		Data	Notes	Reference ID
Origin: Venezuela				
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".				
API Gravity				
		25.3		OGJ 99
Sulphur (weight %)				
		1.73		OGJ 99
Reid Vapour Pressure (kPa)				
		28		OGJ 99
Density (g/mL)				
	Temperature (°C)			
	0	0.9230		Mackay 82a
	5	0.9210		Mackay 82a
	10	0.9170		Mackay 82a
	15	0.9140		Mackay 82a
	20	0.9110		Mackay 82a
	25	0.9080		Mackay 82a
Pour Point (°C)				
		< -46		OGJ 99
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	0	640		Mackay 82a
	5	423		Mackay 82a
	10	282		Mackay 82a
	15	180		Mackay 82a
	20	135		Mackay 82a
	25	104		Mackay 82a
Kinematic Viscosity (mm²/s or cSt)				
	Temperature (°C)			
	50	24		OGJ 99
Hydrocarbon Groups (weight %)				
	Saturates	66		Mackay 82a
	Aromatics	23		Mackay 82a
	Resins	4		Mackay 82a
	Asphaltenes	6		Mackay 82a
	Waxes	10		Mackay 82a

La Rosa Medium

		Data	Notes	Reference ID
Yield on Crude (volume %)				
	Boiling Range (°C)			
	C2-C5	1		OGJ 99
	C5-70	2		OGJ 99
	70-100	2		OGJ 99
	100-150	5		OGJ 99
	150-205	7		OGJ 99
	205-265	8		OGJ 99
	265-343	13		OGJ 99
	343-370	6		OGJ 99
	370-400	6		OGJ 99
	>400	49		OGJ 99

		Data	Notes	Reference ID
Origin: Malaysia				
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".				
API Gravity				
		33.2		OGJ 99
Sulphur (weight %)				
		0.09		OGJ 99
Reid Vapour Pressure (kPa)				
		24		OGJ 99
Pour Point (°C)				
		11		OGJ 99
Kinematic Viscosity (mm²/s or cSt)				
	Temperature (°C)			
	21	4		OGJ 99
Hydrocarbon Groups (weight %)				
	Asphaltenes	0		OGJ 99
	Waxes	2		OGJ 99
Yield on Crude				
	Boiling Range (°C)			
Weight %	C1-C5	1		OGJ 99
Volume %	Light naphtha (C5-63)	2		OGJ 99
	Heavy naphtha (63-166)	19		OGJ 99
	Kerosene (166-232)	18		OGJ 99
	Distillate (232-343)	38		OGJ 99
	Residue (>343)	22		OGJ 99
Metals (ppm)				
	Nickel	< 0.002		OGJ 99
	Vanadium	0.02		OGJ 99

Lago

Origin: Angola		Data	Notes	Reference ID
API Gravity				
		27.3		ESD 93
Equation(s) for Predicting Evaporation				
%Ev = (1.13 + 0.045T)ln(t) Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 97
Sulphur (weight %)				
Evaporation (weight %)				
0		0.30		ESD 97
11		0.30		ESD 97
17		0.32		ESD 97
Water Content (weight %)				
Evaporation (weight %)				
0		0.2		ESD 99
11		< 0.1		ESD 99
15		< 0.1		ESD 99
Flash Point (°C)				
Evaporation (weight %)				
0		-13		ESD 94
11		90		ESD 95
17		> 95		ESD 95
Density (g/mL)				
Evaporation (weight %)	Temperature (°C)			
0	0	0.9035		ESD 93
	15	0.8907		ESD 93
11	0	0.9246		ESD 95
	15	0.9128		ESD 95
17	0	0.9344		ESD 95
	15	0.9230		ESD 95
Pour Point (°C)				
Evaporation (weight %)				
0		21		ESD 93
11		25		ESD 95
17		30		ESD 95

		Data	Notes	Reference ID
Dynamic Viscosity (mPa·s or cP)				
Evaporation (weight %)	Temperature (°C)			
0	0	8,644	*(a)*	ESD 93
		87,240	*(b)*	ESD 93
	15	153		ESD 93
11	0	362,200	*(b)*	ESD 95
	15	7,819	*(a)*	ESD 95
		39,320	*(b)*	ESD 95
17	0	668,000	*(b)*	ESD 95
	15	18,900	*(a)*	ESD 95
		95,350	*(b)*	ESD 95
Shear rate = (a) 10/s; (b) 1/s				
Chemical Dispersibility (volume %)				
	Corexit 9500	0		ESD 94
	Corexit 9527	0		ESD 92
	Dasic LTS	0		ESD 92
	Enersperse 700	5		ESD 92
Hydrocarbon Groups (weight %)				
Evaporation (weight %)				
0	Saturates	56		ESD 96
	Aromatics	31		ESD 96
	Resins	11		ESD 96
	Asphaltenes	3		ESD 94
	Waxes	10		ESD 94
11	Saturates	51		ESD 96
	Aromatics	33		ESD 96
	Resins	14		ESD 96
	Asphaltenes	2		ESD 96
	Waxes	8		ESD 98
17	Saturates	53		ESD 96
	Aromatics	30		ESD 96
	Resins	14		ESD 96
	Asphaltenes	3		ESD 96
	Waxes	8		ESD 98
Adhesion (g/m²)				
Evaporation (weight %)				
0		65	*SD = 4*	ESD 95
11		96	*SD = 7*	ESD 95
17		800	*SD = 200*	ESD 95

		Data	Notes	Reference ID
Volatile Organic Compounds (ppm)				
Evaporation (weight %)				
0	Benzene	290		ESD 94
	Toluene	1,920		ESD 94
	Ethylbenzene	720		ESD 94
	Xylenes	2,930		ESD 94
	C3-benzenes	5,000		ESD 94
	Total BTEX	5,870		ESD 94
	Total VOCs	10,870		ESD 94
11	Benzene	0		ESD 96
	Toluene	20		ESD 96
	Ethylbenzene	20		ESD 96
	Xylenes	270		ESD 96
	C3-benzenes	1,210		ESD 96
	Total BTEX	320		ESD 96
	Total VOCs	1,530		ESD 96
17	Benzene	0		ESD 96
	Toluene	10		ESD 96
	Ethylbenzene	0		ESD 96
	Xylenes	0		ESD 96
	C3-benzenes	0		ESD 96
	Total BTEX	10		ESD 96
	Total VOCs	10		ESD 96
Surface Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	DNF		ESD 94
	15	DNF		ESD 94
11	0	DNF		ESD 95
	15	DNF		ESD 95
17	0	DNF		ESD 95
	15	DNF		ESD 95
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	DNF		ESD 94
	15	DNF		ESD 94
11	0	DNF		ESD 95
	15	DNF		ESD 95
17	0	DNF		ESD 95
	15	DNF		ESD 95

		Data	Notes	Reference ID
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	DNF		ESD 94
	15	DNF		ESD 94
11	0	DNF		ESD 95
	15	DNF		ESD 95
17	0	DNF		ESD 95
	15	DNF		ESD 95

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
Evaporation (weight %)	Boiling Point (°C)			
0	80	1		ESD 94
	100	2		ESD 94
	120	4		ESD 94
	140	6		ESD 94
	160	8		ESD 94
	180	10		ESD 94
	200	12		ESD 94
	250	18		ESD 94
	300	25		ESD 94
	350	32		ESD 94
	400	40		ESD 94
	450	50		ESD 94
	500	58		ESD 94
	550	66		ESD 94
	600	73		ESD 94
	650	79		ESD 94
	700	84		ESD 94
11	160	1		ESD 95
	180	2		ESD 95
	200	4		ESD 95
	250	11		ESD 95
	300	18		ESD 95
	350	28		ESD 95
	400	37		ESD 95
	450	48		ESD 95
	500	59		ESD 95
	550	68		ESD 95
	600	76		ESD 95
	650	83		ESD 95
	700	88		ESD 95
17	250	5		ESD 95
	300	13		ESD 95
	350	23		ESD 95
	400	33		ESD 95
	450	45		ESD 95
	500	56		ESD 95
	550	66		ESD 95
	600	74		ESD 95
	650	82		ESD 95
	700	88		ESD 95

Origin: Venezuela		**Data**	**Notes**	**Reference ID**
API Gravity				
		22.6		ESD 97
Equation(s) for Predicting Evaporation				
%Ev = (1.12 + 0.045T)ln(t) Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 98
Sulphur (weight %)				
Evaporation (weight %)				
0		2.59		ESD 97
16		2.75		ESD 99
Flash Point (°C)				
Evaporation (weight %)				
0		-3		ESD 97
16		> 95		ESD 97
Density (g/mL)				
Evaporation (weight %)	Temperature (°C)			
0	0	0.9345		ESD 97
	15	0.9230		ESD 97
	25	0.9191		ESD 97
16	0	0.9772		ESD 97
	15	0.9661		ESD 97
	25	0.9594		ESD 97
Pour Point (°C)				
Evaporation (weight %)				
0		-20		ESD 97
16		-1		ESD 97
Dynamic Viscosity (mPa s or cP)				
Evaporation (weight %)	Temperature (°C)			
0	0	940		ESD 97
	15	272		ESD 97
	25	169		ESD 97
16	0	210,100		ESD 97
	15	16,160		ESD 97
	25	5,162		ESD 97
Chemical Dispersibility (volume %)				
Evaporation (weight %)				
0	Corexit 9500	10		ESD 00
16		< 10		ESD 00

Lago Treco

		Data	Notes	Reference ID
Hydrocarbon Groups (weight %)				
Evaporation (weight %)				
0	Saturates	38		ESD 97
	Aromatics	38		ESD 97
	Resins	14		ESD 97
	Asphaltenes	11		ESD 97
16	Saturates	32		ESD 97
	Aromatics	38		ESD 97
	Resins	15		ESD 97
	Asphaltenes	15		ESD 97
Adhesion (g/m²)				
Evaporation (weight %)				
0		62	*SD = 3*	ESD 97
16		96	*SD = 21*	ESD 97
Volatile Organic Compounds (ppm)				
Evaporation (weight %)				
0	Benzene	202		ESD 97
	Toluene	2,579		ESD 97
	Ethylbenzene	718		ESD 97
	Xylenes	3,012		ESD 97
	C3-benzenes	4,393		ESD 97
	Total BTEX	6,510		ESD 97
	Total VOCs	10,903		ESD 97
16	Benzene	0		ESD 97
	Toluene	1		ESD 97
	Ethylbenzene	1		ESD 97
	Xylenes	1		ESD 97
	C3-benzenes	21		ESD 97
	Total BTEX	2		ESD 97
	Total VOCs	23		ESD 97
Surface Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	29.8		ESD 97
	15	28.7		ESD 97
	25	28.3		ESD 00
16	0	NM		ESD 97
	15	40.0		ESD 97
	25	30.3		ESD 00

		Data	Notes	Reference ID
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	20.5		ESD 97
	15	19.3		ESD 97
	25	NM		ESD 00
16	0	NM		ESD 97
	15	NM		ESD 97
	25	NM		ESD 00
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	26.2		ESD 97
	15	24.4		ESD 97
	25	NM		ESD 00
16	0	NM		ESD 97
	15	NM		ESD 97
	25	NM		ESD 00

Lago Treco

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
Evaporation (weight %)	Boiling Point (°C)			
0	40	4		ESD 97
	60	4		ESD 97
	80	6		ESD 97
	100	8		ESD 97
	120	8		ESD 97
	140	9		ESD 97
	160	11		ESD 97
	180	14		ESD 97
	200	16		ESD 97
	250	23		ESD 97
	300	30		ESD 97
	350	40		ESD 97
	400	50		ESD 97
	450	59		ESD 97
	500	68		ESD 97
	550	76		ESD 97
	600	84		ESD 97
	650	91		ESD 97
	700	97		ESD 97
16	250	4		ESD 99
	300	12		ESD 99
	350	23		ESD 99
	400	34		ESD 99
	450	45		ESD 99
	500	55		ESD 99
	550	64		ESD 99
	600	71		ESD 99
	650	78		ESD 99
	700	83		ESD 99

		Data	Notes	Reference ID
Origin: Venezuela				
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".				
API Gravity				
		31.5		OGJ 99
		30.6		EETD 84
Sulphur (weight %)				
		1.17		OGJ 99
Flash Point (°C)				
		57		EETD 84
Reid Vapour Pressure (kPa)				
		16		EETD 84
		37		OGJ 99
Density (g/mL)				
Evaporation (volume %)	Temperature (°C)			
0	0	0.8800		EETD 84
	15	0.8720		EETD 84
9	0	0.8980		EETD 84
	15	0.8910		EETD 84
15	0	0.9060		EETD 84
	15	0.8970		EETD 84
Pour Point (°C)				
		-26		OGJ 99
Dynamic Viscosity (mPa·s or cP)				
Evaporation (volume %)	Temperature (°C)			
0	0	4,355		EETD 84
	15	41		EETD 84
9	0	7,800		EETD 84
	15	84		EETD 84
15	0	16,500		EETD 84
	15	265		EETD 84
Saybolt Viscosity (SUS)				
	Temperature (°C)			
	38	56		OGJ 99
Chemical Dispersibility (volume %)				
	Corexit 9527	20		ESD 92
	Dasic LTS	5		EETD 89
	Enersperse 700	10		EETD 89
Hydrocarbon Groups (weight %)				
	Asphaltenes	5		EETD 89
	Waxes	10		ESD 91

Lagomedio

		Data	Notes	Reference ID
Volatile Organic Compounds (ppm)				
	Benzene	230		ESD 94
	Toluene	810		ESD 94
	Ethylbenzene	180		ESD 94
	Xylenes	1,220		ESD 94
	C3-benzenes	1,710		ESD 94
	Total BTEX	2,430		ESD 94
	Total VOCs	4,140		ESD 94
Surface Tension (mN/m or dynes/cm)				
Evaporation (volume %)	Temperature (°C)			
0	0	NM		EETD 84
	15	28.2		EETD 84
9	0	NM		EETD 84
	15	27.5		EETD 84
15	0	NM		EETD 84
	15	29.6		EETD 84
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
Evaporation (volume %)	Temperature (°C)			
0	0	NM		EETD 84
	15	12.4		EETD 84
9	0	NM		EETD 84
	15	14.4		EETD 84
15	0	NM		EETD 84
	15	17.1		EETD 84
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
Evaporation (volume %)	Temperature (°C)			
0	0	NM		EETD 84
	15	23.2		EETD 84
9	0	NM		EETD 84
	15	23.7		EETD 84
15	0	NM		EETD 84
	15	20.5		EETD 84

	Data	Notes	Reference ID
Boiling Point Distribution (weight %)			
Boiling Point (°C)			
100	2		ESD 94
120	3		ESD 94
140	6		ESD 94
160	9		ESD 94
180	12		ESD 94
200	15		ESD 94
250	23		ESD 94
300	32		ESD 94
350	42		ESD 94
400	51		ESD 94
450	59		ESD 94
500	67		ESD 94
550	75		ESD 94
600	81		ESD 94
650	87		ESD 94
700	91		ESD 94
Yield on Crude (volume %)			
Boiling Range (°C)			
C1-C4	2		OGJ 99
Light naphtha (28-93)	6		OGJ 99
Heavy naphtha (93-149)	9		OGJ 99
Naphtha (149-178)	5		OGJ 99
Kerosene (178-204)	5		OGJ 99
Gas oil (204-260)	9		OGJ 99
Gas oil (260-288)	5		OGJ 99
Gas oil (288-343)	9		OGJ 99
Residue (>343)	49		OGJ 99

Lagomedio

		Data	Notes	Reference ID
Metals (ppm)				
	Aluminum	< 5		Cao 92
	Barium	< 0.3		Cao 92
	Cadmium	< 0.5		Cao 92
	Calcium	420		Cao 92
	Chromium	< 2		Cao 92
	Cobalt	< 1		Cao 92
	Copper	< 0.6		Cao 92
	Iron	< 3		Cao 92
	Lead	< 3		Cao 92
	Magnesium	4		Cao 92
	Manganese	< 0.3		Cao 92
	Mercury	< 15		Cao 92
	Molybdenum	< 0.6		Cao 92
	Nickel	6		Cao 92
	Selenium	22		Cao 92
	Strontium	0.2		Cao 92
	Tin	< 15		Cao 92
	Titanium	< 0.6		Cao 92
	Vanadium	163		Cao 92
	Zinc	< 0.6		Cao 92
Aqueous Solubility (mg/L)				
	Temperature (°C)			
	20 (approx.)	12	*(a)*	MacLean 89
		10	*(b)*	MacLean 89
		26	*(c)*	Bobra 83
		0.6	*(c) (d)*	Bobra 83
(a) fresh water; (b) salt water; (c) distilled water				
(d) evaporated 22.3 wt%				
Acute Toxicity of Water Soluble Fraction (mg/L)				
	Test Organism			
48h LC50	Daphnia magna	8		Bobra 83
		> 12	*(a)*	MacLean 89
		> 8	*(b)*	EETD 89
		> 0.6	*(c)*	Bobra 83
	Artemia spp.	10	*(a)*	MacLean 89
		7	*(b)*	EETD 89
48h EC50	Daphnia magna	3	*(a)*	MacLean 89
		2	*(b)*	EETD 89
	Artemia spp.	9	*(a)*	MacLean 89
		6	*(b)*	EETD 89

(a) results based on fluorescence spectroscopy; (b) results based on GC purge-and-trap analysis; (c) evaporated 22.3 wt%

		Data	Notes	Reference ID
Origin: Venezuela				
Data from OGJ 99 were originally published in 1997.				
API Gravity				
		24.0		OGJ 99
Sulphur (weight %)				
		1.52		OGJ 99
Flash Point (°C)				
		-31		OGJ 99
Reid Vapour Pressure (kPa)				
		25		OGJ 99
Density (g/mL)				
	Temperature (°C)			
	15	0.9100		OGJ 99
Pour Point (°C)				
		-29		OGJ 99
Kinematic Viscosity (mm²/s or cSt)				
	Temperature (°C)			
	38	31		OGJ 99
	50	19		OGJ 99
	60	13		OGJ 99
Hydrocarbon Groups (weight %)				
	Asphaltenes	5		OGJ 99
Yield on Crude (weight %)				
	Boiling Range (°C)			
	IBP-20	1		OGJ 99
	20-100	4		OGJ 99
	100-150	6		OGJ 99
	150-200	5		OGJ 99
	200-250	7		OGJ 99
	250-300	8		OGJ 99
	300-343	8		OGJ 99
	343-402	10		OGJ 99
	402-461	9		OGJ 99
	461-520	8		OGJ 99
	>520	34		OGJ 99
Metals (ppm)				
	Aluminum	< 5		OGJ 99
	Nickel	42		OGJ 99
	Sodium	5		OGJ 99
	Vanadium	139		OGJ 99

Leona

		Data	Notes	Reference ID
Other Elements (weight %)				
	Nitrogen	0.32		OGJ 99

		Data	Notes	Reference ID
Origin: Wales				
Data from OGJ 99 were originally published in 1997.				
API Gravity				
		43.3		OGJ 99
Sulphur (weight %)				
		0.24		OGJ 99
Water Content (weight %)				
		< 0.1		OGJ 99
Reid Vapour Pressure (kPa)				
		31		OGJ 99
Density (g/mL)				
	Temperature (°C)			
	15	0.8091		OGJ 99
Pour Point (°C)				
		-18		OGJ 99
Kinematic Viscosity (mm²/s or cSt)				
	Temperature (°C)			
	20	7		OGJ 99
	40	3		OGJ 99
Hydrocarbon Groups (weight %)				
	Asphaltenes	0		OGJ 99
	Waxes	8		OGJ 99
Yield on Crude (weight %)				
	Boiling Range (°C)			
	C1-C4	2		OGJ 99
	C5-70	7		OGJ 99
	70-140	15		OGJ 99
	140-190	9		OGJ 99
	190-230	7		OGJ 99
	230-360	26		OGJ 99
	360-450	14		OGJ 99
	450-540	12		OGJ 99
	>540	10		OGJ 99
Metals (ppm)				
	Copper	< 0.1		OGJ 99
	Iron	10		OGJ 99
	Nickel	< 0.1		OGJ 99
	Sodium	55		OGJ 99
	Vanadium	< 0.1		OGJ 99

Liverpool Bay

		Data	Notes	Reference ID
Other Elements (weight %)				
	Carbon	85.44		OGJ 99
	Hydrogen	14.40		OGJ 99
	Nitrogen	0.02		OGJ 99

Origin: Alberta/Saskatchewan, Canada

		Data	Notes	Reference ID
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".				
API Gravity				
		20.7		OGJ 99
Sulphur (weight %)				
		3.15		OGJ 99
Flash Point (°C)				
		11	*(a)*	Twardus 80
(a) open cup				
Fire Point (°C)				
		17		Twardus 80
Reid Vapour Pressure (kPa)				
		0		OGJ 99
Density (g/mL)				
Evaporation (volume %)	Temperature (°C)			
0	0	0.9100		Mackay 82a
	5	0.9080		Mackay 82a
	10	0.9060		Mackay 82a
	15	0.9020		Mackay 82a
	20	0.9000		Mackay 82a
	25	0.8970		Mackay 82a
10	20	0.9230		Mackay 82a
20		0.9370		Mackay 82a
Pour Point (°C)				
Evaporation (volume %)				
0		-36		Mackay 82a
		-52		Twardus 80
		-32		OGJ 99
10		-36		Mackay 82a
20		-21		Mackay 82a

Lloydminster

		Data	Notes	Reference ID
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	0	180		Mackay 82a
		126		Twardus 80
	5	113		Mackay 82a
	10	80		Mackay 82a
		86		Twardus 80
	15	63		Mackay 82a
	20	48		Mackay 82a
		52		Twardus 80
	25	36		Mackay 82a
Kinematic Viscosity (mm²/s or cSt)				
	Temperature (°C)			
	40	101		OGJ 99
Hydrocarbon Groups (weight %)				
Evaporation (volume %)				
0	Saturates	68		Mackay 82a
	Aromatics	22		Mackay 82a
	Resins	4		Mackay 82a
	Asphaltenes	6		Mackay 82a
	Waxes	5		Mackay 82a
10	Saturates	66		Mackay 82a
	Aromatics	22		Mackay 82a
	Resins	3		Mackay 82a
	Asphaltenes	9		Mackay 82a
	Waxes	9		Mackay 82a
20	Saturates	63		Mackay 82a
	Aromatics	24		Mackay 82a
	Resins	3		Mackay 82a
	Asphaltenes	10		Mackay 82a
	Waxes	11		Mackay 82a
Surface Tension (mN/m or dynes/cm)				
	Room temperature	25.0		Twardus 80
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
Evaporation (volume %)				
0	Room temperature	21.2		Mackay 82a
10		23.1		Mackay 82a
20		22.9		Mackay 82a
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
	Room temperature	31.2		Twardus 80

		Data	Notes	Reference ID
Distillation (°C)				
	Total Distillate (volume %)			
	0	40		Twardus 80
	10	110		Twardus 80
	20	190		Twardus 80
	30	260		Twardus 80
	40	290		Twardus 80
	50	335		Twardus 80
	60	345		Twardus 80
	70	356		Twardus 80
	80	371		Twardus 80
	90	380		Twardus 80
Yield on Crude (volume %)				
	Boiling Range (°C)			
	C1-C4	1		OGJ 99
	Naphtha (C5-190)	20		OGJ 99
	Kerosene (190-277)	10		OGJ 99
	Distillate (277-343)	10		OGJ 99
	Gas oil (343-565)	25		OGJ 99
	Residue (>565)	36		OGJ 99
Metals (ppm)				
	Nickel	53		OGJ 99
	Vanadium	11		OGJ 99

Loreto

		Data	Notes	Reference ID
Origin: Peru				
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".				
API Gravity				
		34.0		OGJ 99
Sulphur (weight %)				
		0.29		OGJ 99
Pour Point (°C)				
		1		OGJ 99
Saybolt Viscosity (SUS)				
	Temperature (°C)			
	27	53		OGJ 99
Yield on Crude (volume %)				
	Boiling Range (°C)			
	Light naphtha(IBP-45)	2		OGJ 99
	Naphtha (45-104)	7		OGJ 99
	Heavy naphtha (104-199)	18		OGJ 99
	Kerosene (199-288)	19		OGJ 99
	Residue (>343)	41		OGJ 99
Metals (ppm)				
	Nickel	34		OGJ 99
	Vanadium	63		OGJ 99

	Data	Notes	Reference ID
Origin: Louisiana, USA			
This oil was used in the 1992 mesoscale in situ burning experiments carried out on Little Sand Island offshore of Mobile, Alabama, USA. The oil originated from wells in the Louisiana area and was obtained from an oil storage facility in Louisiana.			Walton 93
API Gravity			
	34.5		ESD 93
Equation(s) for Predicting Evaporation			
%Ev = (2.39 + 0.045T)ln(t) Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)			ESD 97

Sulphur (weight %)

Evaporation (weight %)		
0	0.45	ESD 93
	0.41	Walton 93
10	0.53	ESD 94
21	0.58	ESD 94
32	0.66	ESD 94

Flash Point (°C)

Evaporation (weight %)		
0	-11	ESD 93
10	47	ESD 94
21	> 95	ESD 94
32	> 95	ESD 94

Density (g/mL)

Evaporation (weight %)	Temperature (°C)		
0	0	0.8628	ESD 93
	15	0.8518	ESD 93
10	0	0.8803	ESD 94
	15	0.8696	ESD 94
21	0	0.8948	ESD 94
	15	0.8837	ESD 94
32	0	0.9068	ESD 94
	15	0.8953	ESD 94

Pour Point (°C)

Evaporation (weight %)		
0	-28	ESD 93
10	-23	ESD 94
21	-12	ESD 94
32	-8	ESD 94

		Data	Notes	Reference ID
Dynamic Viscosity (mPa·s or cP)				
Evaporation (weight %)	Temperature (°C)			
0	0	15		ESD 93
	15	8		ESD 93
10	0	34		ESD 94
	15	16		ESD 94
21	0	88		ESD 94
	15	36		ESD 94
32	0	254		ESD 94
	15	80		ESD 94
Chemical Dispersibility (volume %)				
	Corexit 9500	34		ESD 95
	Corexit 9527	13		ESD 95
	Dasic LTS	17		ESD 95
	Enersperse 700	14		ESD 95
Hydrocarbon Groups (weight %)				
Evaporation (weight %)				
0	Saturates	73		ESD 95
	Aromatics	21		ESD 95
	Resins	4		ESD 95
	Asphaltenes	1		ESD 97
	Waxes	4		ESD 98
10	Saturates	69		ESD 95
	Aromatics	25		ESD 95
	Resins	5		ESD 95
	Asphaltenes	0		ESD 95
	Waxes	3		ESD 98
21	Saturates	66		ESD 95
	Aromatics	27		ESD 95
	Resins	6		ESD 95
	Asphaltenes	0		ESD 95
	Waxes	4		ESD 98
32	Saturates	64		ESD 95
	Aromatics	29		ESD 95
	Resins	7		ESD 95
	Asphaltenes	0		ESD 95
	Waxes	4		ESD 98

		Data	Notes	Reference ID
Adhesion (g/m²)				
Evaporation (weight %)				
0		18	*SD = 2*	ESD 95
10		22	*SD = 1*	ESD 95
21		27	*SD = 3*	ESD 95
32		34	*SD = 2*	ESD 95
Volatile Organic Compounds (ppm)				
Evaporation (weight %)				
0	Benzene	800		ESD 94
	Toluene	2,190		ESD 94
	Ethylbenzene	710		ESD 94
	Xylenes	5,360		ESD 94
	C3-benzenes	5,710		ESD 94
	Total BTEX	9,060		ESD 94
	Total VOCs	14,780		ESD 94
10	Benzene	200		ESD 94
	Toluene	1,420		ESD 94
	Ethylbenzene	540		ESD 94
	Xylenes	3,820		ESD 94
	C3-benzenes	5,390		ESD 94
	Total BTEX	5,980		ESD 94
	Total VOCs	11,370		ESD 94
21	Benzene	0		ESD 94
	Toluene	0		ESD 94
	Ethylbenzene	0		ESD 94
	Xylenes	90		ESD 94
	C3-benzenes	1,310		ESD 94
	Total BTEX	80		ESD 94
	Total VOCs	1,400		ESD 94
32	Benzene	0		ESD 94
	Toluene	0		ESD 94
	Ethylbenzene	0		ESD 94
	Xylenes	0		ESD 94
	C3-benzenes	0		ESD 94
	Total BTEX	0		ESD 94
	Total VOCs	0		ESD 94

		Data	Notes	Reference ID
Surface Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	27.7		ESD 94
	15	25.9		ESD 94
10	0	29.2		ESD 94
	15	28.3		ESD 94
21	0	30.4		ESD 94
	15	29.6		ESD 94
32	0	31.3		ESD 94
	15	30.2		ESD 94
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	17.5		ESD 94
	15	19.6		ESD 94
10	0	17.5		ESD 94
	15	18.6		ESD 94
21	0	16.6		ESD 94
	15	15.8		ESD 94
32	0	16.0		ESD 94
	15	15.4		ESD 94
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	19.4		ESD 94
	15	21.1		ESD 94
10	0	19.6		ESD 94
	15	21.1		ESD 94
21	0	18.3		ESD 94
	15	19.6		ESD 94
32	0	18.5		ESD 94
	15	19.7		ESD 94

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
Evaporation (weight %)	Boiling Point (°C)			
0	40	1		ESD 96
	60	1		ESD 96
	80	1		ESD 96
	100	1		ESD 96
	120	8		ESD 96
	140	12		ESD 96
	160	14		ESD 96
	180	18		ESD 96
	200	21		ESD 96
	250	33		ESD 96
	300	46		ESD 96
	350	59		ESD 96
	400	69		ESD 96
	450	78		ESD 96
	500	86		ESD 96
	550	91		ESD 96
	600	95		ESD 96
	650	97		ESD 96
	700	99		ESD 96
10	120	2		ESD 95
	140	4		ESD 95
	160	7		ESD 95
	180	11		ESD 95
	200	15		ESD 95
	250	27		ESD 95
	300	42		ESD 95
	350	55		ESD 95
	400	66		ESD 95
	450	76		ESD 95
	500	84		ESD 95
	550	90		ESD 95
	600	94		ESD 95
	650	97		ESD 95
	700	99		ESD 95
21	180	2		ESD 95
	200	4		ESD 95
	250	17		ESD 95
	300	33		ESD 95
	350	49		ESD 95
	400	62		ESD 95
	450	73		ESD 95

Louisiana

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
Evaporation (weight %)	Boiling Point (°C)			
21	500	82		ESD 95
	550	88		ESD 95
	600	93		ESD 95
	650	96		ESD 95
	700	98		ESD 95
32	250	6		ESD 95
	300	23		ESD 95
	350	42		ESD 95
	400	57		ESD 95
	450	70		ESD 95
	500	80		ESD 95
	550	87		ESD 95
	600	93		ESD 95
	650	97		ESD 95
	700	99		ESD 95
Other Elements (weight %)				
	Carbon	85.79		Walton 93
	Hydrogen	13.25		Walton 93

		Data	Notes	Reference ID
API Gravity				
		43.8		ESD 93
Sulphur (weight %)				
		0.03		ESD 93
Flash Point (°C)				
		> 95		ESD 93
Density (g/mL)				
	Temperature (°C)			
	0	0.8060	*(a)*	ESD 93
	15	0.8070	*(a)*	ESD 93
	38	0.8341		ESD 93
(a) measured with a pycnometer				
Pour Point (°C)				
		> 50		ESD 93
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	38	3,582,000	*(a)*	ESD 93
(a) shear rate = 0.5/s				
Hydrocarbon Groups (weight %)				
	Asphaltenes	2		ESD 93
	Waxes	> 95		ESD 93
Volatile Organic Compounds (ppm)				
	Benzene	0		ESD 96
	Toluene	10		ESD 96
	Ethylbenzene	0		ESD 96
	Xylenes	0		ESD 96
	C3-benzenes	0		ESD 96
	Total BTEX	10		ESD 96
	Total VOCs	10		ESD 96
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	DNF		ESD 94
	15	DNF		ESD 94
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	DNF		ESD 94
	15	DNF		ESD 94
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	DNF		ESD 94
	15	DNF		ESD 94

Low Sulphur Waxy Gas Oil

		Data	Notes	Reference ID
Distillation (°C)				
	Total Distillate (volume %)			
	5	336		ESD 93
	10	363		ESD 93
	15	377		ESD 93
	20	387		ESD 93
	25	395		ESD 93
	30	401		ESD 93
	35	409		ESD 93
	40	415		ESD 93
	45	421		ESD 93
	50	428		ESD 93
	55	432		ESD 93
	60	438		ESD 93
	65	445		ESD 93
	70	451		ESD 93
	75	458		ESD 93
	80	466		ESD 93
	85	476		ESD 93
	90	488		ESD 93
	95	507		ESD 93
	FBP	548		ESD 93

		Data	Notes	Reference ID
API Gravity				
		39.5		ESD 93
Sulphur (weight %)				
		0.05		ESD 93
Flash Point (°C)				
		> 95		ESD 93
Density (g/mL)				
	Temperature (°C)			
	0	0.8280	*(a)*	ESD 93
	15	0.8270	*(a)*	ESD 93
	38	0.8629		ESD 93
(a) measured with a pycnometer				
Pour Point (°C)				
		> 50		ESD 93
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	38	3,028,000	*(a)*	ESD 93
(a) shear rate = 0.5/s				
Hydrocarbon Groups (weight %)				
	Asphaltenes	14		ESD 93
	Waxes	85		ESD 93
Volatile Organic Compounds (ppm)				
	Benzene	0		ESD 96
	Toluene	10		ESD 96
	Ethylbenzene	0		ESD 96
	Xylenes	0		ESD 96
	C3-benzenes	0		ESD 96
	Total BTEX	10		ESD 96
	Total VOCs	10		ESD 96
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	DNF		ESD 94
	15	DNF		ESD 94
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	DNF		ESD 94
	15	DNF		ESD 94
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	DNF		ESD 94
	15	DNF		ESD 94

Low Sulphur Waxy Residuum

		Data	Notes	Reference ID
Distillation (°C)				
	Total Distillate (volume %)			
	5	459		ESD 93
	10	477		ESD 93
	15	488		ESD 93
	20	497		ESD 93
	25	504		ESD 93
	30	510		ESD 93
	35	515		ESD 93
	40	521		ESD 93
	45	526		ESD 93
	50	531		ESD 93
	55	537		ESD 93
	60	542		ESD 93
	65	548		ESD 93
	70	554		ESD 93
	75	563		ESD 93
	80	574		ESD 93
	85	590		ESD 93
	90	610		ESD 93
	95	638		ESD 93
	FBP	670		ESD 93

		Data	Notes	Reference ID
This oil was obtained from the collection of Don Mackay in 1995. It was identified as 'Gulf/Sun Oil, product #892-2091:5'.				
API Gravity				
New		30.4		ESD 97
Used		30.1		ESD 97
Equation(s) for Predicting Evaporation				
$\%Ev = (-0.68 + 0.045T)\ln(t)$ Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 00
Sulphur (weight %)				
New		0.14		ESD 97
Used		0.12		ESD 97
Flash Point (°C)				
New		> 95		ESD 96
Used		> 95		ESD 96
Density (g/mL)				
	Temperature (°C)			
New	0	0.8827		ESD 96
	15	0.8734		ESD 96
Used	0	0.8840		ESD 96
	15	0.8746		ESD 96
Pour Point (°C)				
New		-28		ESD 96
Used		-25		ESD 96
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
New	0	660		ESD 96
	15	220		ESD 96
Used	0	690		ESD 96
	15	230		ESD 96
Hydrocarbon Groups (weight %)				
New	Saturates	84		ESD 98
	Aromatics	13		ESD 98
	Resins	2		ESD 98
	Asphaltenes	0		ESD 98
Used	Saturates	81		ESD 98
	Aromatics	16		ESD 98
	Resins	3		ESD 98
	Asphaltenes	0		ESD 98
Adhesion (g/m²)				
New		34	*SD = 3*	ESD 96
Used		36	*SD = 3*	ESD 96

Lubricating Oil (Air Compressor)

		Data	Notes	Reference ID
Volatile Organic Compounds (ppm)				
New	Benzene	0		ESD 97
	Toluene	35		ESD 97
	Ethylbenzene	2		ESD 97
	Xylenes	5		ESD 97
	C3-benzenes	2		ESD 97
	Total BTEX	42		ESD 97
	Total VOCs	44		ESD 97
Used	Benzene	0		ESD 97
	Toluene	2		ESD 97
	Ethylbenzene	0		ESD 97
	Xylenes	4		ESD 97
	C3-benzenes	3		ESD 97
	Total BTEX	7		ESD 97
	Total VOCs	10		ESD 97
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	32.3		ESD 96
	15	31.4		ESD 96
Used	0	32.4		ESD 96
	15	31.4		ESD 96
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	16.7		ESD 96
	15	12.7		ESD 96
Used	0	19.1		ESD 96
	15	15.9		ESD 96
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	21.0		ESD 96
	15	18.0		ESD 96
Used	0	22.1		ESD 96
	15	21.3		ESD 96

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
	Boiling Point (°C)			
New	300	1		ESD 96
	350	2		ESD 96
	400	7		ESD 96
	450	41		ESD 96
	500	86		ESD 96
	550	98		ESD 96
Used	350	2		ESD 96
	400	17		ESD 96
	450	38		ESD 96
	500	73		ESD 96
	550	95		ESD 96

Lubricating Oil (Cutting)

		Data	Notes	Reference ID
Data from PetroCan 97 are for 'Cancut 44'. Data from Shell 99b are for 'Garia D'.				
Sulphur (weight %)				
		1.20		PetroCan 97
		0.89		Shell 99b
Flash Point (°C)				
		207		PetroCan 97
		160		Shell 99b
Kinematic Viscosity (mm²/s or cSt)				
	Temperature (°C)			
	40	29		PetroCan 97
		32		Shell 99b
	100	5		Shell 99b
Other Elements (weight %)				
	Chlorine	0.50		PetroCan 97
		0.92		Shell 99b

		Data	Notes	Reference ID
Sample obtained from Ontario Hydro. Lube 27 is used in hydraulic turbine and governor systems of hydraulic generating stations.				
API Gravity				
New		30.5		EETD 85
Used		30.5		EETD 85
Sulphur (weight %)				
New		0.43		EETD 86
Used		0.43		EETD 86
Flash Point (°C)				
New		> 110		EETD 85
Used		> 110		EETD 85
Density (g/mL)				
	Temperature (°C)			
New	0	0.8820		EETD 85
	15	0.8727		EETD 85
Used	0	0.8834		EETD 85
	15	0.8737		EETD 85
Pour Point (°C)				
New		-24		EETD 85
Used		-27		EETD 85
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
New	0	350		EETD 85
	15	144		EETD 85
Used	0	359		EETD 85
	15	145		EETD 85
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	32.8		EETD 85
	15	31.2		EETD 85
Used	0	31.9		EETD 85
	15	31.0		EETD 85
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	19.0		EETD 85
	15	13.6		EETD 85
Used	0	21.8		EETD 85
	15	11.4		EETD 85

		Data	Notes	Reference ID
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	22.3		EETD 85
	15	19.4		EETD 85
Used	0	24.4		EETD 85
	15	22.0		EETD 85

		Data	Notes	Reference ID
Data from Shell 99b are for 'Aero Shell'.				
Flash Point (°C)				
Grade				
80		282		Shell 99b
100		292		Shell 99b
120		304		Shell 99b
Pour Point (°C)				
Grade				
80		-30		Shell 99b
100		-21		Shell 99b
120		-15		Shell 99b
Kinematic Viscosity (mm²/s or cSt)				
Grade	Temperature (°C)			
80	40	143		Shell 99b
100		232		Shell 99b
120		318		Shell 99b
80	100	15		Shell 99b
100		20		Shell 99b
120		25		Shell 99b

Lubricating Oil (Engine, Aviation Turbine)

		Data	Notes	Reference ID
Data from Shell 99b are for 'Aero Shell Turbine'.				
Flash Point (°C)				
Grade				
500		246		Shell 99b
555		246		Shell 99b
560		260		Shell 99b
Pour Point (°C)				
Grade				
500		-54		Shell 99b
555		-54		Shell 99b
560		< -54		Shell 99b
Kinematic Viscosity (mm²/s or cSt)				
Grade	Temperature (°C)			
500	-40	10,025		Shell 99b
555		10,775		Shell 99b
560		10,775		Shell 99b
500	40	25		Shell 99b
555		29		Shell 99b
560		28		Shell 99b
500	100	5		Shell 99b
555		5		Shell 99b
560		5		Shell 99b

Data from PetroCan 97 are for 'Ralube'.
Data from Shell 99b are for 'Caprinus'.

		Data	Notes	Reference ID
Flash Point (°C)				
Grade				
40		270		PetroCan 97
		274		Shell 99b
20W40		238		PetroCan 97
		248		Shell 99b
Density (g/mL)				
Grade	Temperature (°C)			
40	15	0.8860		PetroCan 97
20W40		0.8810		PetroCan 97
Pour Point (°C)				
Grade				
40		-12		PetroCan 97
		-33		Shell 99b
20W40		-15		PetroCan 97
		-33		Shell 99b
Kinematic Viscosity (mm²/s or cSt)				
Grade	Temperature (°C)			
40	40	145		PetroCan 97
		143		Shell 99b
20W40		123		PetroCan 97
		123		Shell 99b
40	100	15		PetroCan 97
		15		Shell 99b
20W40		14		PetroCan 97
		15		Shell 99b

Lubricating Oil (Engine, Diesel)

		Data	Notes	Reference ID
Data from PetroCan 97 are for 'XHD Motor Oil'. Data from Shell 99b are for 'Shell Fleet'.				
Flash Point (°C)				
Grade				
15W40		220		PetroCan 97
30		222		PetroCan 97
Pour Point (°C)				
Grade				
15W40		-36		Shell 99b
10W30		-39		Shell 99b
10W		-33		Shell 99b
30		-27		Shell 99b
Kinematic Viscosity (mm²/s or cSt)				
Grade	Temperature (°C)			
15W40	40	114		PetroCan 97
		112		Shell 99b
10W30		76		Shell 99b
10W		43		Shell 99b
30		99		PetroCan 97
		94		Shell 99b
15W40	100	15		PetroCan 97
		15		Shell 99b
10W30		12		Shell 99b
10W		7		Shell 99b
30		12		PetroCan 97
		12		Shell 99b

Synonyms: Crankcase Oil

Data from PetroCan 97 are for 'Maximum Motor Oil'.
Data from Shell 99b are for 'Formula Shell'.

		Data	Notes	Reference ID
API Gravity				
Used		28.3		EETD 86
Sulphur (weight %)				
Used		0.29		EETD 86
Flash Point (°C)				
Grade				
5W30		224		PetroCan 97
		214		Shell 99b
10W30		218		PetroCan 97
		218		Shell 99b
10W40		214		PetroCan 97
		222		Shell 99b
Density (g/mL)				
	Temperature (°C)			
Used	0	0.8945		EETD 86
	15	0.8848		EETD 86
Pour Point (°C)				
Grade				
5W30		-39		Shell 99b
10W30		-36		Shell 99b
10W40		-36		Shell 99b
Used		-36		EETD 86
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
Used	0	452		EETD 86
	15	175		EETD 86

Lubricating Oil (Engine, Gasoline)

		Data	Notes	Reference ID
Kinematic Viscosity (mm²/s or cSt)				
Grade	Temperature (°C)			
5W30	40	60		PetroCan 97
		73		Shell 99b
	100	10		PetroCan 97
		12		Shell 99b
10W30	40	68		PetroCan 97
		71		Shell 99b
	100	10		PetroCan 97
		11		Shell 99b
10W40	40	99		PetroCan 97
		97		Shell 99b
	100	15		PetroCan 97
		15		Shell 99b
Chemical Dispersibility (volume %)				
Used	Corexit 9527	40		EETD 89
	Dasic LTS	30		EETD 89
	Enersperse 700	45		EETD 89
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
Used	0	31.6		EETD 86
	15	31.0		EETD 86
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
Used	0	24.2		EETD 86
	15	21.0		EETD 86
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
Used	0	27.1		EETD 86
	15	24.4		EETD 86
Aqueous Solubility (mg/L)				
	Temperature (°C)			
New	20 (approx.)	2	*(a)*	MacLean 89
	22	0.2	*(a)*	Suntio 86
	20 (approx.)	1	*(b)*	MacLean 89
Used		19	*(a)*	MacLean 89
	22	0.6	*(a)*	Suntio 86
	20 (approx.)	13	*(b)*	MacLean 89

(a) fresh water, (b) salt water

		Data	Notes	Reference ID
Acute Toxicity of Water Soluble Fraction (mg/L)				
	Test Organism/Endpoint			
New	Daphnia magna/48h EC50	0.3	*(a)*	MacLean 89
		0.04	*(b)*	EETD 89
	Artemia spp./48h EC50	0.08	*(a)*	MacLean 89
		0.008	*(b)*	EETD 89
	Daphnia magna/48h LC50	0.4	*(a)*	MacLean 89
		0.05	*(b)*	EETD 89
	Artemia spp./48h LC 50	0.4	*(a)*	MacLean 89
		0.05	*(b)*	EETD 89
Used	Daphnia magna/48h EC50	5	*(a)*	MacLean 89
		0.2	*(b)*	EETD 89
	Artemia spp./48h EC50	> 13	*(a)*	MacLean 89
		> 0.5	*(b)*	EETD 89
	Daphnia magna/48h LC50	5	*(a)*	MacLean 89
		0.2	*(b)*	EETD 89
	Artemia spp./48h LC 50	> 13	*(a)*	MacLean 89
		> 0.5	*(b)*	EETD 89

(a) results based on fluorescence spectroscopy; (b) results based on GC purge-and-trap analysis

Lubricating Oil (Engine, Marine Diesel)

Data from PetroCan 97 are for 'BP Energol'.
Data from Shell 99b are for 'Alexia Oil 50'.

Flash Point (°C)

Grade	Data	Notes	Reference ID
30	248		PetroCan 97
40	254		PetroCan 97
50	266		Shell 99b

Density (g/mL)

Grade	Temperature (°C)	Data	Notes	Reference ID
30	15	0.8810		PetroCan 97
40		0.8830		Shell 99b

Pour Point (°C)

Grade	Data	Notes	Reference ID
30	-24		PetroCan 97
40	-12		PetroCan 97
50	-21		Shell 99b

Kinematic Viscosity (mm²/s or cSt)

Grade	Temperature (°C)	Data	Notes	Reference ID
30	40	100		PetroCan 97
40		138		PetroCan 97
50		227		Shell 99b
30	100	11		PetroCan 97
40		14		PetroCan 97
50		19		Shell 99b

		Data	Notes	Reference ID
Data from PetroCan 97 are for 'Outboard Motor Oil'. Data from Shell 99b are for 'Nautilus Premium Outboard Motor Oil'.				
Flash Point (°C)				
		96		PetroCan 97
		77		Shell 99b
Pour Point (°C)				
		-48		PetroCan 97
		-51		Shell 99b
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	-40	11,600		Shell 99b
Kinematic Viscosity (mm²/s or cSt)				
	Temperature (°C)			
	40	29		PetroCan 97
		28		Shell 99b
	100	6		PetroCan 97
		6		Shell 99b

Lubricating Oil (Engine, Two Stroke)

		Data	Notes	Reference ID
Data from PetroCan 97 are for '2 Cycle Motor Oil'. Data from Shell 99b are for 'XTC 50'.				
Flash Point (°C)				
		130		PetroCan 97
		83		Shell 99b
Pour Point (°C)				
		-42		PetroCan 97
		-45		Shell 99b
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	-40	15,000		Shell 99b
Kinematic Viscosity (mm²/s or cSt)				
	Temperature (°C)			
	40	18		PetroCan 97
		24		Shell 99b
	100	4		PetroCan 97
		5		Shell 99b

Data from PetroCan 97 are for 'Gearlube TOS'.
Data from Shell 99b are for 'Spirax HD'.

		Data	Notes	Reference ID
Sulphur (weight %)				
Grade				
75W90		1.90		PetroCan 97
80W90		1.70		PetroCan 97
80W140		1.60		PetroCan 97
85W140		1.90		PetroCan 97
Flash Point (°C)				
Grade				
75W90		178		PetroCan 97
		180		Shell 99b
80W90		208		PetroCan 97
		218		Shell 99b
80W140		180		PetroCan 97
85W140		220		PetroCan 97
		200		Shell 99b
Pour Point (°C)				
Grade				
75W90		-42		PetroCan 97
		-40		Shell 99b
80W90		-30		PetroCan 97
		-24		Shell 99b
80W140		-39		PetroCan 97
85W140		-18		PetroCan 97
		-12		Shell 99b
Dynamic Viscosity (mPa·s or cP)				
Grade	Temperature (°C)			
75W90	-40	125,000		PetroCan 97
		146,000		Shell 99b
80W90		104,000		PetroCan 97
80W140		127,000		PetroCan 97
85W140		39,000		PetroCan 97
80W90	-26	132,000		Shell 99b
85W140	-12	71,000		Shell 99b

Lubricating Oil (Gear, Automotive)

		Data	Notes	Reference ID
Kinematic Viscosity (mm²/s or cSt)				
Grade	Temperature (°C)			
75W90	40	81		PetroCan 97
		113		Shell 99b
80W90		149		PetroCan 97
		134		Shell 99b
80W140		250		PetroCan 97
85W140		377		PetroCan 97
		367		Shell 99b
75W90	100	14		PetroCan 97
		19		Shell 99b
80W90		15		PetroCan 97
		15		Shell 99b
80W140		28		PetroCan 97
85W140		25		PetroCan 97
		28		Shell 99b
Other Elements (weight %)				
Grade				
75W90	Phosphorous	0.10		PetroCan 97
80W90		0.10		PetroCan 97
80W140		0.10		PetroCan 97
85W140		0.10		PetroCan 97

		Data	Notes	Reference ID
This oil was obtained from the collection of Don Mackay in 1995. The oil was identified as 'Gulf EP-80 Product #892-A267:3'.				
API Gravity				
New		29.8		ESD 96
Used		28.7		ESD 96
Sulphur (weight %)				
New		0.75		ESD 97
Used		0.82		ESD 97
Flash Point (°C)				
New		> 95		ESD 96
Used		> 95		ESD 96
Density (g/mL)				
	Temperature (°C)			
New	0	0.8858		ESD 96
	15	0.8764		ESD 96
Used	0	0.8918		ESD 96
	15	0.8824		ESD 96
Pour Point (°C)				
New		-27		ESD 96
Used		-25		ESD 96
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
New	0	2,030		ESD 96
	15	620		ESD 96
Used	0	2,420		ESD 96
	15	670		ESD 96
Hydrocarbon Groups (weight %)				
New	Saturates	95		ESD 98
	Aromatics	3		ESD 98
	Resins	2		ESD 98
	Asphaltenes	0		ESD 98
Used	Saturates	88		ESD 98
	Aromatics	11		ESD 98
	Resins	1		ESD 98
	Asphaltenes	0		ESD 98
Adhesion (g/m²)				
New		48	*SD = 3*	ESD 96
Used		44	*SD = 5*	ESD 96

Lubricating Oil (Gear, Extreme Pressure)

		Data	Notes	Reference ID
Volatile Organic Compounds (ppm)				
New	Benzene	0		ESD 97
	Toluene	6		ESD 97
	Ethylbenzene	35		ESD 97
	Xylenes	183		ESD 97
	C3-benzenes	22		ESD 97
	Total BTEX	223		ESD 97
	Total VOCs	245		ESD 97
Used	Benzene	0		ESD 97
	Toluene	52		ESD 97
	Ethylbenzene	14		ESD 97
	Xylenes	89		ESD 97
	C3-benzenes	31		ESD 97
	Total BTEX	155		ESD 97
	Total VOCs	186		ESD 97
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	33.0		ESD 96
	15	32.0		ESD 96
Used	0	32.8		ESD 96
	15	32.0		ESD 96
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	NM		ESD 96
	15	NM		ESD 96
Used	0	12.8		ESD 96
	15	12.3		ESD 96
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	4.0		ESD 96
	15	3.7		ESD 96
Used	0	NM		ESD 96
	15	12.4		ESD 96

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
	Boiling Point (°C)			
New	300	1		ESD 96
	350	1		ESD 96
	400	3		ESD 96
	450	8		ESD 96
	500	30		ESD 96
	550	67		ESD 96
	600	89		ESD 96
	650	98		ESD 96
Used	300	1		ESD 96
	350	2		ESD 96
	400	4		ESD 96
	450	13		ESD 96
	500	39		ESD 96
	550	69		ESD 96
	600	84		ESD 96
	650	91		ESD 96
	700	95		ESD 96

Data from PetroCan 97 are for 'Ultima EP'.
Data from Shell 99b are for 'Omala'.

	Data	Notes	Reference ID
Flash Point (°C)			
Grade			
32	224		Shell 99b
68	260		PetroCan 97
	242		Shell 99b
100	262		PetroCan 97
	250		Shell 99b
150	263		PetroCan 97
	256		Shell 99b
220	264		PetroCan 97
	258		Shell 99b
320	252		PetroCan 97
	250		Shell 99b
460	261		PetroCan 97
	260		Shell 99b
680	249		PetroCan 97
	238		Shell 99b
1000	238		Shell 99b
Pour Point (°C)			
Grade			
32	-51		Shell 99b
68	-36		PetroCan 97
	-30		Shell 99b
100	-33		PetroCan 97
	-24		Shell 99b
150	-27		PetroCan 97
	-24		Shell 99b
220	-30		PetroCan 97
	-18		Shell 99b
320	-21		PetroCan 97
	-12		Shell 99b
460	-15		PetroCan 97
	-12		Shell 99b
680	-9		PetroCan 97
	-9		Shell 99b
1000	0		Shell 99b

		Data	Notes	Reference ID
Kinematic Viscosity (mm²/s or cSt)				
Grade	Temperature (°C)			
32	40	32		PetroCan 97
68		68		PetroCan 97
		68		Shell 99b
100		101		PetroCan 97
		100		Shell 99b
150		152		PetroCan 97
		150		Shell 99b
220		222		PetroCan 97
		233		Shell 99b
320		320		PetroCan 97
		323		Shell 99b
460		452		PetroCan 97
		465		Shell 99b
680		680		PetroCan 97
		691		Shell 99b
1000		997		Shell 99b
32	100	6		PetroCan 97
68		10		PetroCan 97
		9		Shell 99b
100		12		PetroCan 97
		11		Shell 99b
150		16		PetroCan 97
		15		Shell 99b
220		20		PetroCan 97
		20		Shell 99b
320		24		PetroCan 97
		24		Shell 99b
460		30		PetroCan 97
		31		Shell 99b
680		36		PetroCan 97
		36		Shell 99b
100		46		Shell 99b

Lubricating Oil (Gear, Industrial, Spartan EP-680)

		Data	Notes	Reference ID
API Gravity				
		26.2		ESD 96
Equation(s) for Predicting Evaporation				
%Ev = (-0.66 + 0.045T)ln(t) Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 00
Sulphur (weight %)				
		0.35		ESD 97
Flash Point (°C)				
		> 95		ESD 96
Density (g/mL)				
	Temperature (°C)			
	0	0.9054		ESD 96
	15	0.8963		ESD 96
Pour Point (°C)				
		-12		ESD 96
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	0	17,285		ESD 96
	15	4,210		ESD 96
Hydrocarbon Groups (weight %)				
	Saturates	70		ESD 98
	Aromatics	25		ESD 98
	Resins	4		ESD 98
	Asphaltenes	0		ESD 98
Adhesion (g/m²)				
		46	*SD = 5*	ESD 96
Volatile Organic Compounds (ppm)				
	Benzene	0		ESD 97
	Toluene	54		ESD 97
	Ethylbenzene	1		ESD 97
	Xylenes	4		ESD 97
	C3-benzenes	11		ESD 97
	Total BTEX	59		ESD 97
	Total VOCs	70		ESD 97
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	33.4		ESD 96
	15	32.5		ESD 96

	Data	Notes	Reference ID
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)			
Temperature (°C)			
0	NM		ESD 96
15	NM		ESD 96
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)			
Temperature (°C)			
0	NM		ESD 96
15	NM		ESD 96
Boiling Point Distribution (weight %)			
Boiling Point (°C)			
250	1		ESD 96
300	3		ESD 96
350	10		ESD 96
400	13		ESD 96
450	17		ESD 96
500	29		ESD 96
550	51		ESD 96
600	70		ESD 96
650	84		ESD 96
700	95		ESD 96

Lubricating Oil (Gear, Pulp Mill Refiner)

	Data	Notes	Reference ID
Data from PetroCan 97 are for 'TMP-R Oil 60'.			
Flash Point (°C)			
	204		PetroCan 97
Pour Point (°C)			
	-24		PetroCan 97
Kinematic Viscosity (mm²/s or cSt)			
Temperature (°C)			
40	65		PetroCan 97
100	8		PetroCan 97

Data from PetroCan 97 are for 'Harmony HV1'.
Data from Shell 99b are for 'Tellus T'.

	Data	Notes	Reference ID
Flash Point (°C)			
Grade			
15	116		Shell 99b
22	204		PetroCan 97
	134		Shell 99b
32	212		PetroCan 97
	208		Shell 99b
46	218		PetroCan 97
	228		Shell 99b
68	226		PetroCan 97
	236		Shell 99b
80	240		PetroCan 97
100	242		PetroCan 97
Pour Point (°C)			
Grade			
15	-57		Shell 99b
22	-39		PetroCan 97
	-51		Shell 99b
32	-36		PetroCan 97
	-48		Shell 99b
46	-33		PetroCan 97
	-42		Shell 99b
68	-33		PetroCan 97
	-30		Shell 99b
80	-24		PetroCan 97
100	-24		PetroCan 97

Lubricating Oil (Hydraulic)

		Data	Notes	Reference ID
Dynamic Viscosity (mPa·s or cP)				
Grade	Temperature (°C)			
15	-50	15,729		Shell 99b
	-40	3,212		Shell 99b
22		9,881		Shell 99b
32		32,054		Shell 99b
15	-30	828		Shell 99b
22		2,347		Shell 99b
32		5,777		Shell 99b
46		12,531		Shell 99b
15	-20	282		Shell 99b
22		619		Shell 99b
32		1,483		Shell 99b
46		2,699		Shell 99b
68		8,167		Shell 99b
Kinematic Viscosity (mm²/s or cSt)				
Grade	Temperature (°C)			
15	40	15		Shell 99b
22		21		PetroCan 97
		22		Shell 99b
32		31		PetroCan 97
		32		Shell 99b
46		45		PetroCan 97
		46		Shell 99b
68		63		PetroCan 97
		68		PetroCan 97
80		84		PetroCan 97
100		96		PetroCan 97
15	100	4		Shell 99b
22		4		PetroCan 97
		5		Shell 99b
32		5		PetroCan 97
		6		Shell 99b
46		7		PetroCan 97
		8		Shell 99b
68		9		PetroCan 97
		10		Shell 99b
80		10		PetroCan 97
100		11		PetroCan 97

		Data	Notes	Reference ID
This oil was used during the May 1993 airborne oil spill sensor test program carried out at Canadian Forces Base Petawawa. The program was sponsored by the Emergencies Science Division of Environment Canada and the Marine Spill Response Corporation, Washington, D.C.. Six aircraft from across North America participated in the program. The specific oil used was Esso XD3-10 hydraulic oil.				Brown 94
API Gravity				
		30.6		ESD 93
Sulphur (weight %)				
		0.26		ESD 93
Flash Point (°C)				
		> 95		ESD 93
Density (g/mL)				
	Temperature (°C)			
	0	0.8833		ESD 93
	15	0.8727		ESD 93
Pour Point (°C)				
		-27		ESD 93
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	0	253		ESD 93
	15	102		ESD 93
Hydrocarbon Groups (weight %)				
	Asphaltenes	0		ESD 93
	Waxes	3		ESD 93
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	22.5		ESD 93
	15	21.4		ESD 93
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	9.8		ESD 93
	15	7.9		ESD 93
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	10.9		ESD 93
	15	8.8		ESD 93

Lubricating Oil (Hydraulic, Esso XD3-10)

	Data	Notes	Reference ID
Boiling Point Distribution (weight %)			
Boiling Point (°C)			
300	1		ESD 94
350	4		ESD 94
400	40		ESD 94
450	86		ESD 94
500	95		ESD 94
550	97		ESD 94
600	98		ESD 94
650	99		ESD 94
700	99		ESD 94

		Data	Notes	Reference ID
This oil is made from vegetable oils with a very high natural viscosity index. This oil contains no petroleum based feed stocks, additives or carriers. Produced by Greenland Corporation.				
API Gravity				
		22.4		ESD 96
Equation(s) for Predicting Evaporation				
%Ev = (-0.68 + 0.045T)ln(t) Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 00
Sulphur (weight %)				
		0.45		ESD 97
Flash Point (°C)				
		> 95		ESD 96
Density (g/mL)				
	Temperature (°C)			
	0	0.9343		ESD 96
	15	0.9241		ESD 96
Pour Point (°C)				
		-21		ESD 96
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	0	240		ESD 96
	15	100		ESD 96
Hydrocarbon Groups (weight %)				
	Saturates	38		ESD 98
	Aromatics	61		ESD 98
	Resins	1		ESD 98
	Asphaltenes	0		ESD 98
Adhesion (g/m²)				
		22	*SD = 4*	ESD 96
Volatile Organic Compounds (ppm)				
	Benzene	0		ESD 97
	Toluene	3		ESD 97
	Ethylbenzene	1		ESD 97
	Xylenes	6		ESD 97
	C3-benzenes	5		ESD 97
	Total BTEX	11		ESD 97
	Total VOCs	16		ESD 97
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	27.7		ESD 96
	15	25.7		ESD 96

Lubricating Oil (Hydraulic, Greenplus Hydraulic Fluid ES)

	Data	Notes	Reference ID
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)			
Temperature (°C)			
0	1.0		ESD 96
15	NM		ESD 96
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)			
Temperature (°C)			
0	2.3		ESD 96
15	6.0		ESD 96
Boiling Point Distribution (weight %)			
Boiling Point (°C)			
350	1		ESD 96
400	3		ESD 96
450	4		ESD 96
500	5		ESD 96
550	7		ESD 96
600	13		ESD 96
650	96		ESD 96
700	98		ESD 96

This oil is made from synthetic esters. The sample is from Maryn Lubricants.

		Data	Notes	Reference ID
API Gravity				
		20.6		ESD 96
Sulphur (weight %)				
		0.00		ESD 97
Flash Point (°C)				
		> 95		ESD 96
Density (g/mL)				
	Temperature (°C)			
	0	0.9408		ESD 96
	15	0.9294		ESD 96
Pour Point (°C)				
		-67		ESD 96
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	0	36		ESD 96
	15	17		ESD 96
Hydrocarbon Groups (weight %)				
	Saturates	2		ESD 98
	Aromatics	1		ESD 98
	Resins	97		ESD 98
	Asphaltenes	0		ESD 98
Adhesion (g/m²)				
		15	*SD = 1*	ESD 96
Volatile Organic Compounds (ppm)				
	Benzene	0		ESD 97
	Toluene	3		ESD 97
	Ethylbenzene	1		ESD 97
	Xylenes	5		ESD 97
	C3-benzenes	3		ESD 97
	Total BTEX	10		ESD 97
	Total VOCs	13		ESD 97
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	31.2		ESD 96
	15	30.4		ESD 96
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	7.2		ESD 96
	15	7.0		ESD 96

Lubricating Oil (Hydraulic, Marinus Valve Actuator Oil)

	Data	Notes	Reference ID
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)			
Temperature (°C)			
0	11.3		ESD 96
15	11.5		ESD 96
Boiling Point Distribution (weight %)			
Boiling Point (°C)			
350	1		ESD 96
400	98		ESD 96
450	99		ESD 96

		Data	Notes	Reference ID
API Gravity				
		27.8		ESD 96
Equation(s) for Predicting Evaporation				
%Ev = (-0.68 + 0.045T)ln(t) Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 00
Sulphur (weight %)				
		0.22		ESD 97
Flash Point (°C)				
		> 95		ESD 96
Density (g/mL)				
	Temperature (°C)			
	0	0.8964		ESD 96
	15	0.8872		ESD 96
Pour Point (°C)				
		-15		ESD 96
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	0	2,560		ESD 96
		680		ESD 96
Hydrocarbon Groups (weight %)				
	Saturates	72		ESD 98
	Aromatics	25		ESD 98
	Resins	2		ESD 98
	Asphaltenes	0		ESD 98
Adhesion (g/m²)				
		39	*SD = 3*	ESD 96
Volatile Organic Compounds (ppm)				
	Benzene	0		ESD 97
	Toluene	3		ESD 97
	Ethylbenzene	2		ESD 97
	Xylenes	16		ESD 97
	C3-benzenes	36		ESD 97
	Total BTEX	21		ESD 97
	Total VOCs	57		ESD 97
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	33.1		ESD 96
	15	32.0		ESD 96

Lubricating Oil (Industrial, Teresso 150)

	Data	Notes	Reference ID
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)			
Temperature (°C)			
0	6.4		ESD 96
15	NM		ESD 96
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)			
Temperature (°C)			
0	10.5		ESD 96
15	7.1		ESD 96
Boiling Point Distribution (weight %)			
Boiling Point (°C)			
400	2		ESD 96
450	11		ESD 96
500	44		ESD 96
550	79		ESD 96
600	98		ESD 96

		Data	Notes	Reference ID
API Gravity				
		27.1		ESD 96
Equation(s) for Predicting Evaporation				
%Ev = (-0.66 + 0.045T)ln(t) Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 00
Sulphur (weight %)				
		0.19		ESD 97
Flash Point (°C)				
		> 95		ESD 96
Density (g/mL)				
	Temperature (°C)			
	0	0.9008		ESD 96
	15	0.8916		ESD 96
Pour Point (°C)				
		-15		ESD 96
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	0	4,720		ESD 96
	15	1,170		ESD 96
Hydrocarbon Groups (weight %)				
	Saturates	69		ESD 98
	Aromatics	28		ESD 98
	Resins	3		ESD 98
	Asphaltenes	0		ESD 98
Adhesion (g/m²)				
		40	*SD = 5*	ESD 96
Volatile Organic Compounds (ppm)				
	Benzene	0		ESD 97
	Toluene	3		ESD 97
	Ethylbenzene	2		ESD 97
	Xylenes	14		ESD 97
	C3-benzenes	54		ESD 97
	Total BTEX	19		ESD 97
	Total VOCs	73		ESD 97
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	33.4		ESD 96
	15	32.5		ESD 96

Lubricating Oil (Industrial, Teresso 220)

	Data	Notes	Reference ID
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)			
Temperature (°C)			
0	NM		ESD 96
15	NM		ESD 96
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)			
Temperature (°C)			
0	NM		ESD 96
15	7.9		ESD 96
Boiling Point Distribution (weight %)			
Boiling Point (°C)			
400	2		ESD 96
450	6		ESD 96
500	26		ESD 96
550	64		ESD 96
600	95		ESD 96

		Data	Notes	Reference ID
API Gravity				
		30.3		ESD 96
Equation(s) for Predicting Evaporation				
%Ev = (-0.67 + 0.045T)ln(t) Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 00
Sulphur (weight %)				
		0.16		ESD 97
Flash Point (°C)				
		> 95		ESD 96
Density (g/mL)				
	Temperature (°C)			
	0	0.8833		ESD 96
	15	0.8740		ESD 96
Pour Point (°C)				
		-29		ESD 96
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	0	470		ESD 96
	15	150		ESD 96
Hydrocarbon Groups (weight %)				
	Saturates	80		ESD 98
	Aromatics	18		ESD 98
	Resins	2		ESD 98
	Asphaltenes	0		ESD 98
Adhesion (g/m²)				
		20	*SD = 3*	ESD 96
Volatile Organic Compounds (ppm)				
	Benzene	0		ESD 97
	Toluene	3		ESD 97
	Ethylbenzene	1		ESD 97
	Xylenes	8		ESD 97
	C3-benzenes	25		ESD 97
	Total BTEX	12		ESD 97
	Total VOCs	37		ESD 97
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	31.8		ESD 96
	15	31.3		ESD 96

Lubricating Oil (Industrial, Teresso 46)

	Data	Notes	Reference ID
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)			
Temperature (°C)			
0	11.1		ESD 96
15	7.0		ESD 96
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)			
Temperature (°C)			
0	14.0		ESD 96
15	9.2		ESD 96
Boiling Point Distribution (weight %)			
Boiling Point (°C)			
350	2		ESD 96
400	23		ESD 96
450	63		ESD 96
500	87		ESD 96
550	97		ESD 96

		Data	Notes	Reference ID
Synonyms: White Oil				
Data from PetroCan 97 are for 'Paraflex HT4'. Data from Shell 99b are for 'Pella A'.				
Flash Point (°C)				
		> 98		PetroCan 97
Fire Point (°C)				
		150		Shell 99b
Density (g/mL)				
	Temperature (°C)			
	15	0.8280		PetroCan 97
Pour Point (°C)				
		-52		PetroCan 97
		max 0		Shell 99b
Kinematic Viscosity (mm²/s or cSt)				
	Temperature (°C)			
	40	4		PetroCan 97
		4		Shell 99b
	100	1		PetroCan 97
Hydrocarbon Groups (weight %)				
	Aromatics	< 1		PetroCan 97
Boiling Range (°C)				
		274 to 326		Shell 99b

Lubricating Oil (Penetrating)

		Data	Notes	Reference ID
Data from PetroCan 97 are for 'Con-Rel-Eze'.				
Flash Point (°C)				
Grade				
40		52		PetroCan 97
60		53		PetroCan 97
Pour Point (°C)				
Grade				
40		-57		PetroCan 97
60		-30		PetroCan 97
Kinematic Viscosity (mm²/s or cSt)				
Grade	Temperature (°C)			
40	40	3		PetroCan 97
60		4		PetroCan 97
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
Grade	Temperature (°C)			
40	25	17.3		PetroCan 97
60		2.5		PetroCan 97

	Data	Notes	Reference ID
Synonyms: Bearing Oil High Speed Bearing Oil			
Data from Shell 99b are for 'Tellus 10'.			
Flash Point (°C)			
	152		Shell 99b
Pour Point (°C)			
	-57		Shell 99b
Kinematic Viscosity (mm²/s or cSt)			
Temperature (°C)			
40	10		Shell 99b
100	2		Shell 99b

Lubricating Oil (Turbine, Gas)

	Data	Notes	Reference ID
Data from PetroCan 97 are for 'Premium R&O'. See 'Lubricating Oil (Turbine, Steam)' for data from Shell 99b.			
Flash Point (°C)			
Grade			
10	180		PetroCan 97
22	195		PetroCan 97
32	210		PetroCan 97
46	214		PetroCan 97
68	230		PetroCan 97
100	259		PetroCan 97
150	262		PetroCan 97
220	268		PetroCan 97
320	274		PetroCan 97
Pour Point (°C)			
Grade			
10	-42		PetroCan 97
22	-39		PetroCan 97
32	-36		PetroCan 97
46	-33		PetroCan 97
68	-30		PetroCan 97
100	-18		PetroCan 97
150	-12		PetroCan 97
220	-12		PetroCan 97
320	-9		PetroCan 97

		Data	Notes	Reference ID
Kinematic Viscosity (mm²/s or cSt)				
Grade	Temperature (°C)			
10	40	11		PetroCan 97
22		22		PetroCan 97
32		31		PetroCan 97
46		45		PetroCan 97
68		66		PetroCan 97
100		95		PetroCan 97
150		140		PetroCan 97
220		207		PetroCan 97
320		306		PetroCan 97
10	100	3		PetroCan 97
22		4		PetroCan 97
32		5		PetroCan 97
46		7		PetroCan 97
68		8		PetroCan 97
100		11		PetroCan 97
150		14		PetroCan 97
220		19		PetroCan 97
320		24		PetroCan 97

Lubricating Oil (Turbine, Marinus ISO32)

		Data	Notes	Reference ID
This oil is a lubricant made from synthetic esters. The sample is from Maryn Lubricants.				
API Gravity				
		23.9		ESD 96
Sulphur (weight %)				
		0.57		ESD 97
Flash Point (°C)				
		> 95		ESD 96
Density (g/mL)				
	Temperature (°C)			
	0	0.9202		ESD 96
	15	0.9097		ESD 96
Pour Point (°C)				
		-30		ESD 96
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	0	170		ESD 96
	15	70		ESD 96
Hydrocarbon Groups (weight %)				
	Saturates	5		ESD 98
	Aromatics	1		ESD 98
	Resins	94		ESD 98
	Asphaltenes	0		ESD 98
Adhesion (g/m²)				
		37	*SD = 3*	ESD 96
Volatile Organic Compounds (ppm)				
	Benzene	0		ESD 97
	Toluene	1		ESD 97
	Ethylbenzene	0		ESD 97
	Xylenes	3		ESD 97
	C3-benzenes	4		ESD 97
	Total BTEX	4		ESD 97
	Total VOCs	8		ESD 97
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	33.5		ESD 96
	15	32.9		ESD 96
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	1.0		ESD 96
	15	2.7		ESD 96

	Data	Notes	Reference ID
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)			
Temperature (°C)			
0	7.6		ESD 96
15	6.6		ESD 96
Boiling Point Distribution (weight %)			
Boiling Point (°C)			
300	1		ESD 96
350	1		ESD 96
400	3		ESD 96
450	6		ESD 96
500	10		ESD 96
550	91		ESD 96
600	93		ESD 96
650	95		ESD 96
700	99		ESD 96

Lubricating Oil (Turbine, Marinus ISO46)

		Data	Notes	Reference ID
This oil is a lubricant made from synthetic esters. The sample is from Maryn Lubricants.				
API Gravity				
		21.0		ESD 96
Sulphur (weight %)				
		0.57		ESD 97
Flash Point (°C)				
		> 95		ESD 96
Density (g/mL)				
	Temperature (°C)			
	0	0.9372		ESD 96
	15	0.9271		ESD 96
Pour Point (°C)				
		-36		ESD 96
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
	0	350		ESD 96
	15	140		ESD 96
Hydrocarbon Groups (weight %)				
	Saturates	2		ESD 98
	Aromatics	1		ESD 98
	Resins	98		ESD 98
	Asphaltenes	0		ESD 98
Adhesion (g/m²)				
		20	*SD = 3*	ESD 96
Volatile Organic Compounds (ppm)				
	Benzene	0		ESD 97
	Toluene	2		ESD 97
	Ethylbenzene	1		ESD 97
	Xylenes	3		ESD 97
	C3-benzenes	4		ESD 97
	Total BTEX	6		ESD 97
	Total VOCs	10		ESD 97
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	33.9		ESD 96
	15	33.1		ESD 96
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
	0	6.4		ESD 96
	15	6.0		ESD 96

	Data	Notes	Reference ID
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)			
0	7.0		ESD 96
15	7.9		ESD 96
Boiling Point Distribution (weight %)			
Boiling Point (°C)			
300	1		ESD 96
350	1		ESD 96
400	2		ESD 96
450	6		ESD 96
500	8		ESD 96
550	20		ESD 96
600	46		ESD 96
650	99		ESD 96

Lubricating Oil (Turbine, Steam)

Synonyms: Steam Turbine Oil
Steam Turbine Tube Oil

Data from PetroCan 97 are for 'Super Turboflo'.
Data from Shell 99b are for 'Shell Turbo T'

Flash Point (°C)

Grade	Data	Notes	Reference ID
32	210		PetroCan 97
46	216		PetroCan 97
68	232		PetroCan 97

Pour Point (°C)

Grade	Data	Notes	Reference ID
32	-30		PetroCan 97
	-30		Shell 99b
46	-24		PetroCan 97
	-27		Shell 99b
68	-21		PetroCan 97
	-27		Shell 99b
78	-24		Shell 99b
100	-24		Shell 99b

Kinematic Viscosity (mm²/s or cSt)

Grade	Temperature (°C)	Data	Notes	Reference ID
32	40	32		PetroCan 97
		32		Shell 99b
46		47		PetroCan 97
		46		Shell 99b
68		68		PetroCan 97
		67		Shell 99b
78		79		Shell 99b
100		99		Shell 99b
32	100	6		PetroCan 97
		5		Shell 99b
46		7		PetroCan 97
		7		Shell 99b
68		9		PetroCan 97
		9		Shell 99b
78		10		Shell 99b
100		11		Shell 99b

		Data	Notes	Reference ID
This oil was obtained from the collection of Don Mackay in 1995. It was identified as 'Gulf S Turbolene, Product #892-1158:4'.				
API Gravity				
New		30.7		ESD 96
Used		31.1		ESD 96
Equation(s) for Predicting Evaporation				
%Ev = (-0.68 + 0.045T)ln(t) Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 00
Sulphur (weight %)				
New		0.14		ESD 97
Used		0.14		ESD 97
Flash Point (°C)				
New		> 95		ESD 96
Used		> 95		ESD 96
Density (g/mL)				
	Temperature (°C)			
New	0	0.8805		ESD 96
	15	0.8714		ESD 96
Used	0	0.8787		ESD 96
	15	0.8693		ESD 96
Pour Point (°C)				
New		-21		ESD 96
Used		-20		ESD 96
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
New	0	476		ESD 96
	15	146		ESD 96
Used	0	363		ESD 96
	15	124		ESD 96
Hydrocarbon Groups (weight %)				
New	Saturates	86		ESD 98
	Aromatics	12		ESD 98
	Resins	1		ESD 98
	Asphaltenes	0		ESD 98
Used	Saturates	85		ESD 98
	Aromatics	13		ESD 98
	Resins	1		ESD 98
	Asphaltenes	0		ESD 98
Adhesion (g/m²)				
New		18	*SD = 3*	ESD 96
Used		39	*SD = 3*	ESD 96

Lubricating Oil (Turbine, STO 120)

		Data	Notes	Reference ID
Volatile Organic Compounds (ppm)				
New	Benzene	0		ESD 97
	Toluene	6		ESD 97
	Ethylbenzene	2		ESD 97
	Xylenes	4		ESD 97
	C3-benzenes	3		ESD 97
	Total BTEX	12		ESD 97
	Total VOCs	15		ESD 97
Used	Benzene	0		ESD 97
	Toluene	17		ESD 97
	Ethylbenzene	1		ESD 97
	Xylenes	4		ESD 97
	C3-benzenes	5		ESD 97
	Total BTEX	23		ESD 97
	Total VOCs	28		ESD 97
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	31.9		ESD 96
	15	31.3		ESD 96
Used	0	31.9		ESD 96
	15	31.3		ESD 96
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	20.6		ESD 96
	15	20.5		ESD 96
Used	0	13.3		ESD 96
	15	10.0		ESD 96
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	28.8		ESD 96
	15	23.3		ESD 96
Used	0	17.7		ESD 96
	15	16.2		ESD 96

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
	Boiling Point (°C)			
New	350	1		ESD 96
	400	7		ESD 96
	450	54		ESD 96
	490	99		ESD 96
Used	350	6		ESD 96
	400	30		ESD 96
	450	70		ESD 96
	500	94		ESD 96
	550	99		ESD 96

Lubricating Oil (Turbine, STO 90)

		Data	Notes	Reference ID
This oil was obtained from the collection of Don Mackay in 1995. It was identified as Gulf 490-803, Product #892.2095				
API Gravity				
New		31.7		ESD 96
Used		32.5		ESD 96
Equation(s) for Predicting Evaporation				
%Ev = (-0.68 + 0.045T)ln(t) Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 00
Sulphur (weight %)				
New		0.13		ESD 97
Used		0.04		ESD 97
Flash Point (°C)				
New		> 95		ESD 96
Used		> 95		ESD 96
Density (g/mL)				
	Temperature (°C)			
New	0	0.8758		ESD 96
	15	0.8662		ESD 96
Used	0	0.8715		ESD 96
	15	0.8619		ESD 96
Pour Point (°C)				
New		-22		ESD 96
Used		-27		ESD 96
Dynamic Viscosity (mPa·s or cP)				
	Temperature (°C)			
New	0	270		ESD 96
	15	99		ESD 96
Used	0	246		ESD 96
	15	89		ESD 96
Hydrocarbon Groups (weight %)				
New	Saturates	86		ESD 98
	Aromatics	12		ESD 98
	Resins	2		ESD 98
	Asphaltenes	0		ESD 98
Used	Saturates	91		ESD 98
	Aromatics	7		ESD 98
	Resins	2		ESD 98
	Asphaltenes	0		ESD 98
Adhesion (g/m²)				
New		40	*SD = 3*	ESD 96
Used		36	*SD = 3*	ESD 96

		Data	Notes	Reference ID
Volatile Organic Compounds (ppm)				
New	Benzene	0		ESD 97
	Toluene	7		ESD 97
	Ethylbenzene	1		ESD 97
	Xylenes	5		ESD 97
	C3-benzenes	2		ESD 97
	Total BTEX	13		ESD 97
	Total VOCs	14		ESD 97
Used	Benzene	0		ESD 97
	Toluene	2		ESD 97
	Ethylbenzene	1		ESD 97
	Xylenes	4		ESD 97
	C3-benzenes	4		ESD 97
	Total BTEX	7		ESD 97
	Total VOCs	11		ESD 97
Surface Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	31.6		ESD 96
	15	31.1		ESD 96
Used	0	31.5		ESD 96
	15	31.1		ESD 96
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	11.2		ESD 96
	15	7.4		ESD 96
Used	0	12.7		ESD 96
	15	8.0		ESD 96
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
	Temperature (°C)			
New	0	17.2		ESD 96
	15	15.4		ESD 96
Used	0	15.9		ESD 96
	15	13.2		ESD 96

Lubricating Oil (Turbine, STO 90)

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
	Boiling Point (°C)			
New	350	3		ESD 96
	400	24		ESD 96
	450	73		ESD 96
	490	99		ESD 96
Used	350	2		ESD 96
	400	16		ESD 96
	450	63		ESD 96
	500	99		ESD 96

		Data	Notes	Reference ID
Origin: Gabon				
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".				
API Gravity				
		39.5		OGJ 99
Sulphur (weight %)				
		0.05		OGJ 99
Reid Vapour Pressure (kPa)				
		44		OGJ 99
Pour Point (°C)				
		15		OGJ 99
Kinematic Viscosity (mm²/s or cSt)				
	Temperature (°C)			
	20	16		OGJ 99
Hydrocarbon Groups (weight %)				
	Asphaltenes	0		OGJ 99
Yield on Crude (volume %)				
	Boiling Range (°C)			
	Gasoline (C5-80)	6		OGJ 99
	Heavy gasoline (80-150)	13		OGJ 99
	Kerosene (150-225)	14		OGJ 99
	Gas oil (150-350)	39		OGJ 99
	Residue (>350)	40		OGJ 99
Metals (ppm)				
	Nickel	12		OGJ 99
	Vanadium	1		OGJ 99

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Origin: Angola		Data	Notes	Reference ID
API Gravity				
		33.4		ESD 93
Equation(s) for Predicting Evaporation				
%Ev = (2.17 + 0.045T)ln(t) Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 96
Sulphur (weight %)				
Evaporation (weight %)				
0		0.17		ESD 97
11		0.16		ESD 97
15		0.12		ESD 97
27		0.06		ESD 97
Water Content (weight %)				
Evaporation (weight %)				
0		< 0.1		ESD 99
11		< 0.1		ESD 99
15		< 0.1		ESD 99
27		< 0.1		ESD 99
Flash Point (°C)				
Evaporation (weight %)				
0		-10		ESD 94
11		44		ESD 95
15		68		ESD 95
27		> 95		ESD 95
Density (g/mL)				
Evaporation (weight %)	Temperature (°C)			
0	0	0.8709		ESD 93
	15	0.8574		ESD 93
11	0	0.8951		ESD 95
	15	0.8821		ESD 95
15	0	0.9036		ESD 95
	15	0.8904		ESD 95
27	0	0.9108		ESD 95
	15	0.9050		ESD 95
Pour Point (°C)				
Evaporation (weight %)				
0		18		ESD 93
11		28		ESD 95
15		30		ESD 95
27		32		ESD 95

		Data	Notes	Reference ID
Dynamic Viscosity (mPa·s or cP)				
Evaporation (weight %)	Temperature (°C)			
0	0	710	*(a)*	ESD 93
		4,130	*(b)*	ESD 93
		29,230	*(c)*	ESD 93
	15	43		ESD 93
11	0	39,480	*(b)*	ESD 95
		243,500	*(c)*	ESD 95
	15	5,214	*(b)*	ESD 95
		34,030	*(c)*	ESD 95
15	0	62,330	*(b)*	ESD 95
		449,700	*(c)*	ESD 95
	15	6,118	*(b)*	ESD 95
		51,650	*(c)*	ESD 95
27	0	1,901,000	*(c)*	ESD 95
	15	32,590	*(b)*	ESD 95
		230,300	*(c)*	ESD 95
Shear rate = (a) 50/s; (b) 10/s; (c) 1/s				
Chemical Dispersibility (volume %)				
	Corexit 9500	20		ESD 94
	Corexit 9527	5		ESD 92
	Dasic LTS	5		ESD 92
	Enersperse 700	5		ESD 92

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		Data	Notes	Reference ID
Hydrocarbon Groups (weight %)				
Evaporation (weight %)				
0	Saturates	67		ESD 96
	Aromatics	22		ESD 96
	Resins	8		ESD 96
	Asphaltenes	4		ESD 96
	Waxes	13		ESD 94
11	Saturates	64		ESD 96
	Aromatics	23		ESD 96
	Resins	8		ESD 96
	Asphaltenes	4		ESD 96
	Waxes	10		ESD 98
15	Saturates	62		ESD 96
	Aromatics	26		ESD 96
	Resins	9		ESD 96
	Asphaltenes	4		ESD 96
	Waxes	11		ESD 98
27	Saturates	59		ESD 96
	Aromatics	26		ESD 96
	Resins	12		ESD 96
	Asphaltenes	4		ESD 96
	Waxes	12		ESD 98
Adhesion (g/m²)				
Evaporation (weight %)				
0		43	*SD = 1*	ESD 95
11		115	*SD = 15*	ESD 95
15		116	*SD = 3*	ESD 95
27		369	*SD = 25*	ESD 95

		Data	Notes	Reference ID
Volatile Organic Compounds (ppm)				
Evaporation (weight %)				
0	Benzene	370		ESD 94
	Toluene	1,070		ESD 94
	Ethylbenzene	210		ESD 94
	Xylenes	1,900		ESD 94
	C3-benzenes	2,690		ESD 94
	Total BTEX	3,550		ESD 94
	Total VOCs	6,240		ESD 94
11	Benzene	0		ESD 96
	Toluene	730		ESD 96
	Ethylbenzene	200		ESD 96
	Xylenes	2,010		ESD 96
	C3-benzenes	2,940		ESD 96
	Total BTEX	2,950		ESD 96
	Total VOCs	5,890		ESD 96
15	Benzene	0		ESD 96
	Toluene	170		ESD 96
	Ethylbenzene	90		ESD 96
	Xylenes	1,060		ESD 96
	C3-benzenes	2,470		ESD 96
	Total BTEX	1,310		ESD 96
	Total VOCs	3,780		ESD 96
27	Benzene	0		ESD 96
	Toluene	10		ESD 96
	Ethylbenzene	0		ESD 96
	Xylenes	0		ESD 96
	C3-benzenes	0		ESD 96
	Total BTEX	10		ESD 96
	Total VOCs	10		ESD 96
Surface Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	DNF		ESD 94
	15	DNF		ESD 94
11	0	DNF		ESD 95
	15	DNF		ESD 95
15	0	DNF		ESD 95
	15	DNF		ESD 95
22	0	DNF		ESD 95
	15	DNF		ESD 95

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		Data	Notes	Reference ID
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	DNF		ESD 94
	15	DNF		ESD 94
11	0	DNF		ESD 95
	15	DNF		ESD 95
15	0	DNF		ESD 95
	15	DNF		ESD 95
27	0	DNF		ESD 95
	15	DNF		ESD 95
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	DNF		ESD 94
	15	DNF		ESD 94
11	0	DNF		ESD 95
	15	DNF		ESD 95
15	0	DNF		ESD 95
	15	DNF		ESD 95
27	0	DNF		ESD 95
	15	DNF		ESD 95

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
Evaporation (weight %)	Boiling Point (°C)			
0	80	3		ESD 94
	100	6		ESD 94
	120	8		ESD 94
	140	11		ESD 94
	160	13		ESD 94
	180	16		ESD 94
	200	18		ESD 94
	250	25		ESD 94
	300	32		ESD 94
	350	41		ESD 94
	400	48		ESD 94
	450	57		ESD 94
	500	65		ESD 94
	550	71		ESD 94
	600	77		ESD 94
	650	82		ESD 94
	700	86		ESD 94
11	100	1		ESD 95
	120	2		ESD 95
	140	4		ESD 95
	160	7		ESD 95
	180	10		ESD 95
	200	12		ESD 95
	250	20		ESD 95
	300	29		ESD 95
	350	38		ESD 95
	400	48		ESD 95
	450	58		ESD 95
	500	67		ESD 95
	550	75		ESD 95
	600	81		ESD 95
	650	87		ESD 95
	700	92		ESD 95
15	140	1		ESD 95
	160	3		ESD 95
	180	5		ESD 95
	200	8		ESD 95
	250	16		ESD 95
	300	25		ESD 95
	350	35		ESD 95
	400	45		ESD 95

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
Evaporation (weight %)	Boiling Point (°C)			
15	450	56		ESD 95
	500	66		ESD 95
	550	74		ESD 95
	600	81		ESD 95
	650	87		ESD 95
	700	92		ESD 95
27	250	4		ESD 95
	300	14		ESD 95
	350	26		ESD 95
	400	37		ESD 95
	450	50		ESD 95
	500	61		ESD 95
	550	71		ESD 95
	600	79		ESD 95
	650	86		ESD 95
	700	91		ESD 95