

	Data	Notes	Reference ID
Origin: Viet Nam			
Synonyms: White Tiger			
Data from OGJ 99 were originally published in 1990.			
API Gravity	38.6		OGJ 99
Sulphur (weight %)	0.04		OGJ 99
Reid Vapour Pressure (kPa)	17		OGJ 99
Pour Point (°C)	33		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
	<u>Temperature (°C)</u>		
	40	10	OGJ 99
	50	7	OGJ 99
	60	5	OGJ 99
Hydrocarbon Groups (weight %)			
	Asphaltenes	0	OGJ 99
	Waxes	27	OGJ 99
Yield on Crude (volume %)			
	<u>Boiling Range (°C)</u>		
	<C5	0	OGJ 99
	Naphtha (C5-149)	10	OGJ 99
	Kerosene (149-232)	14	OGJ 99
	Gas oil (232-342)	23	OGJ 99
	Residue (>342)	52	OGJ 99
	Residue (>369)	47	OGJ 99
	Residue (>509)	18	OGJ 99
	Residue (>550)	14	OGJ 99
Metals (ppm)			
	Nickel	2	OGJ 99
	Vanadium	2	OGJ 99
Other Elements (weight %)			
	Nitrogen	0.07	OGJ 99

Bachaquero

	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	16.8		OGJ 99
Sulphur (weight %)	2.40		OGJ 99
Reid Vapour Pressure (kPa)	11		OGJ 99
Pour Point (°C)	-23		OGJ 99
Saybolt Viscosity (SUS)			
	<u>Temperature (°C)</u>		
	38	1,362	OGJ 99
Yield on Crude (volume %)			
	<u>Boiling Range (°C)</u>		
	C1-C4	1	OGJ 99
	Light naphtha (28-93)	2	OGJ 99
	Heavy naphtha (93-149)	4	OGJ 99
	Naphtha (149-177)	2	OGJ 99
	Kerosene (177-204)	2	OGJ 99
	Gas oil (204-260)	6	OGJ 99
	Gas oil (260-287)	4	OGJ 99
	Gas oil (287-343)	9	OGJ 99
	Residue (>343)	70	OGJ 99

	Data	Notes	Reference ID
Origin: Indonesia			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	41.3		OGJ 99
Sulphur (weight %)	0.08		OGJ 99
Reid Vapour Pressure (kPa)	39		OGJ 99
Pour Point (°C)	-26		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
	<u>Temperature (°C)</u>		
	38	6	OGJ 99
Hydrocarbon Groups (weight %)			
	Waxes	7	OGJ 99

Bahrgansar/Nowruz

	Data	Notes	Reference ID
Origin: Iran			
Synonyms: SIRIP Blend			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	27.1		OGJ 99
Sulphur (weight %)	2.45		OGJ 99
Reid Vapour Pressure (kPa)	4		OGJ 99
Pour Point (°C)	-33		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
	<u>Temperature (°C)</u>		
	38	20	OGJ 99
Yield on Crude (weight %)			
	<u>Boiling Range (°C)</u>		
	Light naphtha (C5-66)	4	OGJ 99
	Naphtha (66-150)	9	OGJ 99
	Kerosene (150-250)	13	OGJ 99
	Gas oil (250-350)	14	OGJ 99
	Residue (>350)	59	OGJ 99
Metals (ppm)			
	Nickel	25	OGJ 99
	Vanadium	72	OGJ 99

		Data	Notes	Reference ID
Origin: Australia				
Data from OGJ 99 were originally published sometime between 1984 and 1992.				
API Gravity				
		36.7		ESD 93
		36.8		OGJ 99
Equation(s) for Predicting Evaporation				
%Ev = (4.67 + 0.045T)ln(t)				ESD 96
Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				
Sulphur (weight %)				
<u>Evaporation (weight %)</u>				
0		0.04		ESD 97
		0.05		OGJ 99
17		0.03		ESD 97
32		0.05		ESD 97
48		0.06		ESD 97
Water Content (weight %)				
<u>Evaporation (weight %)</u>				
0		< 0.1		ESD 99
17		< 0.1		ESD 99
32		< 0.1		ESD 99
48		< 0.1		ESD 99
Flash Point (°C)				
<u>Evaporation (weight %)</u>				
0		< -30		ESD 94
17		42		ESD 95
32		80		ESD 95
48		> 95		ESD 95
Density (g/mL)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	0.8522		ESD 93
	15	0.8410		ESD 93
17	0	0.8807		ESD 94
	15	0.8700		ESD 94
32	0	0.9010		ESD 95
	15	0.8906		ESD 95
48	0	0.9178		ESD 94
	15	0.9075		ESD 94

Barrow Island

		Data	Notes	Reference ID
Pour Point (°C)				
<u>Evaporation (weight %)</u>				
0		< -65		ESD 95
		-30		OGJ 99
17		-62		ESD 95
32		-46		ESD 95
48		-27		ESD 95
Dynamic Viscosity (mPa·s or cP)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	4		ESD 93
	15	2		ESD 93
17	0	7		ESD 94
	15	4		ESD 94
32	0	20		ESD 95
	15	11		ESD 95
48	0	54		ESD 94
	15	23		ESD 94
Kinematic Viscosity (mm²/s or cSt)				
	<u>Temperature (°C)</u>			
	10	3		OGJ 99
	100	2		OGJ 99
Chemical Dispersibility (volume %)				
<u>Evaporation (weight %)</u>				
0	Corexit 9500	61		ESD 95
17		36		ESD 99
32		27		ESD 99
48		23		ESD 99

		Data	Notes	Reference ID
Hydrocarbon Groups (weight %)				
<u>Evaporation (weight %)</u>				
0	Saturates	64		ESD 95
	Aromatics	32		ESD 95
	Resins	4		ESD 95
	Asphaltenes	0		ESD 95
	Waxes	0		ESD 93
17	Saturates	66		ESD 97
	Aromatics	30		ESD 97
	Resins	4		ESD 97
	Asphaltenes	0		ESD 97
	Waxes	1		ESD 98
32	Saturates	61		ESD 97
	Aromatics	35		ESD 97
	Resins	4		ESD 97
	Asphaltenes	0		ESD 97
	Waxes	1		ESD 98
48	Saturates	59		ESD 97
	Aromatics	36		ESD 97
	Resins	6		ESD 97
	Asphaltenes	0		ESD 97
	Waxes	1		ESD 98
Adhesion (g/m²)				
<u>Evaporation (weight %)</u>				
0		6	<i>SD = 2</i>	ESD 95
17		11	<i>SD = 1</i>	ESD 95
32		20	<i>SD = 2</i>	ESD 95
48		24	<i>SD = 7</i>	ESD 95

Barrow Island

		Data	Notes	Reference ID
Volatile Organic Compounds (ppm)				
<u>Evaporation (weight %)</u>				
0	Benzene	129		ESD 97
	Toluene	2,224		ESD 97
	Ethylbenzene	450		ESD 97
	Xylenes	3,801		ESD 97
	C3-benzenes	8,775		ESD 97
	Total BTEX	6,604		ESD 97
	Total VOCs	15,379		ESD 97
17	Benzene	5		ESD 97
	Toluene	1,048		ESD 97
	Ethylbenzene	507		ESD 97
	Xylenes	4,893		ESD 97
	C3-benzenes	10,718		ESD 97
	Total BTEX	6,453		ESD 97
	Total VOCs	17,171		ESD 97
32	Benzene	0		ESD 97
	Toluene	28		ESD 97
	Ethylbenzene	31		ESD 97
	Xylenes	318		ESD 97
	C3-benzenes	4,323		ESD 97
	Total BTEX	377		ESD 97
	Total VOCs	4,700		ESD 97
48	Benzene	0		ESD 97
	Toluene	17		ESD 97
	Ethylbenzene	13		ESD 97
	Xylenes	42		ESD 97
	C3-benzenes	52		ESD 97
	Total BTEX	72		ESD 97
	Total VOCs	124		ESD 97

Surface Tension (mN/m or dynes/cm)

<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>		
0	0	27.1	ESD 94
	15	26.2	ESD 94
17	0	29.0	ESD 95
	15	28.3	ESD 95
32	0	30.5	ESD 95
	15	29.8	ESD 95
48	0	31.5	ESD 95
	15	31.0	ESD 95

		Data	Notes	Reference ID
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	15.1		ESD 94
	15	15.9		ESD 94
17	0	13.1		ESD 95
	15	14.9		ESD 95
32	0	11.5		ESD 95
	15	12.7		ESD 95
48	0	11.7		ESD 95
	15	12.1		ESD 95
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	16.8		ESD 94
	15	18.1		ESD 94
17	0	16.1		ESD 95
	15	16.3		ESD 95
32	0	15.2		ESD 95
	15	15.3		ESD 95
48	0	15.7		ESD 95
	15	14.3		ESD 95

Barrow Island

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
<u>Evaporation (weight %)</u>	<u>Boiling Point (°C)</u>			
0	80	4		ESD 94
	100	9		ESD 94
	120	14		ESD 94
	140	19		ESD 94
	160	24		ESD 94
	180	31		ESD 94
	200	37		ESD 94
	250	55		ESD 94
	300	71		ESD 94
	350	82		ESD 94
	400	88		ESD 94
	450	93		ESD 94
	500	96		ESD 94
	550	98		ESD 94
	600	99		ESD 94
17	120	3		ESD 95
	140	6		ESD 95
	160	12		ESD 95
	180	19		ESD 95
	200	26		ESD 95
	250	47		ESD 95
	300	66		ESD 95
	350	78		ESD 95
	400	86		ESD 95
	450	92		ESD 95
	500	96		ESD 95
	550	98		ESD 95
	600	99		ESD 95
32	160	1		ESD 95
	180	5		ESD 95
	200	11		ESD 95
	250	35		ESD 95
	300	58		ESD 95
	350	73		ESD 95
	400	83		ESD 95
	450	90		ESD 95
	500	94		ESD 95
	550	96		ESD 95
	600	98		ESD 95
	650	99		ESD 95
48	200	1		ESD 95

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
<u>Evaporation (weight %)</u>	<u>Boiling Point (°C)</u>			
48	250	18		ESD 95
	300	45		ESD 95
	350	65		ESD 95
	400	78		ESD 95
	450	87		ESD 95
	500	92		ESD 95
	550	96		ESD 95
	600	98		ESD 95
	650	99		ESD 95
Yield on Crude (volume %)				
	<u>Boiling Range (°C)</u>			
	Gasoline (C5-65)	3		OGJ 99
	Light straight run (65-100)	8		OGJ 99
	Naphtha (100-150)	14		OGJ 99
	Heavy naphtha (150-200)	16		OGJ 99
	Kerosene (200-250)	17		OGJ 99
	Diesel (250-300)	15		OGJ 99
	Gas oil (300-350)	10		OGJ 99
	Heavy gas oil (350-370)	3		OGJ 99
	Residue (370+)	15		OGJ 99

Basrah Heavy

	Data	Notes	Reference ID
Origin: Iraq			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	24.7		OGJ 99
Sulphur (weight %)	3.50		OGJ 99
Pour Point (°C)	-30		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
<u>Temperature (°C)</u>			
10	86		OGJ 99
Yield on Crude (weight %)			
<u>Boiling Range (°C)</u>			
C1-C4	1		OGJ 99
Light naphtha (C5-65)	3		OGJ 99
Heavy naphtha (65-175)	12		OGJ 99
Kerosene (175-225)	7		OGJ 99
Gas oil (225-360)	22		OGJ 99
Heavy gas oil (360-460)	14		OGJ 99
Residue (>460)	42		OGJ 99

		Data	Notes	Reference ID
Origin: Iraq				
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".				
API Gravity		33.7		OGJ 99
Sulphur (weight %)		1.95		OGJ 99
Pour Point (°C)		-15		OGJ 99
Kinematic Viscosity (mm²/s or cSt)				
	<u>Temperature (°C)</u>			
	10	15		OGJ 99
Yield on Crude (weight %)				
	<u>Boiling Range (°C)</u>			
	C1-C4	1		OGJ 99
	Light naphtha (C5-65)	4		OGJ 99
	Heavy naphtha (65-175)	16		OGJ 99
	Kerosene (175-225)	8		OGJ 99
	Gas oil (225-360)	23		OGJ 99
	Heavy gas oil (360-525)	25		OGJ 99
	Residue (>525)	23		OGJ 99

Basrah Medium

	Data	Notes	Reference ID
Origin: Iraq			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	31.1		OGJ 99
Sulphur (weight %)	2.58		OGJ 99
Pour Point (°C)	-30		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
<u>Temperature (°C)</u>			
10	41		OGJ 99
Yield on Crude (weight %)			
<u>Boiling Range (°C)</u>			
C1-C4	2		OGJ 99
Light naphtha (C5-65)	3		OGJ 99
Heavy naphtha (65-175)	15		OGJ 99
Kerosene (175-225)	8		OGJ 99
Gas oil (225-360)	22		OGJ 99
Heavy gas oil (360-520)	22		OGJ 99
Residue (>520)	28		OGJ 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				
		23.4		ESD 91
		23.5		OGJ 99
Equation(s) for Predicting Evaporation				
%Ev = (1.08 + 0.045T)ln(t)				ESD 96
Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				
Sulphur (weight %)				
<u>Evaporation (volume %)</u>				
0		1.85		OGJ 99
		2.07		ESD 93
9		2.04		ESD 93
Flash Point (°C)				
<u>Evaporation (volume %)</u>				
0		< -43		ESD 91
9		67		ESD 92
17		> 95		ESD 92
Reid Vapour Pressure (kPa)				
		5		ESD 91
Density (g/mL)				
<u>Evaporation (volume %)</u>	<u>Temperature (°C)</u>			
0	0	0.9229		ESD 91
	15	0.9129		ESD 91
9	0	0.9442		ESD 91
	15	0.9342		ESD 91
17	0	0.9496		ESD 91
	15	0.9399		ESD 91
Pour Point (°C)				
<u>Evaporation (volume %)</u>				
0		-51		OGJ 99
		-42		ESD 91
9		-21		ESD 91
17		-18		ESD 91

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		Data	Notes	Reference ID
Dynamic Viscosity (mPa·s or cP)				
<u>Evaporation (volume %)</u>	<u>Temperature (°C)</u>			
0	0	356		ESD 91
	15	125		ESD 91
9	0	2,153		ESD 91
	15	557		ESD 91
17	0	8,729		ESD 91
	15	1,629		ESD 91
Saybolt Viscosity (SUS)				
	<u>Temperature (°C)</u>			
	38	192		OGJ 99
Chemical Dispersibility (volume %)				
	Corexit 9500	12		ESD 94
	Corexit 9527	20		ESD 93
	Dasic LTS	0		ESD 93
	Enersperse 700	5		ESD 93
Hydrocarbon Groups (weight %)				
<u>Evaporation (volume %)</u>				
0	Saturates	43		ESD 96
	Aromatics	37		ESD 96
	Resins	13		ESD 96
	Asphaltenes	7		ESD 96
	Waxes	4		ESD 96
9	Saturates	41		ESD 96
	Aromatics	36		ESD 96
	Resins	14		ESD 96
	Asphaltenes	8		ESD 96
	Waxes	3		ESD 98
Adhesion (g/m²)				
<u>Evaporation (volume %)</u>				
0		35	<i>SD = 1</i>	ESD 96
9		59	<i>SD = 2</i>	ESD 96

		Data	Notes	Reference ID
Volatile Organic Compounds (ppm)				
<u>Evaporation (volume %)</u>				
0	Benzene	530		ESD 94
	Toluene	1,680		ESD 94
	Ethylbenzene	580		ESD 94
	Xylenes	2,420		ESD 94
	C3-benzenes	3,260		ESD 94
	Total BTEX	5,210		ESD 94
	Total VOCs	8,470		ESD 94
9	Benzene	100		ESD 94
	Toluene	430		ESD 94
	Ethylbenzene	390		ESD 94
	Xylenes	1,590		ESD 94
	C3-benzenes	3,040		ESD 94
	Total BTEX	2,510		ESD 94
	Total VOCs	5,560		ESD 94
Surface Tension (mN/m or dynes/cm)				
<u>Evaporation (volume %)</u>	<u>Temperature (°C)</u>			
0	0	29.2		ESD 91
	15	28.2		ESD 91
9	0	30.1		ESD 91
	15	29.6		ESD 91
17	0	30.5		ESD 91
	15	30.9		ESD 91
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
<u>Evaporation (volume %)</u>	<u>Temperature (°C)</u>			
0	0	24.9		ESD 91
	15	21.3		ESD 91
9	0	22.7		ESD 91
	15	20.2		ESD 91
17	0	22.5		ESD 91
	15	20.0		ESD 91
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
<u>Evaporation (volume %)</u>	<u>Temperature (°C)</u>			
0	0	28.1		ESD 91
	15	21.5		ESD 91
9	0	28.0		ESD 91
	15	23.8		ESD 91
17	0	28.1		ESD 91
	15	24.2		ESD 91

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		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
<u>Evaporation (weight %)</u>	<u>Boiling Point (°C)</u>			
0	40	1		ESD 94
	60	2		ESD 94
	80	2		ESD 94
	100	4		ESD 94
	120	5		ESD 94
	140	7		ESD 94
	160	9		ESD 94
	180	11		ESD 94
	200	13		ESD 94
	250	19		ESD 94
	300	26		ESD 94
	350	35		ESD 94
	400	43		ESD 94
	450	52		ESD 94
	500	60		ESD 94
	550	68		ESD 94
	600	76		ESD 94
	650	82		ESD 94
	700	88		ESD 94
9	120	1		ESD 96
	140	1		ESD 96
	160	3		ESD 96
	180	4		ESD 96
	200	6		ESD 96
	250	13		ESD 96
	300	20		ESD 96
	350	30		ESD 96
	400	39		ESD 96
	450	49		ESD 96
	500	58		ESD 96
	550	66		ESD 96
	600	73		ESD 96
	650	80		ESD 96
	700	87		ESD 96

	Data	Notes	Reference ID
Yield on Crude (volume %)			
<u>Boiling Range (°C)</u>			
C1-C4	2		OGJ 99
Light naphtha (28-93)	4		OGJ 99
Heavy naphtha (93-149)	5		OGJ 99
Naphtha (149-177)	3		OGJ 99
Kerosene (177-204)	3		OGJ 99
Gas oil (204-260)	8		OGJ 99
Gas oil (260-288)	5		OGJ 99
Gas oil (288-343)	10		OGJ 99
Residue (>343)	62		OGJ 99

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		Data	Notes	Reference ID
Metals (ppm)				
<u>Evaporation (volume %)</u>				
0	Barium	< 0.3		Cao 92
	Chromium	< 2		Cao 92
	Copper	< 0.6		Cao 92
	Iron	< 4		Cao 92
	Lead	< 3		Cao 92
	Magnesium	7		Cao 92
	Molybdenum	< 0.6		Cao 92
	Nickel	30		Cao 92
	Titanium	< 0.6		Cao 92
	Vanadium	290		Cao 92
	Zinc	< 0.6		Cao 92
9	Aluminum	< 5		Cao 92
	Barium	< 0.3		Cao 92
	Cadmium	< 0.5		Cao 92
	Calcium	48		Cao 92
	Chromium	< 2		Cao 92
	Cobalt	< 1		Cao 92
	Copper	< 0.6		Cao 92
	Iron	5		Cao 92
	Lead	< 3		Cao 92
	Magnesium	< 1		Cao 92
	Manganese	< 0.3		Cao 92
	Mercury	< 15		Cao 92
	Molybdenum	< 0.6		Cao 92
	Nickel	24		Cao 92
	Selenium	21		Cao 92
	Strontium	0.4		Cao 92
	Tin	< 15		Cao 92
	Titanium	< 0.6		Cao 92
	Vanadium	248		Cao 92
	Zinc	< 0.6		Cao 92

Aqueous Solubility (mg/L)

<u>Evaporation (volume %)</u>	<u>Temperature (°C)</u>			
0	Room temperature	16	(a)	ESD 91
9		3	(a)	ESD 91

*(a) fresh water***Acute Toxicity of Water Soluble Fraction (mg/L)**

	<u>Test Organism</u>			
48h LC50	Daphnia magna	11	(a)	Harris 94
<i>(a) results based on GC purge-and-trap analysis</i>				

	Data	Notes	Reference ID
Origin: North Sea, UK			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	38.7		OGJ 99
Sulphur (weight %)	0.05		OGJ 99
Reid Vapour Pressure (kPa)	39		OGJ 99
Pour Point (°C)	13		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
	<u>Temperature (°C)</u>		
	40	7	OGJ 99
	50	5	OGJ 99
Yield on Crude (volume %)			
	<u>Boiling Range (°C)</u>		
	C1-C5	4	OGJ 99
	Light naphtha (20-70)	4	OGJ 99
	Naphtha (70-100)	4	OGJ 99
	Heavy naphtha (100-150)	7	OGJ 99
	Kerosene (150-205)	9	OGJ 99
	Middle distillate (205-343)	26	OGJ 99
	Gas oil (343-565)	35	OGJ 99
	Residue (>565)	14	OGJ 99

Bekapai

	Data	Notes	Reference ID
Origin: Indonesia			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	40.0		OGJ 99
Sulphur (weight %)	0.08		OGJ 99
Reid Vapour Pressure (kPa)	13		OGJ 99
Pour Point (°C)	-21		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
	<u>Temperature (°C)</u>		
	38	2	OGJ 99
Hydrocarbon Groups (weight %)			
	Asphaltenes	0	OGJ 99
Yield on Crude (weight %)			
	<u>Boiling Range (°C)</u>		
	C1-C4	1	OGJ 99
	Gasoline (C5-100)	8	OGJ 99
	Naphtha (100-185)	25	OGJ 99
	Kerosene (185-230)	16	OGJ 99
	Gas oil (185-375)	52	OGJ 99
	Residue (>375)	14	OGJ 99
Metals (ppm)			
	Nickel	< 0.5	OGJ 99
	Vanadium	< 0.5	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	49.1		OGJ 99
Sulphur (weight %)	0.02		OGJ 99
Reid Vapour Pressure (kPa)	52		OGJ 99
Pour Point (°C)	-3		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
	<u>Temperature (°C)</u>		
	38	2	OGJ 99
Hydrocarbon Groups (weight %)			
	Waxes	6	OGJ 99
Yield on Crude (volume %)			
	<u>Boiling Range (°C)</u>		
	C1-C4	3	OGJ 99
	Light naphtha (C5-63)	7	OGJ 99
	Heavy naphtha (63-165)	27	OGJ 99
	Kerosene (166-232)	16	OGJ 99
	Distillate (232-343)	26	OGJ 99
	Residue (>343)	22	OGJ 99
Metals (ppm)			
	Nickel	< 1	OGJ 99
	Vanadium	< 1	OGJ 99
Other Elements (weight %)			
	Nitrogen	0.01	OGJ 99

Belayim

	Data	Notes	Reference ID
Origin: Egypt			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	27.5		OGJ 99
Sulphur (weight %)	2.20		OGJ 99
Reid Vapour Pressure (kPa)	45		OGJ 99
Pour Point (°C)	6		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
	<u>Temperature (°C)</u>		
	20	51	OGJ 99
Hydrocarbon Groups (weight %)			
	Waxes	8	OGJ 99
Yield on Crude (volume %)			
	<u>Boiling Range (°C)</u>		
	C1-C4	2	OGJ 99
	Naphtha (C5-82)	5	OGJ 99
	Naphtha (82-160)	10	OGJ 99
	Kerosene (160-230)	9	OGJ 99
	Gas oil (230-350)	18	OGJ 99
	Residue (>350)	54	OGJ 99
Metals (ppm)			
	Nickel	55	OGJ 99
	Vanadium	79	OGJ 99

		Data	Notes	Reference ID
Origin: Indonesia				
Data from OGJ 99 were originally published in 1994.				
API Gravity		45.1		OGJ 99
Sulphur (weight %)		0.02		OGJ 99
Water Content (volume %)		5.8	(a)	OGJ 99
(a) water and sediment				
Hydrogen Sulphide (weight %)		< 0		OGJ 99
Density (g/mL)				
	Temperature (°C)			
	15	0.8012		OGJ 99
Pour Point (°C)		16		OGJ 99
Kinematic Viscosity (mm²/s or cSt)				
	Temperature (°C)			
	21	8		OGJ 99
	27	6		OGJ 99
Yield on Crude (volume %)				
	Boiling Range (°C)			
	Light ends (C1-C5)	3		OGJ 99
	Naphtha (37-193)	37		OGJ 99
	Kerosene (193-266)	19		OGJ 99
	Heavy distillate (266-385)	20		OGJ 99
	Gas oil (385-513)	15		OGJ 99
	Residue (>513)	7		OGJ 99
Metals (ppm)				
	Copper	< 0.5		OGJ 99
	Iron	2		OGJ 99
	Nickel	< 0.5		OGJ 99
	Vanadium	< 1		OGJ 99
Other Elements (weight %)				
	Nitrogen	0.02		OGJ 99

Belridge Heavy

		Data	Notes	Reference ID
Origin: California, USA				
API Gravity		13.6		ESD 92
Equation(s) for Predicting Evaporation				
%Ev = (0.03 + 0.013T)sqrt(t) Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 96
Sulphur (weight %)				
<u>Evaporation (volume %)</u>				
0		1.03		ESD 93
3		1.03		ESD 93
Water Content (weight %)				
<u>Evaporation (volume %)</u>				
0		2.4		ESD 98
3		0.1		ESD 98
Flash Point (°C)				
<u>Evaporation (volume %)</u>				
0		> 90		ESD 92
3		> 90		ESD 92
Density (g/mL)				
<u>Evaporation (volume %)</u>	<u>Temperature (°C)</u>			
0	0	0.9849		ESD 92
	15	0.9746		ESD 92
3	0	0.9871		ESD 92
	15	0.9770		ESD 92
Pour Point (°C)				
<u>Evaporation (volume %)</u>				
0		2		ESD 92
3		4		ESD 92
Dynamic Viscosity (mPa·s or cP)				
<u>Evaporation (volume %)</u>	<u>Temperature (°C)</u>			
0	0	92,600		ESD 92
	15	12,610		ESD 92
3	0	156,200		ESD 92
	15	17,105		ESD 92

		Data	Notes	Reference ID
Emulsion Formation				
<u>Evaporation (volume %)</u>				
0	Visual stability	entrained		ESD 98
	Viscosity (mPa·s)	42,000		ESD 98
	Complex modulus (mPa)	140,000		ESD 98
	Water content (wt %)	54		ESD 98
3	Visual stability	entrained		ESD 98
	Viscosity (mPa·s)	47,000		ESD 98
	Complex modulus (mPa)	200,000		ESD 98
	Water content (wt %)	60		ESD 98
Chemical Dispersibility (volume %)				
<u>Evaporation (volume %)</u>				
0	Corexit 9500	4		ESD 97
	Corexit 9527	9		ESD 97
	Dasic LTS	0		ESD 97
	Enersperse 700	0		ESD 97
3	Corexit 9500	7		ESD 98
Hydrocarbon Groups (weight %)				
<u>Evaporation (volume %)</u>				
0	Saturates	28		ESD 96
	Aromatics	39		ESD 96
	Resins	30		ESD 96
	Asphaltenes	3		ESD 96
	Waxes	1		ESD 96
3	Saturates	29		ESD 96
	Aromatics	38		ESD 96
	Resins	30		ESD 96
	Asphaltenes	4		ESD 96
	Waxes	1		ESD 97
Adhesion (g/m²)				
<u>Evaporation (volume %)</u>				
0		88	<i>SD = 6</i>	ESD 96
3		83	<i>SD = 2</i>	ESD 96

Belridge Heavy

		Data	Notes	Reference ID
Volatile Organic Compounds (ppm)				
<u>Evaporation (volume %)</u>				
0	Benzene	110		ESD 94
	Toluene	0		ESD 94
	Ethylbenzene	0		ESD 94
	Xylenes	0		ESD 94
	C3-benzenes	0		ESD 94
	Total BTEX	110		ESD 94
	Total VOCs	110		ESD 94
3	Benzene	90		ESD 94
	Toluene	0		ESD 94
	Ethylbenzene	0		ESD 94
	Xylenes	0		ESD 94
	C3-benzenes	0		ESD 94
	Total BTEX	90		ESD 94
	Total VOCs	90		ESD 94
Surface Tension (mN/m or dynes/cm)				
<u>Evaporation (volume %)</u>	<u>Temperature (°C)</u>			
0	0	NM		ESD 92
	15	31.2		ESD 92
3	0	NM		ESD 92
	15	32.9		ESD 92
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
<u>Evaporation (volume %)</u>	<u>Temperature (°C)</u>			
0	0	NM		ESD 92
	15	20.0		ESD 92
3	0	NM		ESD 92
	15	30.4		ESD 92
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
<u>Evaporation (volume %)</u>	<u>Temperature (°C)</u>			
0	0	NM		ESD 92
	15	25.1		ESD 92
3	0	NM		ESD 92
	15	NM		ESD 92

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
<u>Evaporation (volume %)</u>	<u>Boiling Point (°C)</u>			
0	160	1		ESD 94
	180	1		ESD 94
	200	2		ESD 94
	250	9		ESD 94
	300	17		ESD 94
	350	28		ESD 94
	400	39		ESD 94
	450	52		ESD 94
	500	62		ESD 94
	550	71		ESD 94
	600	79		ESD 94
	650	86		ESD 94
	700	91		ESD 94
3	180	1		ESD 96
	200	2		ESD 96
	250	8		ESD 96
	300	17		ESD 96
	350	28		ESD 96
	400	39		ESD 96
	450	52		ESD 96
	500	62		ESD 96
	550	71		ESD 96
	600	78		ESD 96
	650	84		ESD 96
	700	89		ESD 96
Metals (ppm)				
	Barium	0.3		Cao 92
	Chromium	< 2		Cao 92
	Copper	< 0.6		Cao 92
	Iron	40		Cao 92
	Lead	< 3		Cao 92
	Magnesium	5		Cao 92
	Molybdenum	< 0.6		Cao 92
	Nickel	70		Cao 92
	Titanium	< 0.6		Cao 92
	Vanadium	86		Cao 92
	Zinc	< 0.6		Cao 92
Acute Toxicity of Water Soluble Fraction (mg/L)				
	<u>Test Organism</u>			
48h LC50	Daphnia magna	> 0.07	(a)	Harris 94
<i>(a) results based on GC headspace analysis</i>				

Bent Horn

		Data	Notes	Reference ID
Origin: Northwest Territories, Canada				
Data for sample taken from the tanker Imperial Bedford on September 10, 1985 at the Port of Montreal.				
API Gravity				
		41.3		EETD 85
Sulphur (weight %)				
		0.82		EETD 86
Flash Point (°C)				
		-9		EETD 85
Density (g/mL)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	0.8298		EETD 85
	15	0.8181		EETD 85
20	0	0.8589		EETD 85
	15	0.8472		EETD 85
33	0	0.8738		EETD 85
	15	0.8619		EETD 85
Pour Point (°C)				
<u>Evaporation (weight %)</u>				
0		-18		EETD 85
20		-7		EETD 85
33		8		EETD 85
Dynamic Viscosity (mPa·s or cP)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	54		EETD 85
	15	24		EETD 85
20	0	14,750		EETD 85
	15	60		EETD 85
33	0	110,000		EETD 85
	15	5,820		EETD 85
Chemical Dispersibility (volume %)				
	Corexit 9500	25		ESD 95
	Dasic LTS	15		EETD 89
	Enersperse 700	15		EETD 89

		Data	Notes	Reference ID
Hydrocarbon Groups (weight %)				
<u>Evaporation (weight %)</u>				
0	Saturates	94		EETD 86
	Aromatics	5		EETD 86
	Resins	0		EETD 86
	Asphaltenes	0		ESD 91
	Waxes	7		ESD 91
20	Asphaltenes	0		EETD 89
Volatile Organic Compounds (ppm)				
<u>Evaporation (weight %)</u>				
0	Benzene	100		ESD 94
	Toluene	150		ESD 94
	Ethylbenzene	50		ESD 94
	Xylenes	500		ESD 94
	C3-benzenes	1,290		ESD 94
	Total BTEX	800		ESD 94
	Total VOCs	2,090		ESD 94
21	Benzene	0		ESD 94
	Toluene	90		ESD 94
	Ethylbenzene	50		ESD 94
	Xylenes	460		ESD 94
	C3-benzenes	1,620		ESD 94
	Total BTEX	600		ESD 94
	Total VOCs	2,220		ESD 94
Surface Tension (mN/m or dynes/cm)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	27.7		EETD 85
	15	26.2		EETD 85
20	0	33.1		EETD 85
	15	28.2		EETD 85
33	0	NM		EETD 85
	15	25.0		EETD 85
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	53.5		EETD 85
	15	38.5		EETD 85
20	0	32.1		EETD 85
	15	2.2		EETD 85
33	0	NM		EETD 85
	15	7.4		EETD 85

Bent Horn

		Data	Notes	Reference ID
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	48.0		EETD 85
	15	39.1		EETD 85
20	0	42.3		EETD 85
	15	16.6		EETD 85
33	0	NM		EETD 85
	15	15.4		EETD 85
Boiling Point Distribution (weight %)				
	<u>Boiling Point (°C)</u>			
	60	1		ESD 94
	80	1		ESD 94
	100	3		ESD 94
	120	6		ESD 94
	140	9		ESD 94
	160	12		ESD 94
	180	15		ESD 94
	200	19		ESD 94
	250	28		ESD 94
	300	38		ESD 94
	350	47		ESD 94
	400	56		ESD 94
	450	64		ESD 94
	500	72		ESD 94
	550	78		ESD 94
	600	84		ESD 94
	650	88		ESD 94
	700	91		ESD 94

		Data	Notes	Reference ID
Metals (ppm)				
<u>Evaporation (weight %)</u>				
0	Barium	< 0.3		Cao 92
	Chromium	< 2		Cao 92
	Copper	< 0.6		Cao 92
	Iron	56		Cao 92
	Lead	< 3		Cao 92
	Magnesium	3		Cao 92
	Molybdenum	< 0.6		Cao 92
	Nickel	< 1		Cao 92
	Titanium	< 0.6		Cao 92
	Vanadium	< 0.6		Cao 92
	Zinc	< 0.6		Cao 92
20	Barium	0.6		Cao 92
	Chromium	< 2		Cao 92
	Copper	< 0.6		Cao 92
	Iron	19		Cao 92
	Lead	< 3		Cao 92
	Magnesium	16		Cao 92
	Molybdenum	0.9		Cao 92
	Nickel	< 1		Cao 92
	Titanium	< 0.6		Cao 92
	Vanadium	< 0.6		Cao 92
	Zinc	2		Cao 92
Aqueous Solubility (mg/L)				
<u>Temperature (°C)</u>				
	Room temperature	6	(a)	ESD 91
	20 (approx.)	6	(a)	MacLean 89
	22	8	(a)	Suntio 86
	20 (approx.)	5	(b)	MacLean 89
	22	6	(b)	Suntio 86

(a) fresh water; (b) salt water

Bent Horn

		Data	Notes	Reference ID
Acute Toxicity of Water Soluble Fraction (mg/L)				
	<u>Test Organism</u>			
48h EC50	Daphnia magna	1	(a)	MacLean 89
		1	(b)	EETD 89
	Artemia spp.	3	(a)	MacLean 89
		4	(b)	EETD 89
48h LC50	Daphnia magna	2	(a)	MacLean 89
		2	(b)	EETD 89
	Artemia spp.	4	(a)	MacLean 89
		5	(b)	EETD 89

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

		Data	Notes	Reference ID
Origin: Northwest Territories, Canada				
Data from EETD 1985 are for drill stem testing sample of A-02 well, 1985.				
API Gravity		41.5		EETD 85
Equation(s) for Predicting Evaporation				
%Ev = $(3.19 + 0.045T)\ln(t)$ Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 96
Sulphur (weight %)				
<u>Evaporation (weight %)</u>				
0		0.76		EETD 86
20		0.81		EETD 86
33		0.89		EETD 86
Flash Point (°C)		-14		EETD 85
Density (g/mL)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	0.8299		EETD 85
	15	0.8177		EETD 85
20	0	0.8600		EETD 85
	15	0.8484		EETD 85
33	0	0.8735		EETD 85
	15	0.8615		EETD 85
Pour Point (°C)				
<u>Evaporation (weight %)</u>				
0		-16		EETD 85
20		-2		EETD 85
33		11		EETD 85
Dynamic Viscosity (mPa·s or cP)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	25		EETD 85
	15	12		EETD 85
20	0	NM		EETD 85
	15	100		EETD 85
33	0	NM		EETD 85
	15	525		EETD 85
Hydrocarbon Groups (weight %)				
	Asphaltenes	0		ESD 91
	Waxes	9		ESD 91

Bent Horn A-02

		Data	Notes	Reference ID
Volatile Organic Compounds (ppm)				
	Benzene	390		ESD 94
	Toluene	770		ESD 94
	Ethylbenzene	140		ESD 94
	Xylenes	1,550		ESD 94
	C3-benzenes	2,660		ESD 94
	Total BTEX	2,850		ESD 94
	Total VOCs	5,510		ESD 94
Surface Tension (mN/m or dynes/cm)				
	<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>		
	0	0	27.4	EETD 85
		15	25.4	EETD 85
	20	0	31.1	EETD 85
		15	27.9	EETD 85
	33	0	NM	EETD 85
		15	28.7	EETD 85
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
	<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>		
	0	0	34.4	EETD 85
		15	17.6	EETD 85
	20	0	26.7	EETD 85
		15	1.7	EETD 85
	33	0	NM	EETD 85
		15	2.3	EETD 85
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
	<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>		
	0	0	30.0	EETD 85
		15	26.6	EETD 85
	20	0	38.9	EETD 85
		15	13.8	EETD 85
	33	0	NM	EETD 85
		15	11.4	EETD 85
Distillation (°C)				
	<u>Total Distillate (volume %)</u>			
	IBP	33		EETD 85
	5	92		EETD 85
	10	113		EETD 85
	15	130		EETD 85
	20	149		EETD 85
	25	169		EETD 85
	30	188		EETD 85
	35	206		EETD 85

		Data	Notes	Reference ID
Metals (ppm)				
<u>Evaporation (weight %)</u>				
0	Aluminum	< 5		Cao 92
	Barium	2		Cao 92
	Cadmium	< 0.5		Cao 92
	Calcium	105		Cao 92
	Chromium	< 2		Cao 92
	Cobalt	< 1		Cao 92
	Copper	< 0.6		Cao 92
	Iron	8		Cao 92
	Lead	< 3		Cao 92
	Magnesium	39		Cao 92
	Manganese	0.4		Cao 92
	Mercury	< 15		Cao 92
	Molybdenum	< 0.6		Cao 92
	Nickel	7		Cao 92
	Selenium	17		Cao 92
	Strontium	0.2		Cao 92
	Tin	< 15		Cao 92
	Titanium	< 0.6		Cao 92
	Vanadium	< 0.6		Cao 92
	Zinc	3		Cao 92
20	Barium	1		Cao 92
	Chromium	< 2		Cao 92
	Copper	2		Cao 92
	Iron	70		Cao 92
	Lead	< 3		Cao 92
	Magnesium	24		Cao 92
	Molybdenum	1		Cao 92
	Nickel	< 1		Cao 92
	Titanium	0.6		Cao 92
	Vanadium	< 0.6		Cao 92
	Zinc	4		Cao 92

Berri

		Data	Notes	Reference ID
Origin: Saudi Arabia				
Synonyms: Arabian Light				
API Gravity		37.2		OGJ 92
Sulphur (weight %)		1.15		OGJ 92
Pour Point (°C)		-29		OGJ 92
Kinematic Viscosity (mm²/s or cSt)				
	<u>Temperature (°C)</u>			
	16	7		OGJ 92
Yield on Crude				
	<u>Boiling Range (°C)</u>			
Weight %	C1-C5	3		OGJ 92
Volume %	20-175	25		OGJ 92
	175-295	26		OGJ 92
	295-343	10		OGJ 92
	343-565	29		OGJ 92
	565-816	10		OGJ 92
Other Elements (weight %)				
	Nitrogen	0.04		OGJ 92

		Data	Notes	Reference ID
Origin: North Sea, UK				
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".				
API Gravity		36.5		OGJ 99
Sulphur (weight %)		0.42		OGJ 99
Reid Vapour Pressure (kPa)		36		OGJ 99
Kinematic Viscosity (mm²/s or cSt)				
	<u>Temperature (°C)</u>			
	15	9		OGJ 99
Yield on Crude (volume %)				
	<u>Boiling Range (°C)</u>			
	C1-C5	4		OGJ 99
	Naphtha (16-49)	2		OGJ 99
	Naphtha (49-166)	22		OGJ 99
	Kerosene (166-218)	11		OGJ 99
	Light gas oil (218-343)	25		OGJ 99
	Heavy gas oil (343-535)	26		OGJ 99
	Residue (>535)	13		OGJ 99
Metals (ppm)				
	Nickel	0.8		OGJ 99
	Vanadium	4		OGJ 99

Beta

		Data	Notes	Reference ID
Origin: California, USA				
API Gravity		13.7		ESD 91
Equation(s) for Predicting Evaporation				
Short term (<5 days): %Ev = (-0.08 + 0.013T)sqrt(t)				ESD 97
Long term: %Ev = (0.29 + 0.045T)ln(t)				
Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				
Sulphur (weight %)		3.78		ESD 93
Water Content (weight %)		1.7		ESD 98
Flash Point (°C)		2		ESD 91
Density (g/mL)				
	<u>Temperature (°C)</u>			
	0	0.9829		ESD 91
	15	0.9738		ESD 91
Pour Point (°C)		3		ESD 91
Dynamic Viscosity (mPa.s or cP)				
	<u>Temperature (°C)</u>			
	0	90,210		ESD 91
	15	13,380		ESD 91
Emulsion Formation				
	Visual stability	entrained		ESD 98
	Water content (wt %)	37		ESD 98
Chemical Dispersibility (volume %)				
	Corexit 9500	0		ESD 98
	Corexit 9527	0		ESD 91
	Dasic LTS	0		ESD 91
	Enersperse 700	0		ESD 91
Hydrocarbon Groups (weight %)				
	Saturates	21		ESD 96
	Aromatics	39		ESD 96
	Resins	31		ESD 96
	Asphaltenes	7		ESD 96
	Waxes	3		ESD 91
Adhesion (g/m²)		165	SD = 24	ESD 96

	Data	Notes	Reference ID
Volatile Organic Compounds (ppm)			
Benzene	110		ESD 94
Toluene	280		ESD 94
Ethylbenzene	220		ESD 94
Xylenes	500		ESD 94
C3-benzenes	1,170		ESD 94
Total BTEX	1,110		ESD 94
Total VOCs	2,280		ESD 94
Surface Tension (mN/m or dynes/cm)			
<u>Temperature (°C)</u>			
0	NM		ESD 91
15	32.2		ESD 91
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)			
<u>Temperature (°C)</u>			
0	NM		ESD 91
15	30.4		ESD 91
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)			
<u>Temperature (°C)</u>			
0	NM		ESD 91
15	34.1		ESD 91
Boiling Point Distribution (weight %)			
<u>Boiling Point (°C)</u>			
100	1		ESD 94
120	2		ESD 94
140	3		ESD 94
160	4		ESD 94
180	5		ESD 94
200	6		ESD 94
250	11		ESD 94
300	16		ESD 94
350	22		ESD 94
400	29		ESD 94
450	38		ESD 94
500	46		ESD 94
550	55		ESD 94
600	65		ESD 94
650	74		ESD 94
700	81		ESD 94

Beta

		Data	Notes	Reference ID
Metals (ppm)				
	Barium	1		Cao 92
	Chromium	< 2		Cao 92
	Copper	< 0.6		Cao 92
	Iron	68		Cao 92
	Lead	< 3		Cao 92
	Magnesium	25		Cao 92
	Molybdenum	< 0.6		Cao 92
	Nickel	112		Cao 92
	Titanium	2		Cao 92
	Vanadium	146		Cao 92
	Zinc	< 0.6		Cao 92
Aqueous Solubility (mg/L)				
	Room temperature	6	(a)	ESD 91
(a) fresh water				
Acute Toxicity of Water Soluble Fraction (mg/L)				
	<u>Test Organism</u>			
48h LC50	Daphnia magna	> 4	(a)	Harris 94
(a) results based on GC purge-and-trap analysis				

	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	26.5		OGJ 99
Sulphur (weight %)	0.13		OGJ 99
Reid Vapour Pressure (kPa)	20		OGJ 99
Pour Point (°C)	-5		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
Temperature (°C)			
56	5		OGJ 99
Distillation (°C)			
Total Distillate (volume %)			
IBP	28		OGJ 99
5	104		OGJ 99
10	135		OGJ 99
15	169		OGJ 99
20	199		OGJ 99
25	227		OGJ 99
30	245		OGJ 99
35	259		OGJ 99
40	273		OGJ 99
45	285		OGJ 99
47	290		OGJ 99
Other Elements (weight %)			
Nitrogen	0.05		OGJ 99

Bombay High

	Data	Notes	Reference ID
Origin: India			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	39.4		OGJ 99
Sulphur (weight %)	0.17		OGJ 99
Reid Vapour Pressure (kPa)	33		OGJ 99
Pour Point (°C)	30		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
	<u>Temperature (°C)</u>		
	40	3	OGJ 99
Hydrocarbon Groups (weight %)			
	Waxes	11	OGJ 99
Yield on Crude (weight %)			
	<u>Boiling Range (°C)</u>		
	Naphtha (C5-150)	19	OGJ 99
	Kerosene (140-240)	19	OGJ 99
	Gas oil (240-370)	26	OGJ 99
	Vacuum gas oil (370-550)	29	OGJ 99
	Residue (>550)	5	OGJ 99
Metals (ppm)			
	Iron	< 0.3	OGJ 99
	Nickel	1	OGJ 99
	Vanadium	0.3	OGJ 99

		Data	Notes	Reference ID
Origin: Nigeria				
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".				
API Gravity		36.7		OGJ 99
Sulphur (weight %)		0.12		OGJ 99
Kinematic Viscosity (mm²/s or cSt)				
	<u>Temperature (°C)</u>			
	38	3		OGJ 99
Hydrocarbon Groups (weight %)				
	Waxes	8		OGJ 99
Yield on Crude				
	<u>Boiling Range (°C)</u>			
Weight %	C1-C4	2		OGJ 99
Volume %	Naphtha (C5-149)	21		OGJ 99
	Kerosene (149-232)	17		OGJ 99
	Gas oil (232-342)	27		OGJ 99
	Heavy gas oil (369-509)	20		OGJ 99
	Residue (>342)	33		OGJ 99
Metals (ppm)				
	Nickel	3		OGJ 99
	Vanadium	< 2		OGJ 99

Bonny Medium

		Data	Notes	Reference ID
Origin: Nigeria				
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".				
API Gravity		25.2		OGJ 99
Sulphur (weight %)		0.23		OGJ 99
Pour Point (°C)		-27		OGJ 99
Kinematic Viscosity (mm²/s or cSt)				
	<u>Temperature (°C)</u>			
	38	12		OGJ 99
Yield on Crude				
	<u>Boiling Range (°C)</u>			
Weight %	C1-C4	1		OGJ 99
Volume %	Naphtha (C5-149)	6		OGJ 99
	Kerosene (149-232)	13		OGJ 99
	Gas oil (232-343)	34		OGJ 99
	Heavy gas oil (369-509)	26		OGJ 99
	Residue (>342)	46		OGJ 99
Metals (ppm)				
	Nickel	7		OGJ 99
	Vanadium	< 1		OGJ 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		10.9		ESD 92
		10.1		OGJ 99
Equation(s) for Predicting Evaporation				
%Ev = $(-0.15 + 0.013T)\sqrt{t}$ Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				ESD 98
Sulphur (weight %)		5.50		OGJ 99
		4.60		ESD 93
Flash Point (°C)		57		ESD 92
Density (g/mL)				
	<u>Temperature (°C)</u>			
	0	1.0030		ESD 92
	15	0.9930		ESD 92
Pour Point (°C)		21		ESD 92
		10		OGJ 99
Dynamic Viscosity (mPa·s or cP)				
	<u>Temperature (°C)</u>			
	0	8,826,000		ESD 92
	15	485,500		ESD 92
Saybolt Viscosity (SUS)				
	<u>Temperature (°C)</u>			
	38	90,000		OGJ 99
Hydrocarbon Groups (weight %)				
	Saturates	25		ESD 96
	Aromatics	35		ESD 96
	Resins	22		ESD 96
	Asphaltenes	18		ESD 96
	Waxes	4		ESD 92
Adhesion (g/m²)		818	SD = 61	ESD 96

Boscan

	Data	Notes	Reference ID
Volatile Organic Compounds (ppm)			
Benzene	120		ESD 94
Toluene	180		ESD 94
Ethylbenzene	120		ESD 94
Xylenes	300		ESD 94
C3-benzenes	720		ESD 94
Total BTEX	720		ESD 94
Total VOCs	1,440		ESD 94
Boiling Point Distribution (weight %)			
<u>Boiling Point (°C)</u>			
120	1		ESD 94
140	1		ESD 94
160	2		ESD 94
180	2		ESD 94
200	3		ESD 94
250	6		ESD 94
300	9		ESD 94
350	15		ESD 94
400	21		ESD 94
450	28		ESD 94
500	36		ESD 94
550	46		ESD 94
600	55		ESD 94
650	64		ESD 94
700	73		ESD 94
Yield on Crude (volume %)			
<u>Boiling Range (°C)</u>			
Light naphtha (28-93)	1		OGJ 99
Heavy naphtha (93-149)	1		OGJ 99
Naphtha (149-178)	1		OGJ 99
Kerosene (178-204)	1		OGJ 99
Gas oil (204-260)	4		OGJ 99
Gas oil (260-288)	3		OGJ 99
Gas oil (288-343)	6		OGJ 99
Residue (>343)	83		OGJ 99

		Data	Notes	Reference ID
Metals (ppm)				
	Aluminum	70		Cao 92
	Barium	0.5		Cao 92
	Cadmium	< 0.5		Cao 92
	Calcium	470		Cao 92
	Chromium	< 2		Cao 92
	Cobalt	< 1		Cao 92
	Copper	2		Cao 92
	Iron	56		Cao 92
	Lead	< 3		Cao 92
	Magnesium	16		Cao 92
	Manganese	0.5		Cao 92
	Mercury	< 15		Cao 92
	Molybdenum	5		Cao 92
	Nickel	117		Cao 92
	Selenium	< 15		Cao 92
	Strontium	2		Cao 92
	Tin	< 15		Cao 92
	Titanium	< 0.6		Cao 92
	Vanadium	1,320		Cao 92
	Zinc	5		Cao 92
Acute Toxicity of Water Soluble Fraction (mg/L)				
	<u>Test Organism</u>			
48h LC50	Daphnia magna	> 1	(a)	Harris 94
<i>(a) results based on GC headspace analysis</i>				

Bow River Blended

		Data	Notes	Reference ID
Origin: Alberta, Canada				
Flash Point (°C)		< 12		Twardus 80
Fire Point (°C)		22		Twardus 80
Density (g/mL)				
<u>Evaporation (volume %)</u>	<u>Temperature (°C)</u>			
0	0	0.9000		Mackay 82a
	5	0.8990		Mackay 82a
	10	0.8960		Mackay 82a
	15	0.8930		Mackay 82a
	20	0.8890		Mackay 82a
	25	0.8850		Mackay 82a
10	20	0.9230		Mackay 82a
20		0.9380		Mackay 82a
Pour Point (°C)				
<u>Evaporation (volume %)</u>				
0		-39		Mackay 82a
		-27		Twardus 80
10		-15		Mackay 82a
20		-3		Mackay 82a
Dynamic Viscosity (mPa·s or cP)				
	<u>Temperature (°C)</u>			
	0	88		Mackay 82a
		74		Twardus 80
	5	62		Mackay 82a
	10	45		Mackay 82a
		67		Twardus 80
	15	34		Mackay 82a
	20	28		Mackay 82a
		43		Twardus 80
	25	24		Mackay 82a

		Data	Notes	Reference ID
Hydrocarbon Groups (weight %)				
<u>Evaporation (volume %)</u>				
0	Saturates	70		Mackay 82a
	Aromatics	21		Mackay 82a
	Resins	4		Mackay 82a
	Asphaltenes	5		Mackay 82a
	Waxes	3		Mackay 82a
10	Saturates	67		Mackay 82a
	Aromatics	22		Mackay 82a
	Resins	3		Mackay 82a
	Asphaltenes	8		Mackay 82a
	Waxes	6		Mackay 82a
20	Saturates	63		Mackay 82a
	Aromatics	26		Mackay 82a
	Resins	4		Mackay 82a
	Asphaltenes	8		Mackay 82a
	Waxes	9		Mackay 82a
Surface Tension (mN/m or dynes/cm)				
Room temperature		15.0		Twardus 80
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
<u>Evaporation (volume %)</u>	<u>Temperature (°C)</u>			
0	Room temperature	26.8		Mackay 82a
10		23.9		Mackay 82a
20		27.8		Mackay 82a
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
Room temperature		29.0		Twardus 80
Distillation (°C)				
<u>Total Distillate (volume %)</u>				
0		46		Twardus 80
10		115		Twardus 80
20		185		Twardus 80
30		265		Twardus 80
40		310		Twardus 80
50		350		Twardus 80
60		370		Twardus 80
70		385		Twardus 80
80		390		Twardus 80

Bow River Heavy

	Data	Notes	Reference ID
Origin: Alberta, Canada			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	26.7		OGJ 99
Sulphur (weight %)	2.10		OGJ 99
Reid Vapour Pressure (kPa)	7		OGJ 99
Pour Point (°C)	-50		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
	<u>Temperature (°C)</u>		
	40	18	OGJ 99
Yield on Crude (volume %)			
	<u>Boiling Range (°C)</u>		
	C3-C4	2	OGJ 99
	Naphtha (C5-190)	20	OGJ 99
	Kerosene (190-277)	13	OGJ 99
	Distillate (277-343)	11	OGJ 99
	Gas oil (343-565)	33	OGJ 99
	Residue (>565)	23	OGJ 99
Metals (ppm)			
	Nickel	21	OGJ 99
	Vanadium	54	OGJ 99

		Data	Notes	Reference ID
Origin: North Sea, UK				
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".				
API Gravity		33.6		OGJ 99
Sulphur (weight %)		0.73		OGJ 99
Pour Point (°C)		-6		OGJ 99
Kinematic Viscosity (mm²/s or cSt)				
	<u>Temperature (°C)</u>			
	10	14		OGJ 99
Hydrocarbon Groups (weight %)				
	Asphaltenes	0		OGJ 99
Yield on Crude				
	<u>Boiling Range (°C)</u>			
Weight %	C1-C4	2		OGJ 99
Volume %	Gasoline (C5-95)	9		OGJ 99
	Naphtha (C5-149)	21		OGJ 99
	Kerosene (149-232)	15		OGJ 99
	Gas oil (232-342)	21		OGJ 99
	Residue (>342)	39		OGJ 99
Metals (ppm)				
	Nickel	0.4		OGJ 99
	Vanadium	3		OGJ 99

Brass River

	Data	Notes	Reference ID
Origin: Nigeria			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	40.9		OGJ 99
Sulphur (weight %)	0.09		OGJ 99
Reid Vapour Pressure (kPa)	48		OGJ 99
Pour Point (°C)	2		OGJ 99
Saybolt Viscosity (SUS)			
	<u>Temperature (°C)</u>		
	21	39	OGJ 99
Yield on Crude (volume %)			
	<u>Boiling Range (°C)</u>		
	C1-C4	2	OGJ 99
	Gasoline (16-93)	11	OGJ 99
	Naphtha (93-149)	17	OGJ 99
	Naphtha (149-204)	12	OGJ 99
	Kerosene (204-260)	17	OGJ 99
	Gas oil (260-343)	16	OGJ 99
	Heavy gas oil (329-593)	25	OGJ 99
Metals (ppm)			
	Nickel	2	OGJ 99
	Vanadium	2	OGJ 99

	Data	Notes	Reference ID
Origin: Libya			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	40.4		OGJ 99
Sulphur (weight %)	0.21		OGJ 99
Reid Vapour Pressure (kPa)	44		OGJ 99
Pour Point (°C)	-1		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
	<u>Temperature (°C)</u>		
	21	6	OGJ 99
	38	4	OGJ 99
Yield on Crude (volume %)			
	<u>Boiling Range (°C)</u>		
	Light naphtha (20-100)	12	OGJ 99
	Heavy naphtha (100-150)	11	OGJ 99
	Kerosene (150-235)	17	OGJ 99
	Light gas oil (235-343)	20	OGJ 99
	Heavy gas oil (343-565)	28	OGJ 99
	Residue (>565)	9	OGJ 99

Brent Blend

		Data	Notes	Reference ID
Origin: North Sea, UK				
Data from OGJ 99 were originally published in 1995.				
API Gravity				
		38.3		OGJ 99
		37.8		ESD 94
Equation(s) for Predicting Evaporation				
%Ev = (3.39 + 0.048T)ln(t)				ESD 96
Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)				
Sulphur (weight %)				
Evaporation (weight %)				
0		0.40		OGJ 99
		0.39		ESD 97
14		0.38		ESD 97
26		0.44		ESD 97
40		0.52		ESD 97
Water Content (weight %)				
		0.4		OGJ 99
Flash Point (°C)				
Evaporation (weight %)				
0		< -30		ESD 95
14		27		ESD 95
26		71		ESD 95
40		> 95		ESD 95
Hydrogen Sulphide (weight %)				
		0		OGJ 99
Density (g/mL)				
Evaporation (weight %)				
Temperature (°C)				
0	0	0.8472		ESD 94
	15	0.8351		ESD 94
		0.8334		OGJ 99
14	0	0.8751		ESD 95
	15	0.8624		ESD 95
26	0	0.8930		ESD 95
	15	0.8796		ESD 95
40	0	0.9125		ESD 95
	15	0.8996		ESD 95

Brent Blend

		Data	Notes	Reference ID
Pour Point (°C)				
<u>Evaporation (weight %)</u>				
0		-42		OGJ 99
		-6		ESD 95
14		5		ESD 95
26		9		ESD 95
40		12		ESD 95
Dynamic Viscosity (mPa·s or cP)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	16		ESD 94
	15	6		ESD 94
14	0	47		ESD 95
	15	14		ESD 95
26	0	264		ESD 95
	15	39		ESD 95
40	0	1,758	(a)	ESD 95
		11,380	(b)	ESD 95
		86,300	(c)	ESD 95
	15	256		ESD 95
<i>Shear rate = (a) 100/s; (b) 10/s; (c) 1/s</i>				
Kinematic Viscosity (mm²/s or cSt)				
	<u>Temperature (°C)</u>			
	20	6		OGJ 99
	30	15		OGJ 99
Chemical Dispersibility (volume %)				
	Corexit 9527	45		ESD 94
	Dasic LTS	15		ESD 94
	Enersperse 700	25		ESD 94

Brent Blend

		Data	Notes	Reference ID
Hydrocarbon Groups (weight %)				
<u>Evaporation (weight %)</u>				
0	Saturates	72		ESD 94
	Aromatics	23		ESD 94
	Resins	4		ESD 94
	Asphaltenes	1		ESD 97
		0		OGJ 99
14	Waxes	7		ESD 98
	Saturates	61		ESD 96
	Aromatics	31		ESD 96
	Resins	7		ESD 96
	Asphaltenes	2		ESD 96
26	Waxes	7		ESD 98
	Saturates	56		ESD 96
	Aromatics	35		ESD 96
	Resins	7		ESD 96
	Asphaltenes	2		ESD 96
40	Waxes	8		ESD 98
	Saturates	53		ESD 96
	Aromatics	34		ESD 96
	Resins	11		ESD 96
	Asphaltenes	2		ESD 96
	Waxes	9		ESD 98
Adhesion (g/m²)				
<u>Evaporation (weight %)</u>				
0		12	<i>SD = 1</i>	ESD 95
14		20	<i>SD = 3</i>	ESD 95
26		36	<i>SD = 2</i>	ESD 95
40		53	<i>SD = 8</i>	ESD 95

		Data	Notes	Reference ID
Volatile Organic Compounds (ppm)				
<u>Evaporation (weight %)</u>				
0	Benzene	2,280		ESD 97
	Toluene	6,851		ESD 97
	Ethylbenzene	2,715		ESD 97
	Xylenes	8,703		ESD 97
	C3-benzenes	11,923		ESD 97
	Total BTEX	20,550		ESD 97
	Total VOCs	32,473		ESD 97
14	Benzene	921		ESD 97
	Toluene	5,915		ESD 97
	Ethylbenzene	2,959		ESD 97
	Xylenes	9,711		ESD 97
	C3-benzenes	14,025		ESD 97
	Total BTEX	19,577		ESD 97
	Total VOCs	33,602		ESD 97
26	Benzene	0		ESD 96
	Toluene	220		ESD 96
	Ethylbenzene	380		ESD 96
	Xylenes	2,290		ESD 96
	C3-benzenes	5,680		ESD 96
	Total BTEX	2,890		ESD 96
	Total VOCs	8,570		ESD 96
40	Benzene	0		ESD 96
	Toluene	0		ESD 96
	Ethylbenzene	0		ESD 96
	Xylenes	0		ESD 96
	C3-benzenes	0		ESD 96
	Total BTEX	0		ESD 96
	Total VOCs	0		ESD 96

Surface Tension (mN/m or dynes/cm)

<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>		
0	0	28.0	ESD 95
	15	25.5	ESD 94
14	0	29.0	ESD 95
	15	28.0	ESD 95
26	0	30.4	ESD 95
	15	29.4	ESD 95
40	0	DNF	ESD 95
	15	30.5	ESD 95

Brent Blend

		Data	Notes	Reference ID
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	24.9		ESD 95
	15	22.5		ESD 94
14	0	21.7		ESD 95
	15	22.7		ESD 95
26	0	23.4		ESD 95
	15	25.0		ESD 95
40	0	DNF		ESD 95
	15	23.5		ESD 95
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
<u>Evaporation (weight %)</u>	<u>Temperature (°C)</u>			
0	0	25.7		ESD 95
	15	22.7		ESD 94
14	0	22.8		ESD 95
	15	23.2		ESD 95
26	0	23.9		ESD 95
	15	24.8		ESD 95
40	0	DNF		ESD 95
	15	23.8		ESD 95

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
<u>Evaporation (weight %)</u>	<u>Boiling Point (°C)</u>			
0	40	3		ESD 96
	60	4		ESD 96
	80	4		ESD 96
	100	5		ESD 96
	120	19		ESD 96
	140	22		ESD 96
	160	25		ESD 96
	180	29		ESD 96
	200	32		ESD 96
	250	42		ESD 96
	300	52		ESD 96
	350	62		ESD 96
	400	70		ESD 96
	450	78		ESD 96
	500	85		ESD 96
	550	91		ESD 96
	600	95		ESD 96
	650	97		ESD 96
	700	99		ESD 96
14	80	1		ESD 95
	100	3		ESD 95
	120	6		ESD 95
	140	10		ESD 95
	160	14		ESD 95
	180	18		ESD 95
	200	22		ESD 95
	250	33		ESD 95
	300	44		ESD 95
	350	55		ESD 95
	400	65		ESD 95
	450	75		ESD 95
	500	83		ESD 95
	550	89		ESD 95
	600	93		ESD 95
26	650	97		ESD 95
	700	99		ESD 95
	140	1		ESD 95
	160	3		ESD 95
	180	7		ESD 95
	200	11		ESD 95
	250	23		ESD 95

Brent Blend

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
<u>Evaporation (weight %)</u>	<u>Boiling Point (°C)</u>			
26	300	36		ESD 95
	350	49		ESD 95
	400	60		ESD 95
	450	71		ESD 95
	500	80		ESD 95
	550	87		ESD 95
	600	93		ESD 95
	650	96		ESD 95
	700	99		ESD 95
40	250	6		ESD 95
	300	20		ESD 95
	350	36		ESD 95
	400	50		ESD 95
	450	64		ESD 95
	500	75		ESD 95
	550	84		ESD 95
	600	91		ESD 95
	650	96		ESD 95
	700	99		ESD 95
Yield on Crude (weight %)				
	<u>Boiling Range (°C)</u>			
	C1-C5	6		OGJ 99
	IBP-150	21		OGJ 99
	150-230	13		OGJ 99
	230-350	23		OGJ 99
	350-375	4		OGJ 99
	375-550	23		OGJ 99
	>550	14		OGJ 99
Metals (ppm)				
	Nickel	1		OGJ 99
	Vanadium	6		OGJ 99

	Data	Notes	Reference ID
Origin: Libya			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	43.6		OGJ 99
Sulphur (weight %)	0.03		OGJ 99
Reid Vapour Pressure (kPa)	0		OGJ 99
Pour Point (°C)	32		OGJ 99
Yield on Crude (volume %)			
<u>Boiling Range (°C)</u>			
Light ends (IBP-71)	3		OGJ 99
Light naphtha (71-143)	9		OGJ 99
Heavy naphtha (143-199)	9		OGJ 99
Kerosene (199-260)	12		OGJ 99
Diesel (260-335)	11		OGJ 99
Light gas oil (335-413)	21		OGJ 99
Heavy gas oil (413-500)	21		OGJ 99
Residue (>500)	15		OGJ 99

Buchan

		Data	Notes	Reference ID
Origin: North Sea, UK				
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".				
API Gravity		33.7		OGJ 99
Sulphur (weight %)		0.84		OGJ 99
Pour Point (°C)		6		OGJ 99
Kinematic Viscosity (mm²/s or cSt)				
	<u>Temperature (°C)</u>			
	20	20		OGJ 99
Yield on Crude				
	<u>Boiling Range (°C)</u>			
Weight %	C1-C4	2		OGJ 99
Volume %	Gasoline (C5-95)	9		OGJ 99
	Naphtha (C5-149)	20		OGJ 99
	Kerosene (149-232)	14		OGJ 99
	Gas oil (232-342)	21		OGJ 99
	Gas oil (342-369)	4		OGJ 99
	Gas oil (369-509)	20		OGJ 99
Metals (ppm)				
	Nickel	4		OGJ 99
	Vanadium	19		OGJ 99

Bunker C Fuel Oil

	Data	Notes	Reference ID
Synonyms: Fuel Oil No. 6 Residual/Heavy Fuel Oil			
Data from Shell 1999 were taken from MSDS Number 362-100.			
For additional fuel specifications refer to ASTM D396.			
API Gravity			
	14.1		API 81
	12.3		EETD 88
Equation(s) for Predicting Evaporation			
Short term (<5 days): %Ev = (0.35 + 0.13T)sqrt(t) Long term: %Ev = (-0.21 + 0.045T)ln(t) Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)			ESD 96
Sulphur (weight %)			
	2.40		API 81
Water Content (weight %)			
	0.1		ESD 98
Flash Point (°C)			
	98		EETD 88
	174		Twardus 80
	> 62		Shell 99a
Fire Point (°C)			
	> 257		Twardus 80
Density (g/mL)			
	<u>Temperature (°C)</u>		
	0	0.9800	Mackay 82a
		0.9941	EETD 88
	5	0.9760	Mackay 82a
		0.9904	EETD 88
	10	0.9730	Mackay 82a
		0.9867	EETD 88
	15	0.9690	Mackay 82a
		0.9830	EETD 88
		< 1.0290	Shell 99a
	16	0.9710	API 81
	20	0.9660	Mackay 82a
		0.9788	EETD 88
	25	0.9650	Mackay 82a
		0.9749	EETD 88
	30	0.9718	EETD 88

Bunker C Fuel Oil

	Data	Notes	Reference ID
Pour Point (°C)			
	15		EETD 88
	6		Mackay 82a
	7		Twardus 80
Dynamic Viscosity (mPa·s or cP)			
<u>Temperature (°C)</u>			
0	73,500,000		Twardus 80
	1,037,000		ESD 93
10	28,700,000		Twardus 80
15	45,030		ESD 93
20	5,980,000		Twardus 80
25	3,180		Mackay 82a
Kinematic Viscosity (mm²/s or cSt)			
<u>Temperature (°C)</u>			
50	211 to 640		Shell 99a
Emulsion Formation			
<u>Evaporation (weight%)</u>			
Visual stability	entrained		ESD 98
Viscosity (mPa·s)	110,000		ESD 98
Complex modulus (mPa)	720,000		ESD 98
Water content (wt %)	26		ESD 98
Chemical Dispersibility (volume %)			
Corexit 9500	7		ESD 98
Corexit 9527	0		EETD 89
Dasic LTS	0		EETD 89
Enersperse 700	0		EETD 89
Hydrocarbon Groups (weight %)			
Saturates	24		Mackay 82a
Aromatics	55		Mackay 82a
Resins	15		Mackay 82a
Asphaltenes	6		Mackay 82a
	7		ESD 91
Waxes	12		ESD 91
	55		Mackay 82a
Surface Tension (mN/m or dynes/cm)			
<u>Temperature (°C)</u>			
0	NM		EETD 88
15	NM		EETD 88
Room temperature	27.0		Twardus 80

Bunker C Fuel Oil

	Data	Notes	Reference ID
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)			
<u>Temperature (°C)</u>			
0	NM		EETD 88
15	NM		EETD 88
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)			
<u>Temperature (°C)</u>			
0	NM		EETD 88
15	NM		EETD 88
Room temperature	40.0		Twardus 80
Boiling Point Distribution (weight %)			
<u>Boiling Point (°C)</u>			
160	1		ESD 94
180	1		ESD 94
200	2		ESD 94
250	5		ESD 94
300	8		ESD 94
350	13		ESD 94
400	20		ESD 94
450	28		ESD 94
500	33		ESD 94
550	38		ESD 94
600	51		ESD 94
650	68		ESD 94
700	81		ESD 94
Metals (ppm)			
Barium	< 0.3		Cao 92
Chromium	< 2		Cao 92
Copper	1		Cao 92
Iron	35		Cao 92
Lead	< 3		Cao 92
Magnesium	24		Cao 92
Molybdenum	< 0.6		Cao 92
Nickel	9		Cao 92
Titanium	< 0.6		Cao 92
Vanadium	42		Cao 92
Zinc	2		Cao 92
Other Elements (weight %)			
Nitrogen	0.34		API 81

Bunker C Fuel Oil

		Data	Notes	Reference ID
Aqueous Solubility (mg/L)				
	22	0.4	(a)	Suntio 86
	Unknown	2	(a)	Murray 84
	20	6	(b)	Anderson 74
<i>(a) distilled water; (b) salt water</i>				
Acute Toxicity of Water Soluble Fraction (mg/L)				
	Test Organism			
24h LC50	Neanthes arenaceodentata	> 6		Rossi 76
	Capitaella capitata	> 6		Rossi 76
	Mysidopsis almyra	6		Anderson 74
	Palaemonetes pugio	3		Anderson 74
	Penaeus aztecus	4		Anderson 74
	Menidia beryllina	4		Anderson 74
	Fundulus similis	4		Anderson 74
	Cyprinodon variegatus	5		Anderson 74
48h LC50	Neanthes arenaceodentata	5		Rossi 76
	Capitaella capitata	1		Rossi 76
	Mysidopsis almyra	0.9		Anderson 74
	Palaemonetes pugio	3		Anderson 74
	Penaeus aztecus	4		Anderson 74
	Menidia beryllina	3		Anderson 74
	Fundulus similis	2		Anderson 74
	Cyprinodon variegatus	4		Anderson 74
96h LC50	Neanthes arenaceodentata	4		Rossi 76
	Capitaella capitata	0.9		Rossi 76
	Palaemonetes pugio	3		Anderson 74
	Penaeus aztecus	2		Anderson 74
	Menidia beryllina	2		Anderson 74
	Fundulus similis	2		Anderson 74
	Cyprinodon variegatus	3		Anderson 74

Bunker C Fuel Oil (Alaska)

	Data	Notes	Reference ID
Synonyms: Fuel Oil No. 6 Residual/Heavy Fuel Oil			
This oil was analyzed as part of a project entitled "Assessment of the Freshwater Biodegradation Potential of Oils Commonly Transported in Alaska". The sample was collected from a crude oil tankship at berth, Valdez Marine Terminal.			Blenkinsopp 97
API Gravity			
	11.4		ESD 96
Equation(s) for Predicting Evaporation			
Short term (<5 days): %Ev = $(-0.13 + 0.013T)\sqrt{t}$ Long term: %Ev = $(0.31 + 0.045T)\ln(t)$ Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)			ESD 98
Sulphur (weight %)			
<u>Evaporation (weight %)</u>			
0	0.53		ESD 97
8	0.56		ESD 97
Water Content (weight %)			
<u>Evaporation (weight %)</u>			
0	0.2		ESD 98
8	< 0.1		ESD 98
Flash Point (°C)			
<u>Evaporation (weight %)</u>			
0	83		ESD 96
8	> 95		ESD 96
Density (g/mL)			
<u>Evaporation (weight %)</u>		<u>Temperature (°C)</u>	
0	0	0.9954	ESD 96
	15	0.9891	ESD 96
8	0	1.0111	ESD 96
	15	1.0050	ESD 96
Pour Point (°C)			
<u>Evaporation (weight %)</u>			
0	-2		ESD 96
8	23		ESD 96
Dynamic Viscosity (mPa·s or cP)			
<u>Evaporation (weight %)</u>		<u>Temperature (°C)</u>	
0	0	79,100	ESD 96
	15	8,706	ESD 96
8	0	7,500,000	(a) ESD 96
	15	280,000	ESD 96

(a) shear rate = 0.25/s

Bunker C Fuel Oil (Alaska)

		Data	Notes	Reference ID
Emulsion Formation				
<u>Evaporation (weight%)</u>				
0	Visual stability	entrained		ESD 98
	Viscosity (mPa·s)	28,000		ESD 98
	Complex modulus (mPa)	130,000		ESD 98
	Water content (wt %)	35		ESD 98
8	Visual stability	none		ESD 98
	Water content (wt %)	6		ESD 98
Chemical Dispersibility (volume %)				
<u>Evaporation (weight %)</u>				
0	Corexit 9500	14		ESD 98
8		6		ESD 98
Hydrocarbon Groups (weight %)				
<u>Evaporation (weight %)</u>				
0	Saturates	25		ESD 97
	Aromatics	47		ESD 97
	Resins	17		ESD 97
	Asphaltenes	11		ESD 97
	Waxes	2		ESD 98
8	Saturates	23		ESD 97
	Aromatics	42		ESD 97
	Resins	20		ESD 97
	Asphaltenes	15		ESD 97
	Waxes	2		ESD 98
Adhesion (g/m²)				
<u>Evaporation (weight %)</u>				
0		85	<i>SD = 9</i>	ESD 96
8		421	<i>SD = 55</i>	ESD 96

Bunker C Fuel Oil (Alaska)

		Data	Notes	Reference ID
Volatile Organic Compounds (ppm)				
<u>Evaporation (weight %)</u>				
0	Benzene	33		ESD 97
	Toluene	41		ESD 97
	Ethylbenzene	55		ESD 97
	Xylenes	187		ESD 97
	C3-benzenes	1,470		ESD 97
	Total BTEX	317		ESD 97
	Total VOCs	1,787		ESD 97
8	Benzene	20		ESD 97
	Toluene	4		ESD 97
	Ethylbenzene	1		ESD 97
	Xylenes	5		ESD 97
	C3-benzenes	8		ESD 97
	Total BTEX	30		ESD 97
	Total VOCs	38		ESD 97
Surface Tension (mN/m or dynes/cm)				
<u>Evaporation (weight %)</u>		<u>Temperature (°C)</u>		
0		0	NM	ESD 96
		15	32.5	ESD 96
8		0	NM	ESD 96
		15	NM	ESD 96
Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
<u>Evaporation (weight %)</u>		<u>Temperature (°C)</u>		
0		0	NM	ESD 96
		15	NM	ESD 96
8		0	NM	ESD 96
		15	NM	ESD 96
Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
<u>Evaporation (weight %)</u>		<u>Temperature (°C)</u>		
0		0	NM	ESD 96
		15	NM	ESD 96
8		0	NM	ESD 96
		15	NM	ESD 96

Bunker C Fuel Oil (Alaska)

		Data	Notes	Reference ID
Boiling Point Distribution (weight %)				
<u>Evaporation (weight %)</u>	<u>Boiling Point (°C)</u>			
0	160	1		ESD 96
	180	2		ESD 96
	200	4		ESD 96
	250	12		ESD 96
	300	17		ESD 96
	350	23		ESD 96
	400	33		ESD 96
	450	46		ESD 96
	500	57		ESD 96
	550	65		ESD 96
	600	73		ESD 96
	650	81		ESD 96
	700	88		ESD 96
8	250	4		ESD 96
	300	10		ESD 96
	350	16		ESD 96
	400	27		ESD 96
	450	42		ESD 96
	500	53		ESD 96
	550	63		ESD 96
	600	72		ESD 96
	650	80		ESD 96
	700	87		ESD 96

Bunker C Fuel Oil (Irving Whale)

	Data	Notes	Reference ID
Synonyms: Fuel Oil No. 6 Residual/Heavy Fuel Oil			
The barge IRVING WHALE sank approximately 60 km northeast of North Point, Prince Edward Island in September 1970. At the time of sinking the barge contained 4200 long tons (4,355,400 L) of bunker oil. On July 30, 1996 the IRVING WHALE was raised, still containing approximately 3000 tonnes of oil.			
API Gravity	11.6		ESD 90
Sulphur (weight %)	1.93		ESD 96
Water Content (weight %)	0.7		ESD 90
Flash Point (°C)	115		ESD 90
Density (g/mL)	<u>Temperature (°C)</u>		
	0	0.9985	ESD 90
	5	0.9962	ESD 90
	10	0.9918	ESD 90
	15	0.9879	ESD 90
	20	0.9844	ESD 90
	25	0.9801	ESD 90
Pour Point (°C)	6		ESD 90
Dynamic Viscosity (mPa·s or cP)	<u>Temperature (°C)</u>		
	0	798,200	ESD 90
	15	40,340	ESD 90
Hydrocarbon Groups (weight %)			
	Saturates	32	ESD 95
	Aromatics	32	ESD 95
	Resins	17	ESD 95
	Asphaltenes	19	ESD 95
Volatile Organic Compounds (ppm)			
	Benzene	100	ESD 94
	Toluene	0	ESD 94
	Ethylbenzene	0	ESD 94
	Xylenes	100	ESD 94
	C3-benzenes	560	ESD 94
	Total BTEX	210	ESD 94
	Total VOCs	770	ESD 94

Bunker C Fuel Oil (Irving Whale)

		Data	Notes	Reference ID
Distillation (°C)				
	<u>Total Distillate (volume %)</u>			
	IBP	109		ESD 90
	5	142		ESD 90
	10	216		ESD 90
	15	232		ESD 90
	20	255		ESD 90
	25	243		ESD 90
	30	253		ESD 90
	35	260		ESD 90
	40	264		ESD 90
	45	263		ESD 90
	50	259		ESD 90
	55	264		ESD 90
	60	281		ESD 90

Bunker C Light Fuel Oil

	Data	Notes	Reference ID
Equation(s) for Predicting Evaporation			
$\%Ev = (0.0035 + 0.0026T)\sqrt{t}$ Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)			ESD 96
Chemical Dispersibility (volume %)			
Corexit 9500	5		ESD 94
Corexit 9527	0		EETD 89
Dasic LTS	0		EETD 89
Enersperse 700	0		EETD 89
Volatile Organic Compounds (ppm)			
Benzene	50		ESD 94
Toluene	50		ESD 94
Ethylbenzene	50		ESD 94
Xylenes	140		ESD 94
C3-benzenes	550		ESD 94
Total BTEX	280		ESD 94
Total VOCs	830		ESD 94
Boiling Point Distribution (weight %)			
	<u>Boiling Point (°C)</u>		
	200	1	ESD 94
	250	7	ESD 94
	300	19	ESD 94
	350	38	ESD 94
	400	54	ESD 94
	450	64	ESD 94
	500	69	ESD 94
	550	72	ESD 94
	600	76	ESD 94
	650	83	ESD 94
	700	89	ESD 94
Metals (ppm)			
Barium	< 0.3		Cao 92
Chromium	< 2		Cao 92
Copper	< 0.6		Cao 92
Iron	12		Cao 92
Lead	< 3		Cao 92
Magnesium	5		Cao 92
Molybdenum	0.9		Cao 92
Nickel	31		Cao 92
Titanium	< 0.6		Cao 92
Vanadium	157		Cao 92
Zinc	< 0.6		Cao 92

Bunker C Light Fuel Oil

		Data	Notes	Reference ID
Aqueous Solubility (mg/L)				
	<u>Temperature (°C)</u>			
	20 (approx.)	4	(a)	MacLean 89
		2	(b)	MacLean 89
(a) fresh water; (b) salt water				
Acute Toxicity of Water Soluble Fraction				
	<u>Test Organism</u>			
48h EC50	Daphnia magna	4	(a)	MacLean 89
		0.4	(b)	EETD 89
	Artemia spp.	> 2	(a)	MacLean 89
		> 0.3	(b)	EETD 89
48h LC50	Daphnia magna	> 0.4	(b)	EETD 89
		> 4	(a)	MacLean 89
	Artemia spp.	> 2	(a)	MacLean 89
		> 0.3	(b)	EETD 89

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

	Data	Notes	Reference ID
Origin: Indonesia			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	31.7		OGJ 99
Sulphur (weight %)	0.09		OGJ 99
Reid Vapour Pressure (kPa)	7		OGJ 99
Pour Point (°C)	16		OGJ 99
Kinematic Viscosity (mm²/s or cSt)			
	<u>Temperature (°C)</u>		
	38	3	OGJ 99
Hydrocarbon Groups (weight %)			
	Waxes	8	OGJ 99
Yield on Crude (volume %)			
	<u>Boiling Range (°C)</u>		
	Gasoline (C5-175)	19	OGJ 99
	Kerosene (175-300)	49	OGJ 99
	Gas oil (300-350)	13	OGJ 99
	Residue (>350)	20	OGJ 99

Burgan

	Data	Notes	Reference ID
Origin: Kuwait/Iraq Divided Zone			
Synonyms: Wafra			
Data from OGJ 99 were originally published in 1983 as part of a series entitled "Guide to Export Crudes for the '80s".			
API Gravity	23.3		OGJ 99
Sulphur (weight %)	3.37		OGJ 99
Reid Vapour Pressure (kPa)	23		OGJ 99
Pour Point (°C)	-21		OGJ 99
Saybolt Viscosity (SUS)			
	<u>Temperature (°C)</u>		
	50	134	OGJ 99
Yield on Crude (volume %)			
	<u>Boiling Range (°C)</u>		
	Light naphtha (IBP-93)	3	OGJ 99
	Heavy naphtha (93-224)	14	OGJ 99
	Kerosene (224-260)	7	OGJ 99
	Gas oil (260-327)	13	OGJ 99
	Residual oil (>327)	63	OGJ 99
Metals (ppm)			
	Nickel	7	OGJ 99
	Vanadium	34	OGJ 99