	331.40	4,108.00
CCR, wt%	0.22					0.00	0.06	33.63
N-Heptane Insolubles (C7 Asphaltenes), wt%								7.60
Nickel, ppm	2.10					0.00	0.30	76.50
Vanadium, ppm	0.10	0.00	0.00	0.00	0.00	0.00	0.00	12.00
Calcium, ppm	1.00							
Reid Vapor Pressure (RVP) Whole Crude, psi	2.10							
Heat of Combustion (Gross), BTU/lb	20,308							
Heat of Combustion (Net), BTU/lb	18,724	19,775	19,197	18,924	18,743			
Hydrogen Sulfide (dissolved), ppm	0.00							
Salt content, ptb	7.10							
Paraffins, vol %		100.00	93.79	64.88	54.56	50.75	37.36	
Naphthenes, vol %		0.00	6.20	34.12	38.28	28.46	29.25	
Aromatics (FIA), vol %				1.00	6.28			
Distillation type, D-	1160	86	86	86	86	86	1160	1160
ASTM IBP, F	118.1	-73.9	106.2	207.1	363.4	501.0	685.4	1,036.4
5 vol%, F	173.8	-24.5	112.0	213.7	367.4	504.7	690.5	1,041.4
10 vol%, F	207.4	19.0	114.8	218.7	368.9	506.6	692.2	1,044.8
20 vol%, F	241.1	26.5	120.6	224.4	373.2	510.9	698.1	1,054.7
30 vol%, F	277.7	28.9	128.2	229.5	379.2	516.5	705.5	1,066.6
40 vol%, F	323.4	28.8	131.3	235.6	386.9	521.5	717.2	1,083.1
50 vol%, F	371.7	30.6	133.3	242.7	394.8	527.4	732.4	1,106.6
60 vol%, F	426.4	34.9	138.1	252.0	403.8	535.5	754.0	1,146.2
70 vol%, F	476.4	39.0	142.5	263.2	412.7	546.4	778.1	1,196.9
80 vol%, F	532.9	42.9	146.5	275.9	422.3	561.3	807.6	1,261.9
90 vol%, F	613.9	42.9	146.7	289.1	432.6	579.4	840.2	1,340.9
95 vol%, F	692.6	44.0	147.9	296.3	438.9	589.8	875.3	1,392.7
ASTM EP, F	958.2	45.9	149.7	307.6	449.5	603.3	960.4	1,453.4
Freeze point, F					-39.10	27.10		
Smoke point, mm					29.40			
Naphthalenes (D1840), vol%					0.90			
Viscosity at 100C/212F, cSt	0.77	0.21	0.24	0.38	0.74	1.42	4.58	2,274.89
Viscosity at 150C/302F, cSt	0.57	0.17	0.19	0.28	0.50	0.86	2.09	122.19
Cetane Index 1990 (D4737),	46.90	122.50	45.40	38.40	53.60	55.60	57.40	16.50
Cloud point, F					-46.00	20.00		
Aniline pt, F					158.00	165.90	188.20	
Source: ExxonMobil Refining & Supply. "Crude Oil Information: Crudes by American Petroleum Institute Gravity," <i>ExxonMobil Refining & Supply website</i> . Web. 13 June 2013. http://www.exxonmobil.com/crudeoil/about_crudes_api.aspx								

Brent Blend	Whole crude	Butane & Lighter	Light Naphtha	Heavy Naphtha	Kerosene	Diesel	Vacuum Gas Oil	Vacuum Residue
Distillation Range, F	-200 to 1499	-200 to 60	60 to 165	165 to 330	330 to 480	480 to 650	650 to 1000	1000 to 1499
Cut volume, %	100.00	2.55	8.95	19.39	14.97	17.20	25.48	11.46
API Gravity,	38.50	118.54	82.04	56.07	42.88	34.80	24.86	10.81
Specific Gravity (60/60F),	0.8324	0.5659	0.6626	0.7544	0.8115	0.8508	0.9050	0.9943
Carbon, wt %	85.99	82.50	83.90	85.83	86.18	86.38	86.46	
Hydrogen, wt %	13.53	17.50	16.10	14.17	13.81	13.33	12.81	
Pour point, F	32.00				-69.00	10.00	100.00	97.00
Neutralization number (TAN), MG/GM	0.0900					0.1340	0.1150	0.1660
Sulfur, wt%	0.4060			0.0024	0.0327	0.2585	0.6079	1.3673
Viscosity at 20C/68F, cSt	4.89	0.35	0.41	0.74	1.87	7.06	125.57	1.91E+06
Viscosity at 40C/104F, cSt	3.15	0.30	0.35	0.61	1.36	4.01	41.57	9.89E+04
Viscosity at 50C/122F, cSt	2.63	0.28	0.32	0.56	1.19	3.20	26.81	3.01E+04
Mercaptan sulfur, ppm	20.00			7.70	3.50			
Nitrogen, ppm	970.00	0.00	0.00	0.00	0.20	54.20	899.40	5,202.00
CCR, wt%	2.18					0.00	0.23	15.50
N-Heptane Insolubles (C7 Asphaltenes), wt%								2.30
Nickel, ppm	1.30					0.00	0.00	9.50
Vanadium, ppm	5.90	0.00	0.00	0.00	0.00	0.00	0.00	43.10
Calcium, ppm	0.50							
Reid Vapor Pressure (RVP) Whole Crude, psi	9.20							
Heat of Combustion (Gross), BTU/lb	19,688							
Heat of Combustion (Net), BTU/lb	18,459	19,266	18,869	18,653	18,584			
Hydrogen Sulfide (dissolved), ppm	0.00							
Salt content, ptb	2.30							
Paraffins, vol %		100.00	85.61	47.08	41.03	40.38	23.55	
Naphthenes, vol %		0.00	12.87	38.46	42.44	37.18	39.69	
Aromatics (FIA), vol %				14.46	14.92			
Distillation type, D-	1160	86	86	86	86	86	1160	1160
ASTM IBP, F	9.0	-92.6	94.1	205.7	363.5	505.7	689.9	1,038.6
5 vol%, F	102.0	-50.4	99.0	210.3	367.8	510.5	694.3	1,042.9
10 vol%, F	157.4	-2.9	102.8	212.4	369.8	512.7	705.1	1,052.1
20 vol%, F	232.6	29.2	106.9	216.8	374.6	518.6	727.2	1,071.8
30 vol%, F	316.3	36.0	111.0	222.8	380.6	525.8	752.4	1,095.7
40 vol%, F	411.1	38.0	113.6	230.6	388.0	534.3	779.7	1,123.2
50 vol%, F	508.4	37.3	117.9	239.3	395.4	542.5	808.7	1,155.9
60 vol%, F	609.5	41.5	125.7	249.9	404.2	552.2	837.7	1,198.4
70 vol%, F	716.7	45.6	131.6	261.5	413.4	562.7	865.8	1,248.1
80 vol%, F	830.8	48.5	137.4	274.5	423.5	574.4	895.6	1,306.8
90 vol%, F	970.3	47.0	140.7	288.1	433.9	586.8	926.7	1,373.4
95 vol%, F	1,107.3	46.7	143.6	295.6	439.7	593.8	946.5	1,415.9
ASTM EP, F	1,389.2	47.6	146.3	307.3	444.4	604.8	970.0	1,457.8
Freeze point, F					-48.00	27.40		
Smoke point, mm					20.70			
Naphthalenes (D1840), vol%					3.60			
Viscosity at 100C/212F, cSt	1.36	0.21	0.23	0.38	0.71	1.44	6.03	524.76
Viscosity at 150C/302F, cSt	0.88	0.17	0.18	0.28	0.48	0.87	2.59	56.69
Cetane Index 1990 (D4737),	37.50	134.90	45.00	29.00	43.20	55.80	57.20	40.90
Cloud point, F					-57.00	20.00		
Aniline pt, F					142.90	163.30	191.30	

Source: ExxonMobil Refining & Supply. "Crude Oil Information: Crudes by American Petroleum Institute Gravity." ExxonMobil Refining & Supply website. Web. 13 June 2013.
http://www.exxonmobil.com/crudeoil/about_crudes_api.aspx

Alaskan North Slope	Whole crude	Butane & Lighter	Light Naphtha	Heavy Naphtha	Kerosene	Diesel	Vacuum Gas Oil	Vacuum Residue
Distillation Range, F	-200 to 1499	-200 to 60	60 to 165	165 to 330	330 to 480	480 to 650	650 to 1000	1000 to 1499
Cut volume, %	100.00	2.53	7.98	14.08	14.06	16.01	27.07	18.26
API Gravity,	31.40	113.65	83.77	55.02	41.10	31.39	21.24	6.87
Specific Gravity (60/60F),	0.8686	0.5772	0.6573	0.7586	0.8198	0.8687	0.9264	1.0226
Carbon, wt %		82.64	83.88	85.84	86.18	86.60	86.34	
Hydrogen, wt %		17.36	16.12	14.16	13.74	12.86	12.30	
Pour point, F	-3.00				-69.00	-2.00	88.00	121.00
Neutralization number (TAN), MG/GM	0.2000					0.1330	0.3400	0.1820
Sulfur, wt%	0.9580			0.0107	0.0929	0.5304	1.2117	2.3438
Viscosity at 20C/68F, cSt	12.22	0.35	0.39	0.71	1.81	7.57	285.61	5.40E+08
Viscosity at 40C/104F, cSt	6.88	0.30	0.34	0.59	1.33	4.25	75.53	7.21E+06
Viscosity at 50C/122F, cSt	5.43	0.28	0.31	0.54	1.16	3.37	44.80	1.30E+06
Mercaptan sulfur, ppm	13.00			7.80	8.90			
Nitrogen, ppm	1,800.00	0.00	0.00	0.00	1.10	74.70	1,307.20	6,321.50
CCR, wt%	4.86					0.00	0.52	21.76
N-Heptane Insolubles (C7 Asphaltenes), wt%								7.30
Nickel, ppm	11.00					0.00	0.00	51.50
Vanadium, ppm	24.80					0.00	0.00	118.70
Calcium, ppm	0.50							
Reid Vapor Pressure (RVP) Whole Crude, psi	6.30							
Heat of Combustion (Gross), BTU/lb	19,249							
Heat of Combustion (Net), BTU/lb	18,071	19,168	18,855	18,599	18,491			
Hydrogen Sulfide (dissolved), ppm	0.00							
Salt content, ptb								
Paraffins, vol %		100.00	84.67	43.29	36.76	31.56	19.11	
Naphthenes, vol %		0.00	14.26	43.00	46.56	37.47	34.78	
Aromatics (FIA), vol %				13.71	21.24			
Distillation type, D-	1160	86	86	86	86	86	1160	1160
ASTM IBP, F	32.0	-2.1	94.6	207.6	363.9	505.9	690.3	1,039.0
5 vol%, F	98.8	24.9	99.0	212.7	368.4	510.6	694.9	1,043.7
10 vol%, F	158.3	31.2	102.7	215.1	370.6	512.6	706.4	1,055.3
20 vol%, F	274.2	32.4	107.3	221.6	375.8	518.5	729.5	1,080.5
30 vol%, F	377.8	34.9	112.3	229.5	382.1	525.8	755.5	1,109.7
40 vol%, F	477.2	37.4	116.0	238.9	389.5	534.6	783.5	1,142.7
50 vol%, F	582.1	39.5	119.1	247.6	396.7	543.1	813.8	1,179.8
60 vol%, F	699.2	43.2	123.1	257.7	405.3	553.1	844.8	1,225.4
70 vol%, F	814.4	46.5	128.4	268.3	414.2	563.9	875.3	1,276.3
80 vol%, F	939.6	49.1	135.1	279.4	424.0	575.5	905.9	1,331.5
90 vol%, F	1,085.9	47.8	139.5	290.9	434.1	587.6	934.0	1,387.0
95 vol%, F	1,216.2	47.5	143.2	297.3	439.8	594.3	950.4	1,420.2
ASTM EP, F	1,398.6	48.6	146.5	302.5	444.5	605.0	969.8	1,457.4
Freeze point, F					-52.10	13.80		
Smoke point, mm					21.50			
Naphthalenes (D1840), vol%					2.40			
Viscosity at 100C/212F, cSt	2.32	0.21	0.23	0.37	0.70	1.50	7.84	4,081.63
Viscosity at 150C/302F, cSt	1.37	0.17	0.18	0.27	0.48	0.90	3.01	189.11
Cetane Index 1990 (D4737),	29.70	113.30	50.60	29.30	39.80	48.10	48.10	28.50
Cloud point, F					-60.00	7.00		
Aniline pt, F					130.30	148.30	173.60	

Source: ExxonMobil Refining & Supply. "Crude Oil Information: Crudes by American Petroleum Institute Gravity." ExxonMobil Refining & Supply website. Web. 13 June 2013.
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Hungo Blend	Whole crude	Butane & Lighter	Light Naphtha	Heavy Naphtha	Kerosene	Diesel	Vacuum Gas Oil	Vacuum Residue
Distillation Range, F	-200 to 1499	-200 to 60	60 to 165	165 to 330	330 to 480	480 to 650	650 to 1000	1000 to 1499
Cut volume, %	100.00	1.33	4.24	12.29	13.11	15.96	31.23	21.85
API Gravity,	28.30	121.03	79.73	55.05	41.02	32.65	21.20	7.77
Specific Gravity (60/60F),	0.8855	0.5603	0.6699	0.7585	0.8202	0.8620	0.9266	1.0160
Carbon, wt %		82.44	83.83	85.44	86.39	86.47	86.79	
Hydrogen, wt %	12.93	17.56	16.17	14.55	13.53	13.21	12.31	
Pour point, F	-19.00				-75.00	4.00	89.00	108.00
Neutralization number (TAN), MG/GM	0.4700					0.6340	0.7490	0.3560
Sulfur, wt%	0.6410			0.0138	0.0781	0.3126	0.7550	1.3325
Viscosity at 20C/68F, cSt	32.96	0.29	0.34	0.70	1.83	7.64	299.32	7.55E+08
Viscosity at 40C/104F, cSt	14.41	0.25	0.29	0.56	1.30	4.22	78.38	9.58E+06
Viscosity at 50C/122F, cSt	10.34	0.24	0.27	0.50	1.12	3.33	46.32	1.68E+06
Mercaptan sulfur, ppm	6.00			1.50	0.90			
Nitrogen, ppm	2,640.00	0.10	0.10	1.40	15.00	92.80	1,438.80	8,567.30
CCR, wt%	5.64					0.00	0.47	21.82
N-Heptane Insolubles (C7 Asphaltenes), wt%								3.60
Nickel, ppm	18.00					0.00	0.10	71.50
Vanadium, ppm	15.00					0.00	0.00	59.60
Calcium, ppm	0.50							
Reid Vapor Pressure (RVP) Whole Crude, psi	5.40							
Heat of Combustion (Gross), BTU/lb	19,116							
Heat of Combustion (Net), BTU/lb	17,944	19,334	18,871	18,635	18,509			
Hydrogen Sulfide (dissolved), ppm	0.00							
Salt content, ptb	20.00							
Paraffins, vol %		100.00	83.91	42.53	34.71	30.40	16.35	
Naphthenes, vol %		0.00	15.86	49.81	42.67	42.85	30.80	
Aromatics (FIA), vol %				7.65	15.53			
Distillation type, D-	1160	86	86	86	86	86	1160	1160
ASTM IBP, F	17.8	-114.3	95.3	208.4	364.4	506.1	691.3	1,038.7
5 vol%, F	151.5	-78.0	100.0	214.4	369.1	511.0	696.3	1,043.4
10 vol%, F	228.2	-34.6	103.2	218.2	371.6	513.2	709.2	1,055.2
20 vol%, F	351.5	15.0	106.0	225.7	377.3	519.3	734.7	1,080.9
30 vol%, F	457.3	28.3	110.3	233.5	384.0	526.8	762.2	1,110.6
40 vol%, F	558.1	32.4	113.8	241.8	391.5	535.8	790.6	1,144.9
50 vol%, F	666.5	32.3	118.9	249.6	398.7	544.3	820.1	1,184.3
60 vol%, F	780.0	36.2	126.7	258.9	407.1	554.3	849.1	1,231.9
70 vol%, F	882.1	41.0	132.3	268.9	415.6	564.9	877.9	1,283.7
80 vol%, F	996.4	44.9	137.8	279.8	425.1	576.3	907.5	1,339.0
90 vol%, F	1,135.7	44.3	141.0	291.1	434.7	588.0	935.1	1,395.8
95 vol%, F	1,258.2	44.9	143.8	297.4	440.2	594.5	951.5	1,431.1
ASTM EP, F	1,414.4	46.3	146.4	302.6	444.8	605.1	970.5	1,458.5
Freeze point, F					-58.90	18.80		
Smoke point, mm					24.00			
Naphthalenes (D1840), vol%					1.90			
Viscosity at 100C/212F, cSt	3.28	0.18	0.20	0.32	0.64	1.46	8.01	4,878.67
Viscosity at 150C/302F, cSt	1.69	0.14	0.16	0.23	0.43	0.87	3.05	214.44
Cetane Index 1990 (D4737),	26.60	146.30	39.20	29.80	40.00	51.00	48.20	30.70
Cloud point, F					-67.00	12.00		
Aniline pt, F					134.10	150.60	168.50	

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Cold Lake Blend	Whole crude	Butane & Lighter	Light Naphtha	Heavy Naphtha	Kerosene	Diesel	Vacuum Gas Oil	Vacuum Residue
Distillation Range, F	-200 to 1499	-200 to 60	60 to 165	165 to 330	330 to 480	480 to 650	650 to 1000	1000 to 1499
Cut volume, %	100.00	0.65	11.19	6.91	5.92	11.02	28.66	35.65
API Gravity,	19.71	113.01	89.21	57.80	37.88	26.07	15.27	1.14
Specific Gravity (60/60F),	0.9358	0.5787	0.6411	0.7475	0.8354	0.8980	0.9641	1.0668
Carbon, wt %		82.65	83.54	85.56	86.16	85.78	85.07	
Hydrogen, wt %		17.35	16.46	14.44	13.30	12.24	11.40	
Pour point, F	-37.00				-115.00	-51.00	34.00	124.00
Neutralization number (TAN), MG/GM	1.0180					0.6670	1.6550	0.9940
Sulfur, wt%	3.8177			0.0860	0.6814	1.9316	3.2888	6.0816
Viscosity at 20C/68F, cSt		0.31	0.35	0.70	2.12	11.00	1,311.68	7.82E+12
Viscosity at 40C/104F, cSt		0.27	0.30	0.57	1.50	5.56	224.04	1.31E+10
Viscosity at 50C/122F, cSt		0.25	0.28	0.52	1.29	4.24	113.11	1.03E+09
Mercaptan sulfur, ppm	80.90			119.90	19.10			
Nitrogen, ppm		0.00	0.00	0.50	18.40	97.30	1,521.50	7,854.00
CCR, wt%	11.69					0.00	0.85	27.88
N-Heptane Insolubles (C7 Asphaltenes), wt%								19.90
Nickel, ppm	61.90					0.00	0.10	155.80
Vanadium, ppm	157.70					0.00	0.40	384.30
Calcium, ppm	1.60							
Reid Vapor Pressure (RVP) Whole Crude, psi	5.80							
Heat of Combustion (Gross), BTU/lb	18,211							
Heat of Combustion (Net), BTU/lb	17,150	19,316	19,029	18,674	18,358			
Hydrogen Sulfide (dissolved), ppm	0.00							
Salt content, ptb	10.60							
Paraffins, vol %		100.00	93.80	52.93	21.39	12.19	7.21	
Naphthenes, vol %		0.00	5.90	35.55	56.48	50.02	27.26	
Aromatics (FIA), vol %				11.51	12.87			
Distillation type, D-	1160	86	86	86	86	86	1160	1160
ASTM IBP, F		21.7	86.8	204.1	365.8	508.1	691.7	1,040.8
5 vol%, F		28.0	91.1	207.8	370.8	514.1	696.9	1,046.4
10 vol%, F		33.5	94.7	209.0	373.2	517.8	711.8	1,065.6
20 vol%, F		33.4	94.6	212.5	379.9	526.3	742.1	1,104.9
30 vol%, F		36.9	96.1	217.9	387.9	535.4	773.9	1,145.8
40 vol%, F		39.4	99.2	225.5	396.7	545.2	806.1	1,189.9
50 vol%, F		41.4	102.5	234.5	404.1	553.3	837.4	1,237.1
60 vol%, F		45.0	105.8	246.1	412.4	562.3	865.8	1,286.8
70 vol%, F		48.1	110.8	259.1	420.2	571.4	892.8	1,333.7
80 vol%, F		50.4	119.6	273.1	428.7	581.0	919.0	1,378.4
90 vol%, F		48.9	129.8	287.3	436.8	590.6	941.6	1,415.9
95 vol%, F		48.4	137.2	295.2	441.6	596.0	955.3	1,437.1
ASTM EP, F		49.3	149.0	307.2	445.5	600.5	971.5	1,460.7
Freeze point, F					-96.90	-33.40		
Smoke point, mm					20.10			
Naphthalenes (D1840), vol%					0.70			
Viscosity at 100C/212F, cSt		0.19	0.21	0.35	0.74	1.68	12.32	205,965.14
Viscosity at 150C/302F, cSt		0.15	0.17	0.26	0.50	0.96	3.86	2,227.44
Cetane Index 1990 (D4737),		111.90	58.30	30.90	34.80	37.80	33.70	10.20
Cloud point, F					-105.00	-42.00		
Aniline pt, F					129.40	127.50	141.00	

Source: ExxonMobil Refining & Supply. "Crude Oil Information: Crudes by American Petroleum Institute Gravity." ExxonMobil Refining & Supply website. Web. 13 June 2013.
http://www.exxonmobil.com/crudeoil/about_crudes_api.aspx

57 oxygenated compounds used for analysis

DIMETHYL ETHER

METHYL ETHYL ETHER

ACETALDEHYDE

METHYL FORMATE

DIETHYL ETHER

N-PROPIONALDEHYDE

ACROLEIN

ETHYL FORMATE

METHYL-TERT-BUTYL ETHER

ACETONE

METHYL ACETATE

METHANOL

TETRAMYOROFURAN

METHACROLEIN

VINYL ACETATE

N-BUTYRALDEHYDE

ETHYL ACETATE

ETHANOL

METHYL ETHYL KETONE

N-PROPYL FORMATE

ISOPROPANOL

TERT-BUTANOL

ISOPROPYL ACETATE

N-PROPANOL

SEC-BUTANOL

FORMIC ACID

N-PROPYL ACETATE

DIETHYL KETONE

2-METHYL-2-BUTANOL

METHYL-N-PROPYL KETONE

METHYL N-BUTYRATE
TRANS-CROTONALDEHYDE
ISOBUTANOL
3-METHYL-2-BUTANOL
METHYL ISOBUTYL KETONE
N-BUTANOL
ACETIC ACID
2-PENTANOL
N-BUTYL ACETATE
METHYL-N-BUTYL KETONE
2-METHYL-1-BUTANOL
4-METHYL-2-PENTANOL
1-PENTANOL
PROPIONIC ACID
N-PENTYL ACETATE
2-METHYLPROPIONIC ACID
FURFURAL
N-BUTYRIC ACID
3-METHYLBUTYRIC ACID
PHENOL
N-PENTANOIC ACID
1,2-PROPYLENE GLYCOL
O-CRESOL
P-CRESOL
M-CRESOL
N-HEXANOIC ACID
DIETHYLENE GLYCOL
TETRAETHYLENE GLYCOL