

Tab. 8: SUMMARY

	CRUDE OIL	YIELDS AND CHARACTERISTICS OF PRODUCTS											
		GAS		NAPHTHAS			KEROSENES		GASOILS		V. DIST.	RESIDUES	
TBP Range :		C1-C4	C5-80 [c]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+
TBP Yield %m/m		1,01	3,84	9,52	12,40	9,74	6,86	21,64		21,05	54,25		33,20
TBP Yield %v/v		1,58	5,13	11,44	14,74	10,94	7,64	22,43		20,11	48,45		28,34
Density @15°C Kg/l	0,8851	0,5663	0,6621	0,7360	0,7442	0,7884	0,7953	0,8537		0,9265	0,9912		1,0371
API Gravity @ 60°F	28,3												
Viscosity @ 20°C mm ² /s	31,48												
Viscosity @ 50°C VBN						2,91	4,26	15,63		29,97	41,42		48,68
Sulphur %m/m	2,73		0,0077	0,0250	0,0550	0,0830	0,2000	1,56		2,76	4,30		5,28
Mercaptan Sulphur ppm	71												
Hydrogen Sulphide %m/m	<0,001												
Acidity mgKOH/g	0,34							0,15		0,25			
Paraffins %v/v			88,4	67,7	64,4								
Naphthenes %v/v			7,1	22,0	23,4								
Aromatics %v/v			4,6	10,3	12,2	19,1	19,3						
N+2A			16,2	42,6	47,8								
Smoke Pt. mm						26	25						
Freezing Pt. °C						-53	-43						
Cloud Pt. °C								-5					
Pour Pt. °C	-21							-9		+33	+18		+69
Cetane Index								53,9					
Total Nitrogen %m/m										0,15	0,30		0,40
Basic Nitrogen ppm										469			
Nickel ppm	18									< 1 [c]	34		56
Vanadium ppm	53									< 2 [c]	97		158
P.Value											2,5		
Asphaltenes in NC7 %m/m	3,6										6,70		10,95
R.C.C. %m/m	6,7									0,3	12,3		19,9
Penetration @ 25°C dmm													
UOP K Factor	11,9									11,7	11,4		

TBP Distillation	
Cut Point	%m/m Cum
C1	0,00
C2	0,00
C3	0,16
IC4	0,34
NC4	1,01
IC5	1,59
NC5	2,60
80	4,85
160	14,36
180	17,25
230	24,11
250	27,04
320	37,79
370	45,75
530	66,80
550	69,10

NB: see corresponding tabs for notes associated to each cut.

[c] calculated value

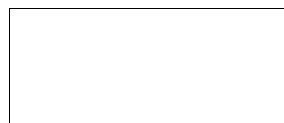
PAGINA 13 DI 14



EniTecnologie

Lab. Caratterizzazione Materie Prime e Semilavorati

Via F. Maritano, 26 - 20097 S. Donato Milanese
 Telefax: 02520.56612 Telefono: 0252046774
 e-mail: silvia.pavoni@euron.eni.it



ARABIAN HEAVY		28,3			
State	ARABIA SAUDITA	Report	R.542	Record	ARH03.2006.03.ET

Tab. 8: SUMMARY

	CRUDE OIL	YIELDS AND CHARACTERISTICS OF PRODUCTS												
		GAS	NAPHTHAS			KEROSENES		GASOILS		V. DIST.	RESIDUES			
		C1-C4	C5-80 [c]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+	
TBP Range :														
TBP Yield %m/m		1,04	5,09	12,35	15,99	12,01	8,38	25,41	4,77	21,01	44,10	39,33	23,09	
TBP Yield %v/v		1,57	6,60	14,37	18,38	13,06	9,05	25,58	4,57	19,55	39,12	34,55	19,57	
Density @15°C Kg/l	0,8597	0,5722	0,6622	0,7392	0,7477	0,7908	0,7964	0,8539	0,8969	0,9240	0,9691	0,9787	1,0142	
API Gravity @ 60°F	33,0													
Viscosity @ 20°C mm ² /s	9,94													
Viscosity @ 50°C VBN						4,52	4,26	15,99	24,52	29,54	37,41	38,97	44,57	
Sulphur %m/m	1,88		0,0224	0,0305	0,0411	0,1100	0,1400	1,48	2,31	2,55	3,36	3,49	4,10	
Mercaptan Sulphur ppm	119													
Hydrogen Sulphide %m/m														
Acidity mgKOH/g	0,13							0,05	0,05	0,06				
Paraffins %v/v			89,0	66,8	65,1									
Naphthenes %v/v			7,8	19,3	18,9									
Aromatics %v/v			3,2	13,9	16,0	23,2	23,1							
N+2A			14,2	47,1	50,9									
Smoke Pt. mm						25	24							
Freezing Pt. °C						-54	-45							
Cloud Pt. °C								-4	+21					
Pour Pt. °C	<-36							-6	+21		+18	+18	+51	
Cetane Index								54,9	59,9					
Total Nitrogen %m/m									0,051	0,08	0,25	0,23	0,41	
Basic Nitrogen ppm									128	239				
Nickel ppm	5										< 1 [c]	11	13	21
Vanadium ppm	16										< 2 [c]	36	41	69
P.Value												2,6		
Asphaltenes in NC7 %m/m	1,4										3,25	3,65	6,20	
R.C.C. %m/m	4,4									0,4	10,0	11,2	18,7	
Penetration @ 25°C dmm														
UOP K Factor	11,9									11,7	11,5	11,5		

TBP Distillation	
Cut Point	%m/m Cum
C1	0,00
C2	0,00
C3	0,11
IC4	0,25
NC4	1,04
IC5	1,73
NC5	3,04
80	6,13
100	8,82
120	11,69
140	14,83
160	18,48
180	22,12
210	27,01
230	30,50
250	34,00
270	37,65
290	41,28
320	46,99
350	52,48
370	55,90
400	60,67
530	76,91
550	79,55

NB: see corresponding tabs for notes associated to each cut.

[c] calculated value

PAGINA 13 DI 14



Lab. Caratterizzazio... e Semilavorati

Via F. Maritano, 26 - 20097 S. Donato Milanese
 Telefax: 02520.56612 Telefono: 0252046774
 e-mail: silvia.pavoni@euron.eni.it



ARABIAN LIGHT		33,0			
State	ARABIA SAUDITA	Report	R.592	Record	ARL03.2006.08.ET

Tab. 8: SUMMARY

	CRUDE OIL	YIELDS AND CHARACTERISTICS OF PRODUCTS												
		GAS		NAPHTHAS			KEROSENES		GASOILS		V. DIST.	RESIDUES		
		C1-C4	C5-80 [c]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+	
TBP Range :														
TBP Yield	%m/m	1,47	4,96	11,30	14,52	10,52	7,30	22,72	4,53	21,26	49,03	44,50	27,77	
TBP Yield	%v/v	2,24	6,56	13,35	16,97	11,63	8,01	23,15	4,40	20,03	43,31	38,91	23,28	
Density @15°C	Kg/l	0,8734	0,5734	0,6603	0,7393	0,7474	0,7904	0,7962	0,8569	0,9006	0,9272	0,9888	0,9988	1,042
API Gravity @ 60°F		30,4												
Viscosity @ 20°C	mm ² /s	17,02												
Viscosity @ 50°C	VBN						4,70	4,26	16,15	25,31	30,27	39,87	41,36	47,23
Sulphur	%m/m	2,79	0,0054	0,0386	0,0559	0,2000	0,2400	1,78	2,75	2,72	4,43	4,60	5,74	
Mercaptan Sulphur	ppm	54	78		23		7							
Hydrogen Sulphide	%m/m													
Acidity	mgKOH/g	0,19				0,04	0,02	0,26	0,23	0,19				
Paraffins	%v/v		90,0	65,5	64,4									
Naphthenes	%v/v		8,2	21,7	21,2									
Aromatics	%v/v		1,7	12,8	14,5	21,3	21,5							
N+2A			11,7	47,3	50,1									
Smoke Pt.	mm					24	23							
Freezing Pt.	°C					-54	-45							
Cloud Pt.	°C							-6	+21					
Pour Pt.	°C	<-36						-9	+21		+18	+21	+57	
Cetane Index								53,9	60,2					
Total Nitrogen	%m/m									0,09	0,23	0,25	0,34	
Basic Nitrogen	ppm								185	268	651	698	943	
Nickel	ppm	12								< 1 [c]	24	26	42	
Vanadium	ppm	38,7								< 2 [c]	79	87	139	
P.Value												3,0		
Asphaltenes in NCT	%m/m	2,5									5,15	5,70	9,15	
R.C.C.	%m/m	6,1								0,7	12,4	13,6	21,3	
Penetration @ 25°C	dmm													
UOP K Factor		11,9								11,7	11,4	11,3		

TBP Distillation

Cut Point %m/m Cum

C1	0,00
C2	0,00
C3	0,12
IC4	0,36
NC4	1,47
IC5	2,22
NC5	3,41
80	6,43
100	8,97
120	11,54
140	14,56
160	17,73
180	20,95
210	25,18
230	28,25
250	31,30
270	34,55
290	37,68
320	42,87
350	47,85
370	50,97
400	55,50
530	72,23
550	74,81

NB: see corresponding tabs for notes associated to each cut.

[c] calculated value

PAGE 13 OF 14



Eni S.p.A.

Div. Refining & Marketing

Centro ricerche di San Donato Milanese (MI)

Via F. Maritano, 26 - 20097 S. Donato Milanese

Telefax: 02520.46308

Telefono: 0252046774

e-mail: silvia.pavoni@eni.it

BASRAH LIGHT		30,4			
State	IRAQ	Report	R.654	Record	BSL07.2007.03.ET

Tab. 8: SUMMARY

	CRUDE OIL	YIELDS AND CHARACTERISTICS OF PRODUCTS												
		GAS		NAPHTHAS			KEROSENES		GASOILS		V. DIST.	RESIDUES		
		C1-C4	C5-80 [c]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+	
TBP Range :														
TBP Yield %m/m		0,84	4,30	11,03	14,22	10,74	7,55	22,77	4,70	21,35	50,33	45,62	28,97	
TBP Yield %v/v		1,29	5,72	13,08	16,69	11,92	8,31	23,38	4,60	20,32	44,75	40,16	24,44	
Density @15°C Kg/l	0,8796	0,5740	0,6607	0,7417	0,7497	0,7925	0,7985	0,8568	0,8998	0,9246	0,9892	0,9994	1,0429	
API Gravity @ 60°F	29,3													
Viscosity @ 20°C mm ² /s	20,93													
Viscosity @ 50°C VBN						4,47	4,26	15,85	24,86	30,14	40,30	41,89	47,78	
Sulphur %m/m	2,43		0,0316	0,0586	0,0702	0,1900	0,2200	1,42	2,28	2,61	3,95	4,12	4,94	
Mercaptan Sulphur ppm	188													
Hydrogen Sulphide %m/m														
Acidity mgKOH/g	0,41					0,13		0,30	0,58	0,52				
Paraffins %v/v			89,0	61,1	60,1									
Naphthenes %v/v			9,2	25,3	24,5									
Aromatics %v/v			1,8	13,6	15,5	21,4	21,1							
N+2A			12,8	52,6	55,4									
Smoke Pt. mm						24	23							
Freezing Pt. °C						-49	-43							
Cloud Pt. °C								-6	+21					
Pour Pt. °C	<-36							-6	+21		+18	+21	+51	
Cetane Index								53,2	58,6					
Total Nitrogen %m/m									0,075	0,12	0,29	0,31	0,41	
Basic Nitrogen ppm									200	305				
Nickel ppm	17									< 1 [c]	34	37	58	
Vanadium ppm	50									< 2 [c]	100	110	173	
P.Value												2,5		
Asphaltenes in NC7 %m/m	2,7										5,35	5,90	9,30	
R.C.C. %m/m	6,5									0,4	13,0	14,3	22,2	
Penetration @ 25°C dmm														
UOP K Factor	11,9									11,7	11,4	11,4		

TBP Distillation	
Cut Point	%m/m Cum
C1	0,00
C2	0,00
C3	0,06
IC4	0,19
NC4	0,84
IC5	1,49
NC5	2,50
80	5,13
100	7,68
120	10,12
140	12,96
160	16,16
180	19,36
210	23,84
230	26,90
250	30,03
270	33,28
290	36,44
320	41,40
350	46,74
370	49,67
400	54,38
530	71,03
550	73,40

NB: see corresponding tabs for notes associated to each cut.

[c] calculated value

PAGINA 13 DI 14



EniTecnologie

Lab. Caratterizzazione Materie Prime e Semilavorati

Via F. Maritano, 26 - 20097 S. Donato Milanese
 Telefax: 02520.56612 Telefono: 0252046774
 e-mail: silvia.pavoni@euron.eni.it



FOROZAN						29,3
State	IRAN	Report	R.581	Record	FOZ03.2006.07.ET	

Tab. 8: SUMMARY

	CRUDE OIL	YIELDS AND CHARACTERISTICS OF PRODUCTS												
		GAS		NAPHTHAS			KEROSENES		GASOILS		V. DIST.	RESIDUES		
TBP Range :		C1-C4	C5-80 [c]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+	
TBP Yield %m/m		0,05	1,39	2,38	3,71	6,61	5,28	24,16		15,70	65,42		49,72	
TBP Yield %v/v		0,08	1,93	3,04	4,69	7,89	6,25	26,65		15,78	60,40		44,61	
Density @15°C	Kg/l	0,9675	0,5575	0,6948	0,7554	0,7654	0,8099	0,8166	0,8769		0,9625	1,0480		1,0782 [c]
API Gravity @ 60°F		14,7												
Viscosity @ 20°C	mm ² /s	1373												
Viscosity @ 50°C	VBN					4,14	4,26	15,90		32,04	47,87		52,87	
Sulphur	%m/m	6,37		0,0494	0,4713	0,6846	1,7100	1,8400	3,26		5,69	8,32		9,15
Mercaptan Sulphur	ppm	140												
Hydrogen Sulphide	%m/m													
Acidity	mgKOH/g	1,10						0,79		1,81				
Paraffins	%v/v		80,8	67,1	65,7									
Naphthenes	%v/v		14,6	21,2	20,1									
Aromatics	%v/v		4,6	11,7	14,2	19,8	20,1							
N+2A			23,9	44,6	48,5									
Smoke Pt.	mm					0	0							
Freezing Pt.	°C					-53	-48							
Cloud Pt.	°C							-8						
Pour Pt.	°C	-24						-11			+39		+80	
Cetane Index								45,5						
Total Nitrogen	%m/m									0,13	0,39		0,47	
Basic Nitrogen	ppm									448				
Nickel	ppm	75								< 1 [c]	114		150	
Vanadium	ppm	109								< 2 [c]	166		218	
P.Value											2,8			
Asphaltenes in NC7	%m/m	5,7									8,70		11,45 [c]	
R.C.C.	%m/m	12,8								1,0	19,6		25,4	
Penetration @ 25°C	dmm													
UOP K Factor		11,6								11,3	11,0			

TBP Distillation	
Cut Point	%m/m Cum
C1	0,00
C2	0,00
C3	0,01
IC4	0,02
NC4	0,05
IC5	0,10
NC5	0,20
80	1,44
100	1,76
120	2,21
140	3,08
160	3,81
180	5,14
210	8,00
230	10,42
250	13,48
270	17,15
290	20,69
320	26,58
350	31,72
370	34,58
530	50,28
550	59,11
550+	100,00

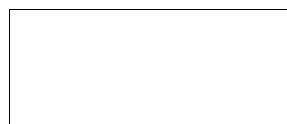
NB: see corresponding tabs for notes associated to each cut.

[c] calculated value

PAGINA 13 DI 14



Lab. Caratterizzazione Materie Prime e Semilavorati
Via F. Maritano, 26 - 20097 S. Donato Milanese
Telefax: 02520.56612 Telefono: 0252046774
e-mail: silvia.pavoni@euron.eni.it



GELA BLEND					14,7
State	ITALIA	Report	R.423	Record	GEL04.2004.11.ET

Tab. 8: SUMMARY

		CRUDE OIL	YIELDS AND CHARACTERISTICS OF PRODUCTS											
			GAS		NAPHTHAS			KEROSENES		GASOILS		V. DIST.		RESIDUES
TBP Range :			C1-C4	C5-80 [c]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+
TBP Yield	%m/m		0,72	4,13	11,10	14,28	10,51	7,33	23,20	4,46	22,99	50,34	45,88	27,35
TBP Yield	%v/v		1,11	5,44	13,10	16,67	11,60	8,03	23,78	4,33	21,77	45,00	40,67	23,22
Density @15°C	Kg/l	0,8775	0,5733	0,6653	0,7440	0,7517	0,7946	0,8011	0,8561	0,9045	0,9267	0,9817	0,9899	1,0333 [c]
API Gravity @ 60°F		29,7												
Viscosity @ 20°C	mm ² /s	18,48												
Viscosity @ 50°C	VBN						3,52	4,26	15,39	24,51	30,13	39,80	41,29	47,94
Sulphur	%m/m	1,97		0,0451	0,0751	0,0900	0,2025	0,2249	1,24	1,79	2,18	3,21	3,35	4,08
Mercaptan Sulphur	ppm	111												
Hydrogen Sulphide	%m/m													
Acidity	mgKOH/g	0,14							0,00	0,17	0,27			
Paraffins	%v/v		86,6	56,9	56,9									
Naphthenes	%v/v		11,3	32,0	30,8									
Aromatics	%v/v		2,1	11,1	12,3	16,2	15,9							
N+2A			15,5	54,2	55,5									
Smoke Pt.	mm					25	24							
Freezing Pt.	°C					-53	-47							
Cloud Pt.	°C								-7	+24				
Pour Pt.	°C	-21							-9	+21		+27	+27	+51
Cetane Index									48,9	56,4				
Total Nitrogen	%m/m											0,35	0,46	
Basic Nitrogen	ppm								250	444				
Nickel	ppm	23									< 1 [c]	46 [c]	50	84
Vanadium	ppm	70									< 2 [c]	139 [c]	153	257
P.Value												2,0		
Asphaltenes in NC7	%m/m	3,3										6,50	7,10	11,95 [c]
R.C.C.	%m/m	6,5									0,6	13,0	14,2	23,4
Penetration @ 25°C	dmm													
UOP K Factor		11,9									11,7	11,5	11,4	

TBP Distillation	
Cut Point	%m/m Cum
C1	0,00
C2	0,00
C3	0,06
IC4	0,18
NC4	0,72
IC5	1,36
NC5	2,29
80	4,85
100	7,39
120	9,87
140	13,17
160	15,95
180	19,13
210	23,47
230	26,46
250	29,62
270	33,00
290	36,18
320	41,42
350	46,46
370	49,66
400	54,12
530	72,65
550	74,95

NB: see corresponding tabs for notes associated to each cut.

[c] calculated value PAGINA 13 DI 14



Lab. Caratterizzazione Materie Prime e Semilavorati

Via F. Maritano, 26 - 20097 S. Donato Milanese
 Telefax: 02520.56612 Telefono: 0252046774
 e-mail: silvia.pavoni@euron.eni.it

IRANIAN HEAVY		29,7	
State	IRAN	Report	R.289
Record	IRH05.2003.09.ET		

Tab. 8: SUMMARY

	CRUDE OIL	YIELDS AND CHARACTERISTICS OF PRODUCTS												
		GAS	NAPHTHAS			KEROSENES		GASOILS		V. DIST.	RESIDUES			
		C1-C4	C5-80 [c]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+	
TBP Range :														
TBP Yield %m/m		0,68	3,64	11,19	14,30	10,86	7,76	26,90	4,94	24,53	46,72	41,79	22,19	
TBP Yield %v/v		1,03	4,65	12,83	16,25	11,72	8,30	27,40	4,79	23,17	42,44	37,65	19,27	
Density @15°C Kg/l	0,8633	0,5700	0,6754	0,7530	0,7595	0,8003	0,8071	0,8477	0,8904	0,9142	0,9505	0,9581	0,9941	
API Gravity @ 60°F	32,3													
Viscosity @ 20°C mm ² /s	16,13													
Viscosity @ 50°C VBN						5,06	5,42	16,17	25,14	30,46	37,58	39,05	45,46	
Sulphur %m/m	0,84	0,0026	0,0019	0,0029	0,0154	0,0187	0,29	0,55	0,62	1,55	1,67	2,58		
Mercaptan Sulphur ppm	5	8		6		2								
Hydrogen Sulphide %m/m														
Acidity mgKOH/g	0,24				0,05		0,07	0,13	0,09					
Paraffins %v/v		78,4	54,8	54,5										
Naphthenes %v/v		16,6	29,0	28,4										
Aromatics %v/v		4,9	16,1	17,2	23,4	24,4								
N+2A		26,5	61,3	62,7										
Smoke Pt. mm					21	20								
Freezing Pt. °C					-56	-50								
Cloud Pt. °C								-5	+24					
Pour Pt. °C	+9							-6	+24		+39	+39	+72	
Cetane Index								57,9	63,6					
Total Nitrogen %m/m										0,07	0,23	0,26	0,41	
Basic Nitrogen ppm									184	377	1392	1556	2930	
Nickel ppm	26									< 1 [c]	56	63	119	
Vanadium ppm	1,9									< 2 [c]	4	5	8	
P.Value												4,5		
Asphaltenes in NC7 %m/m	1,3									2,75	3,10	5,85		
R.C.C. %m/m	3,1								0,0	6,6	7,4	13,9		
Penetration @ 25°C dmm														
UOP K Factor	12,0									11,9	11,8	11,8		

TBP Distillation	
Cut Point	%m/m Cum
C1	0,00
C2	0,00
C3	0,07
IC4	0,21
NC4	0,68
IC5	1,17
NC5	1,84
80	4,32
100	6,81
120	9,43
140	12,43
160	15,51
180	18,62
210	22,87
230	26,37
250	30,03
270	33,96
290	37,50
320	44,75
350	49,96
370	53,28
400	58,21
530	77,81
550	81,15

NB: see corresponding tabs for notes associated to each cut.

[c] calculated value

PAGE 13 OF 14



Eni S.p.A

Div. Refining & Marketing

Centro ricerche di San Donato Milanese (MI)

Via F. Maritano, 26 - 20097 S. Donato Milanese

Telefax: 02520.46308

Telefono: 0252046774

e-mail: silvia.pavoni@eni.it



	IRMINIO			32,3	
State	ITALIA	Report	R.688	Record	IRM01.2007.06.ET

Tab. 8: SUMMARY

	CRUDE OIL	YIELDS AND CHARACTERISTICS OF PRODUCTS												
		GAS		NAPHTHAS			KEROSENES		GASOILS			V. DIST.		RESIDUES
TBP Range :		C1-C4	C5-80 [c]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+	
TBP Yield %m/m		0,17	1,37	4,75	5,56	4,18	3,37	18,77		26,82	70,76		43,94	
TBP Yield %v/v		0,29	1,90	5,89	6,85	4,82	3,87	20,26		26,76	67,02		40,26	
Density @15°C Kg/l	0,9431	0,5674	0,6790	0,7603	0,7658	0,8171	0,8214	0,8737		0,9452	0,9957		1,0293 [c]	
API Gravity @ 60°F	18,5													
Viscosity @ 20°C mm ² /s	899,44													
Viscosity @ 50°C VBN						5,64	4,26	17,05		32,71	43,01		49,30	
Sulphur %m/m	3,97		0,1200	0,3900	0,4400	1,1900	1,2600	2,52		3,06	4,78		5,83	
Mercaptan Sulphur ppm	363		628	319		64								
Hydrogen Sulphide %m/m			0,0038	0,0016		0,0002								
Acidity mgKOH/g	2,02					0,62		0,95		1,74				
Paraffins %v/v			76,1	46,5	45,6									
Naphthenes %v/v			21,0	43,6	43,1									
Aromatics %v/v			2,9	9,9	11,4	15,4	14,2							
N+2A			26,8	63,5	65,8									
Smoke Pt. mm						23	22							
Freezing Pt. °C						-54	-51							
Cloud Pt. °C								-7						
Pour Pt. °C	-12							-9		+36	+27		+51	
Cetane Index								48,2						
Total Nitrogen %m/m										0,07	0,32		0,47	
Basic Nitrogen ppm										354				
Nickel ppm	91									< 1 [c]	129		208	
Vanadium ppm	8									< 2 [c]	12		19	
P.Value											4,0			
Asphaltenes in NC7 %m/m	3,6										5,05		8,10	
R.C.C. %m/m	7,0									0,5	9,9		15,6	
Penetration @ 25°C dmm														
UOP K Factor	11,7									11,6	11,4			

TBP Distillation	
Cut Point	%m/m Cum
C1	0,00
C2	0,00
C3	0,02
IC4	0,06
NC4	0,17
IC5	0,36
NC5	0,55
80	1,54
100	3,14
120	4,54
140	5,26
160	6,29
180	7,10
210	8,73
230	10,47
250	12,47
270	14,69
290	17,10
320	22,74
350	26,74
370	29,24
530	56,06
550	58,11

NB: see corresponding tabs for notes associated to each cut.

[c] calculated value

PAGINA 13 DI 14



EniTecnologie

Lab. Caratterizzazione Materie Prime e Semilavorati

Via F. Maritano, 26 - 20097 S. Donato Milanese
 Telefax: 02520.56612 Telefono: 0252046774
 e-mail: silvia.pavoni@euron.eni.it



	PREZIOSO				18,5	
State	ITALIA	Report	R.469	Record	PRE02.2005.07.ET	

Tab. 8: SUMMARY

		CRUDE OIL	YIELDS AND CHARACTERISTICS OF PRODUCTS											
			GAS		NAPHTHAS			KEROSENES		GASOILS		V. DIST.	RESIDUES	
TBP Range :			C1-C4	C5-80 [c]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+
TBP Yield	%m/m		0,20	1,80	2,94	4,66	5,01	3,29	18,76		30,94	71,29		40,35
TBP Yield	%v/v		0,33	2,43	3,63	5,64	5,74	3,73	20,23		30,89	67,73		36,84
Density @15°C	Kg/l	0,9356	0,5555	0,6918	0,7590	0,7730	0,8156	0,8250	0,8679		0,9372	0,9848		1,0247 [c]
API Gravity @ 60°F		19,7												
Viscosity @ 20°C	mm ² /s	790,60												
Viscosity @ 50°C	VBN						3,47	4,45	15,19		32,45	42,70		50,56
Sulphur	%m/m	2,20		0,0024	0,0100	0,0254	0,1065	0,1330	0,68		1,58	3,10		4,27
Mercaptan Sulphur	ppm	47												
Hydrogen Sulphide	%m/m													
Acidity	mgKOH/g	2,11					0,20		0,80		2,14			
Paraffins	%v/v			75,5	53,0	47,3								
Naphthenes	%v/v			19,5	38,1	41,4								
Aromatics	%v/v			5,0	8,9	11,3	20,6	23,3						
N+2A				29,4	55,9	64,0								
Smoke Pt.	mm						21	20						
Freezing Pt.	°C						-57	-55						
Cloud Pt.	°C								-13					
Pour Pt.	°C	-9							-18		+24	+27		+80
Cetane Index									48,9					
Total Nitrogen	%m/m								0,008		0,10	0,29		0,44
Basic Nitrogen	ppm										260			
Nickel	ppm	66									< 1 [c]	92		163
Vanadium	ppm	9									< 2 [c]	12		21
P.Value														
Asphaltenes in NC7	%m/m	2,6										3,60		6,35 [c]
R.C.C.	%m/m	6,9									0,3	9,7		17,0
Penetration @ 25°C	dmm													
UOP K Factor		11,7									11,6	11,6		

TBP Distillation	
Cut Point	%m/m Cum
C1	0,00
C2	0,00
C3	0,05
IC4	0,11
NC4	0,20
IC5	0,36
NC5	0,56
80	2,00
100	2,71
120	3,00
140	3,82
160	4,94
180	6,65
210	8,39
230	9,95
250	11,86
270	14,29
290	16,59
320	20,50
350	25,96
370	28,71
400	28,71
530	59,65
550	62,57

NB: see corresponding tabs for notes associated to each cut.

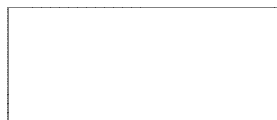
[c] calculated value

PAGINA 13 DI 14



Lab. Caratterizzazione Materie Prime e Semilavorati

Via F. Maritano, 26 - 20097 S. Donato Milanese
 Telefax: 02520.56612 Telefono: 0252046774
 e-mail: silvia.pavoni@euron.eni.it



RAGUSANO		19,7	
State	ITALIA	Report	R.409
Record	RGS01.2004.09.ET		

Tab. 8: SUMMARY

	CRUDE OIL	YIELDS AND CHARACTERISTICS OF PRODUCTS														
		GAS		NAPHTHAS			KEROSENES		GASOILS		V. DIST.	RESIDUES				
		C1-C4	C5-80 [c]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+			
TBP Range :																
TBP Yield %m/m		1,01	4,41	7,10	9,20	6,87	4,76	19,53	4,38	22,41	61,07	56,69	38,66			
TBP Yield %v/v		1,69	5,90	8,56	11,00	7,81	5,37	20,66	4,44	22,09	55,89	51,46	33,80			
Density @15°C Kg/l	0,9131	0,5461	0,6826	0,7572	0,7642	0,8033	0,8099	0,8633	0,9027	0,9264	0,9977	1,0059	1,0443			
API Gravity @ 60°F	23,4															
Viscosity @ 20°C mm ² /s	121,51															
Viscosity @ 50°C VBN						5,55	6,80	16,50	25,46	30,65	43,18	44,55	50,45			
Sulphur %m/m	3,34		0,0322	0,2100	0,2700	0,6400	0,7000	2,00	2,69	2,89	4,22	4,34	4,99			
Mercaptan Sulphur ppm	38		180	249	204	34	31									
Hydrogen Sulphide %m/m			0,0069	0,0005	0,0005	0,0003										
Acidity mgKOH/g	0,51							0,15	0,28	0,36						
Paraffins %v/v			76,2	52,7	52,1											
Naphthenes %v/v			21,0	34,2	33,3											
Aromatics %v/v			2,8	13,1	14,5	20,4	20,7									
N+2A			26,6	60,4	62,4											
Smoke Pt. mm						22	21									
Freezing Pt. °C						-51	-45									
Cloud Pt. °C									-3	+24						
Pour Pt. °C	-9								-6	+24		+39	+42	+96		
Cetane Index									51,4	58,7						
Total Nitrogen %m/m										0,114	0,16	0,45	0,48	0,62		
Basic Nitrogen ppm										328	558	1502	1593	2049		
Nickel ppm	64										< 1 [c]	105	113	166		
Vanadium ppm	83,3										< 2 [c]	136	147	216		
P.Value													2,1			
Asphaltenes in NC7 %m/m	6,6											10,85	11,70	17,15		
R.C.C. %m/m	9,7										0,6	15,9	17,1	24,7		
Penetration @ 25°C dmm																
UOP K Factor	11,7										11,7	11,4	11,4			

TBP Distillation	
Cut Point	%m/m Cum
C1	0,00
C2	0,07
C3	0,20
IC4	0,33
NC4	1,01
IC5	1,48
NC5	2,13
80	5,42
100	7,60
120	9,40
140	10,40
160	12,52
180	14,63
210	16,95
230	19,39
250	21,92
270	24,61
290	27,42
320	31,25
350	35,78
370	38,93
400	43,31
530	61,34
550	62,59

NB: see corresponding tabs for notes associated to each cut.

[c] calculated value

PAGE 13 OF 14



Eni S.p.A

Div. Refining & Marketing

Centro ricerche di San Donato Milanese (MI)

Via F. Maritano, 26 - 20097 S. Donato Milanese

Telefax: 02520.46308

Telefono: 0252046774

e-mail: silvia.pavoni@eni.it



	RAS GHARIB BLEND				23,4
State	EGITTO	Report	R.821	Record	RAG01.2008.09.ET

RESIDUO_BTZ	[u.d.m.]	comp media
Analisi		
Densità Medio Bordo	[kg/m ³]	907,5
Acqua Medio Bordo	[% (v/v)]	0,16
Sali Medio Bordo	[mg/L]	14,7
Densità Flangia Manichetta	[kg/m ³]	904,1
Acqua Flangia Manichetta	[% (v/v)]	0,05
Sali Flangia Manichetta	[mg/L]	5
Zolfo totale	[% (m/m)]	0,30
Viscosità a 50°C	[°E]	41,36
Viscosità a 50°C	[mm ² /s]	93,15
Punto di scorrimento	[°C]	30
Residuo carbonioso	[% (m/m)]	5,95
Sedimenti	[% (m/m)]	0,05
Punto infiammabilità	[°C]	126
Viscosità a 80°C	[°E]	3,51
punto iniziale	[°C]	283
evaporato 5%	[°C]	345
evaporato 10%	[°C]	374
evaporato 20%	[°C]	410
evaporato 30%	[°C]	436
evaporato 40%	[°C]	462
evaporato 50%	[°C]	492
evaporato 60%	[°C]	517
evaporato 70%	[°C]	525
punto finale	[°C]	525
evaporato a 525°C	[% (v/v)]	59,4
Numero di bromo	[gBr ₂ /100g]	1,14
Azoto basico	[ppm]	135
Punto di anilina	[°C]	104



R.174.8.2005

FO.01.2005.08.ET

AGO-2005 OC174

F.O. FRS

12,2 °API

Data

I valori relativi al contenuto in Si e Al, nonché le elevate densità delle frazioni indicano la presenza di componenti da cracking nel fuel oil



F.O.

12,2 °API

AGO-2005 FO.01.2005.08.ET R.174.8.200 OC174

Origine

nazione RUSSIA,
area

Committente

società RAM
unità

Prelievo

data 15/05/05
n/c M/V SEA MERIT
base MILAZZO

Ricevimento campione

24/06/05

Analizzato dal

25/06/05 al 27/06/05

TABLE INDEX

Tab. 1 YIELDS AND CHARACTERISTICS

Tab. 2 METHODS AND PRECISION OF RESULTS


NOTE

- 1 I risultati si riferiscono esclusivamente al campione sottoposto a prova.
- 2 I valori relativi al contenuto in Si e Al, nonché le elevate densità delle frazioni indicano la presenza di componenti da cracking nel fuel oil
- 3

Range :	Yields:	UNIT	FUEL OIL						RESIDUES		METHOD(*)
			IVT-230	230-270	270-400	400-530	400+	530+			
	%m/m		1,90	2,70	10,80	25,90	84,60	58,70		ASTM D2892/D1160	
	%v/v		2,20	3,00	11,30	26,60	83,40	56,80			
Density @15°C	Kg/l	0,9843	0,8356	0,9091	0,9397	0,9595	0,9990	1,0400		EN ISO 3104/ 121185	
Density @20°C	Kg/l	0,9542									
Specific Gravity		0,9849	0,8360	0,9096	0,9402	0,9601	0,9996	1,0406			
API Gravity @ 60°F		12,2	37,8	24,1	19,0	15,9	10,1	4,5			
✓ Water by distillation	%v/v	0,08								ISO 3733	
✓ Water (KF Method)	%m/m									ASTM D 4928	
✓ Sediments by extraction	%m/m									EN ISO 3735	
✓ Salt content (NaCl)	%m/m	-0,002								IP 265	
✓ Flash point	°C									EN ISO 2719	
✓ Viscosity @ 50°C	mm ² /s	563,2	1,250	1,852	5,859	92,22	4804,0	1830829		EN ISO 3104	
✓ Viscosity @ 80°C	mm ² /s	100,9								EN ISO 3104	
✓ Viscosity @ 100°C	mm ² /s					12,100	167,95	3395,3		EN ISO 3104	
✓ Viscosity @ 50°C	VBN	37,81	6,16	10,61	20,27	32,94	42,04	49,76			
✓ Sulphur	%m/m	2,39	0,49	1,77	1,82	2,01	2,44	2,63		EN ISO 14596/ASTM D 1552	
✓ Total Nitrogen	%m/m				0,07	0,20	0,46	0,58		ASTM D 3228	
✓ Basic Nitrogen	ppm					595				UOP 313	
✓ Neutralization Value	mgKOH/g	0,18				0,16				IP 213	
✓ Bromine number	gBr/100g									IP 130	
✓ Freezing Pt.	°C		-7							ASTM D 2386	
✓ Cloud Pt.	°C		-65	-45	+0					EN 23015	
✓ Pour Pt.	°C	+6	-68	-45	+6	+33	+36			ISO 3016	
✓ Cetane Index			0,0	22,1	30,2					EN ISO 4264	
✓ Nickel	ppm	38				< 0,14	45	65		EN 13131	
✓ Vanadium	ppm	107				< 1,9	126	182		EN 13131	
✓ Sodium	ppm	0					0	0		EN 241	
✓ Iron	ppm									Atomic Abs.	
✓ Aluminium	ppm	9								Atomic Abs.	
✓ Silicon	ppm	14								Atomic Abs.	
✓ P.Value		2,6								SMS 1600-1	
✓ R.C.C.	%m/m	11,31				0,78	13,13	18,57		EN ISO 10370	
✓ Ash	%m/m									EN ISO 6245	
✓ Asphaltenes in NC7	%m/m	3,6					4,3	6,18		IP 143	
✓ HFT (esistenti)	%m/m	0,03								ISO 10307-1	
✓ HFT (potenziali)	%m/m	0,03								ISO 10307-2	
✓ Penetration @ 25°C	dmm									EN 1426	
✓ UOP K Factor		11,4				11,4	11,4			UOP 375	

(*) see page 4 for precision of results and method revision date

[c]=Calculated Value

 EniTecnologie		F.O.		12,2	
State	State	Report	FO.01.2005.08.ET		
e Semilavorati Via F. Maritano, 26 - 20097 S. Donato Milanese - Telefono: 0252046774 - Telefax: 02520.56612 e-mail: silvia.pavoni@enitecnologie.eni.it					
					PAGINA 3 DI 4



Tab. 2: Methods

<i>DESCRIPTION</i>		<i>METHOD</i>
Tbp distillation yields	%m/m	ASTM D2892
D1160 distillation yields	%m/m	ASTM D1160
Density @15°C	Kg/l	EN ISO 3675
Density @15°C	Kg/l	EN ISO 12185
API Gravity @ 60°F		ASTM D 287
Water by distillation	%v/v	ISO 3733
Water (KF Method)	%m/m	ASTM D 4928
Sediments by extraction	%m/m	EN ISO 3735
Salt content	%m/m	IP 265
Flash point	°C	EN ISO 2719
Viscosity @ 50°C	mm ² /s	EN ISO 3104
Viscosity @ 50°C	mm ² /s	ASTM D 341
Viscosity @ 100°C	mm ² /s	EN ISO 3104
Viscosity @ 50°C	VBN	ASTM D 341
Sulphur	%m/m	EN ISO 14596
Sulphur	%m/m	ASTM D 1552
Sulphur	ppm	ISO 20846
Mercaptan Sulphur	ppm	ISO 3012
Hydrogen Sulphide	ppm	UOP 163
Organic Chloride	ppm	EN 14077
Total Nitrogen	ppm	ASTM D 4629
Total Nitrogen	%m/m	ASTM D 5762
Basic Nitrogen	ppm	UOP 313
Neutralization Value	mgKOH/g	IP 213
Acid Number	mgKOH/g	ISO 6618
Bromine number	gBr/100g	ISO 3839
Distillation of Petroleum Products	°C	EN ISO 3405
Gas Chromatography of Naphthas	%m/m	ASTM D 5134
LPG Analysis by Gas Chromatography	%m/m	EN 27941
Hydrocarbon types by FIA	%v/v	EN 14517
Detailed Hydrocarbon analysis		Gas Chromatography
Naphthenes	%v/v	ASTM D 6293
Aromatics hydrocarbon types	%m/m	EN 12916
Molecular weight		ASTM D 2502
Smoke Pt.	°C	ASTM D 1322
Freezing Pt.	°C	ASTM D 2386
Cloud Pt.	°C	EN 23015
Pour Pt.	°C	ISO 3016
Pour Pt.	°C	ASTM D 5853
Cetane Index		EN ISO 4264
Nickel	ppm	EN 13131
Vanadium	ppm	EN 13131
Sodium	ppm	EN 241
Iron	ppm	ASTM D 5863
Wax content	%m/m	BP 237
P.Value		SMS 1600-1
R.C.C.	%m/m	EN ISO 10370
Ash	%m/m	EN ISO 6245
Asphaltenes in NC7	%m/m	IP 143
HFT (esistenti)	%m/m	ISO 10307-1
HFT (potenziali)	%m/m	ISO 10307-2
Penetration @ 25°C	dmm	EN 1426
UOP K Factor		UOP 375
Carbon,Hydrogen and Nitrogen in petroleum		ASTM D 5291

^ WHERE X IS THE AVERAGE OF RESULTS BEING COMPARED

Tab. 8: SUMMARY

	CRUDE OIL	YIELDS AND CHARACTERISTICS OF PRODUCTS												
		GAS		NAPHTHAS			KEROSENES		GASOILS			V. DIST.		RESIDUES
TBP Range :		C1-C4	C5-80 [c]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+	
TBP Yield %m/m		0,67	2,16	5,09	6,62	5,67	4,14	17,37	4,21	22,63	69,05	64,83	46,42	
TBP Yield %v/v		1,13	3,02	6,40	8,24	6,66	4,82	18,93	4,38	22,80	63,98	59,60	41,18	
Density @15°C	Kg/l	0,9425	0,5563	0,6733	0,7493	0,7573	0,8029	0,8098	0,8650	0,9067	0,9354	1,0172	1,0253	1,0625
API Gravity @ 60°F		18,6												
Viscosity @ 20°C	mm ² /s	1201,98												
Viscosity @ 50°C	VBN					4,17	4,35	16,29	24,72	31,12	45,87	47,25	53,06	
Sulphur	%m/m	3,59	0,0136	0,0095	0,0222	0,1800	0,2300	2,20	2,57	2,93	4,52	4,65	5,30	
Mercaptan Sulphur	ppm	38												
Hydrogen Sulphide	%m/m													
Acidity	mgKOH/g	0,35						0,17	0,30	0,34				
Paraffins	%v/v		76,8	46,7	46,5									
Naphthenes	%v/v		21,9	45,7	44,1									
Aromatics	%v/v		1,2	7,6	9,4	18,8	20,0							
N+2A			24,4	60,9	62,9									
Smoke Pt.	mm					23	22							
Freezing Pt.	°C					-56	-50							
Cloud Pt.	°C							-9	+18					
Pour Pt.	°C	-18						-12	+18		+45	+52	+51	
Cetane Index								50,6	55,4					
Total Nitrogen	%m/m									0,11	0,44	0,46	0,60	
Basic Nitrogen	ppm								190	298				
Nickel	ppm	43								< 1 [c]	63	67	94	
Vanadium	ppm	115								< 2 [c]	167	178	249	
P.Value												2,9		
Asphaltenes in NC7	%m/m	7,7									11,15	11,90	16,60	
R.C.C.	%m/m	13,2								0,7	19,2	20,4	28,2	
Penetration @ 25°C	dmm													
UOP K Factor		11,7								11,6	11,3	11,2		

TBP Distillation	
Cut Point	%m/m Cum
C1	0,00
C2	0,01
C3	0,15
IC4	0,26
NC4	0,67
IC5	0,98
NC5	1,40
80	2,83
100	4,31
120	5,26
140	6,51
160	7,91
180	9,45
210	11,74
230	13,59
250	15,59
270	17,92
290	20,37
320	23,81
350	28,61
370	30,95
400	35,17
530	53,58
550	56,37

NB: see corresponding tabs for notes associated to each cut.

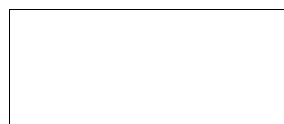
[c] calculated value

PAGINA 13 DI 14



Lab. Caratterizzazione Materie Prime e Semilavorati

Via F. Maritano, 26 - 20097 S. Donato Milanese
 Telefax: 02520.56612 Telefono: 0252046774
 e-mail: silvia.pavoni@euron.eni.it



SOROOSH		18,6			
State	IRAN	Report	R.609	Record	SOR03.2006.11.ET

Tab. 8: SUMMARY

		CRUDE OIL	YIELDS AND CHARACTERISTICS OF PRODUCTS											
			GAS		NAPHTHAS		KEROSENES		GASOILS		V. DIST.	RESIDUES		
TBP Range :			C1-C4	C5-80 [c]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+
TBP Yield	%m/m		0,83	5,27	6,72	9,20	8,34	5,86	19,49	4,45	22,84	59,34	54,89	36,50
TBP Yield	%v/v		1,33	7,12	8,27	11,19	9,58	6,66	20,50	4,45	22,10	53,30	48,86	31,20
Density @15°C	Kg/l	0,9150	0,5712	0,6779	0,7428	0,7528	0,7972	0,8042	0,8701	0,9166	0,9458	1,0187	1,0280	1,0704 [c]
API Gravity @ 60°F		23,1												
Viscosity @ 20°C	mm ² /s	78,16												
Viscosity @ 50°C	VBN						3,52	4,26	15,39	25,39	31,03	43,51	44,98	51,31
Sulphur	%m/m	3,86		0,0337	0,1211	0,1538	0,3902	0,4560	2,29	3,17	3,73	5,19	5,35	6,10
Mercaptan Sulphur	ppm	212												
Hydrogen Sulphide	%m/m	0,00												
Acidity	mgKOH/g	0,12								0,25	0,18			
Paraffins	%v/v		84,8	67,5	65,2									
Naphthenes	%v/v		13,0	21,6	21,6									
Aromatics	%v/v		2,2	10,9	13,2	21,8	22,6							
N+2A			17,4	43,4	48,0									
Smoke Pt.	mm					25	24							
Freezing Pt.	°C					-52	-46							
Cloud Pt.	°C								-9	+19				
Pour Pt.	°C	-21							-12	+19		+30	+33	+100
Cetane Index									47,3	51,1				
Total Nitrogen	%m/m											0,31	0,42	
Basic Nitrogen	ppm													
Nickel	ppm	36									< 1 [c]	61	66	99
Vanadium	ppm	108									< 2 [c]	181	196	295
P.Value												2,1	3,5	
Asphaltenes in NC7	%m/m	4,8										8,05	8,70	13,10
R.C.C.	%m/m	10,0									0,2	16,9	18,3	27,4
Penetration @ 25°C	dmm													
UOP K Factor		11,7									11,5	11,2	11,1	

TBP Distillation	
Cut Point	%m/m Cum
C1	0,00
C2	0,00
C3	0,09
IC4	0,22
NC4	0,83
IC5	1,36
NC5	2,17
80	6,10
100	8,83
120	9,69
140	10,72
160	12,82
180	15,31
210	18,68
230	21,16
250	23,51
270	26,34
290	29,09
320	33,23
350	37,65
370	40,66
400	45,11
530	63,50
550	66,57

NB: see corresponding tabs for notes associated to each cut.

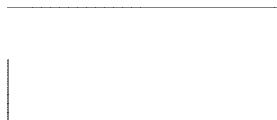
[c] calculated value PAGINA 13 DI 14



EniTecnologie S.p.A.

Lab. Caratterizzazione Materie Prime e Semilavorati

Via F. Maritano, 26 - 20097 S. Donato Milanese
 Telefax: 02520.56612 Telefono: 0252046774
 e-mail: silvia.pavoni@euron.eni.it



SOUEDIE		23,1			
State	SIRIA	Report	R.272	Record	SOU02.2003.09.ET



EniTecnologie S.p.A.

Lab. Caratterizzazione Materie Prime e Semilavorati

Società per azioni con Sede legale in S. Donato Milanese
Capitale sociale E. 28.612.000,00 interamente versato
Registro Imprese di Milanc
Codice Fiscale e Partita IVA 07562850151
REA n. 1166593
VAT id. n. IT07562850151

Via F. Maritano, 26 - 20097 S. Donato Milanese
Telefax: 02520.56612
Telefono: 0252046774
e-mail: silvia.pavoni@euron.eni.it

R.175.10.2005

SFO.01.2005.10.ET

OTT-2005 OC175

RESIDUO FZY

10,4 °API

Data

PAGINA 1 DI 4



RESIDUO FZY

10,4 °API

OTT-2005 SFO.01.2005.10.ET R.175.10.200 OC175

Origine

nazione UCRAINA, YUZHNY
area

Committente

società SUT
unità

Prelievo

data
n/c
base TARANTO

Ricevimento campione

12/09/05

Analizzato dal

13/09/05

al

15/09/05

TABLE INDEX

Tab. 1 YIELDS AND CHARACTERISTICS

Tab. 2 METHODS AND PRECISION OF RESULTS

NOTE

- 1 I risultati si riferiscono ai valori
- 2 relativi al contenuto in
- 3

Range :	FUEL OIL	DISTILLATES			RESIDUES		METHOD(*)	
		IVT-230	230-350	350-530	350+	530+		
Yields:	%m/m	2,00	14,60	21,70	83,10	61,40	ASTM D2892/D1160	
	%v/v	2,30	15,20	21,70	82,10	60,40		
Density @15°C	Kg/l	0,9965	0,8965	0,9583	0,9969	1,0080	1,0130	ASTM D1298/D4052/D70
Specific Gravity		0,9971	0,8970	0,9589	0,9975	1,0086	1,0136	
API Gravity @ 60°F		10,4	26,2	16,1	10,4	8,8	8,1	
✓ Water by distillation	%v/v	0,50						ASTM D 95
✓ Water (KF Method)	%m/m							ASTM D 4377
✓ Sediments by extraction	%m/m							ASTM D 473
✓ Salt content	%m/m	0,006						IP 265
✓ Flash point	°C	+128						IP 34
✓ Viscosity @ 50°C	mm ² /s	635,4	1,010	3,066	61,67	8210,0	143065,6	ASTM D 445/D 341
✓ Viscosity @ 100°C	mm ² /s				9,03	221,8	1521,4	ASTM D 445
✓ Viscosity @ 50°C	VBN	38,08		15,36	31,61	42,93	46,94	
✓ Sulphur	%m/m	2,71	1,60	2,28	2,20	2,80	3,01	ASTM D 4294/D 4239-C
✓ Total Nitrogen	%m/m				0,16	0,35	0,42	ASTM D 3228
✓ Basic Nitrogen	ppm				471			UOP 313
✓ Neutralization Value	mgKOH/g	0,23			0,10			IP 213
✓ Bromine number	gBr/100g				0,0			IP 130
✓ Freezing Pt.	°C		-40					ASTM D 2386
✓ Cloud Pt.	°C			-14				ASTM D 2500
✓ Pour Pt.	°C	+3		-14	+36			ASTM D 97
✓ Cetane Index				22,1				ASTM D 4737
✓ Nickel	ppm	47			< 0,14	56	76	IP 288
✓ Vanadium	ppm	157			< 1,9	189	256	IP 288
✓ Sodium	ppm							IP 288
✓ Iron	ppm							Atomic Abs.
✓ Aluminium	ppm	9						Atomic Abs.
✓ Silicon	ppm	14						Atomic Abs.
✓ P.Value		2,6						SMS 1600-1
✓ R.C.C.	%m/m	12,40			0,50	14,79	19,84	ASTM D 4530
✓ Ash	%m/m							ASTM D 482
✓ Asphaltenes in NC7	%m/m	3,8				4,6	6,24	IP 143
✓ HFT (esistenti)	%m/m	0,05						IP 375
✓ HFT (potenziali)	%m/m	0,06						IP 390
✓ Penetration @ 25°C	dmm							CNR BU 24
✓ UOP K Factor		11,4			10,9	11,3		UOP 375

(*) see page 4 for precision of results and method revision date

[c]=Calculated Value



EniTecnologie S.p.A.

Lab. Caratterizzazione Materie Prime e Semilavorati

Via F. Maritano, 26 - 20097 S. Donato Milanese - Telefono: 0252046774 - Telefax: 02520.56612

e-mail: silvia.pavoni@enitecnologie.eni.it

10,4		
State	Report	FO.01.2005.10.ET

PAGINA 3 DI 4



Tab. 2: Methods and precision of results

DESCRIPTION		METHOD	Repeat ability [^]
Tbp distillation yields	%m/m	ASTM D2892:90	not established
D1160 distillation yields	%m/m	ASTM D1160:95	± 1,9-6,5
Density @15°C	Kg/l	ASTM D1298:85	± 0,0005
Density @15°C	Kg/l	ASTM D4052:95	± 0,0001
Density @15°C	Kg/l	ASTM D70:86	± 0,002 ÷ 0,003
Water by distillation	%v/v	ASTM D 4006:95	± 0,08
Water (KF Method)	%m/m	ASTM D 4377:93	0,034*x ^{-1/3}
Sediments by extraction	%m/m	ASTM D 473:95	0,017+0,255*x
Salt content	%m/m	IP 265:70	± 0,3*√x
Flash point	°C	IP 34:88	± 2 ÷ 5,5
Viscosity @ 50°C	mm ² /s	ASTM D 445:96	± 0,015*x
Viscosity @ 50°C	mm ² /s	ASTM D 341:93	
Viscosity @ 100°C	mm ² /s	ASTM D 445:96	0,013*(x+8)
Viscosity @ 50°C	VDN		
Sulphur	%m/m	ASTM D 4294:95	0,029*(x+0,6)
Sulphur	%m/m	ASTM D 4239-C:94	0,03+0,04x
Sulphur	ppm	ASTM D 3120:96	± 28%
Mercaptan Sulphur	ppm	ASTM D 3227:96	0,0007+0,027x
Hydrogen Sulphide	ppm	UOP 163:80	± 0,1 ÷ 0,8
Total Nitrogen	ppm	ASTM D 4629:96	0,15*x ^{-0,54}
Total Nitrogen	%m/m	ASTM D 3228:95	± 0,01%
Basic Nitrogen	ppm	UOP 313:70	± 0,5
Neutralization Value	mgKOH/g	IP 213:88	† established
Acid Number	mgKOH/g	ASTM D 974:97	0,03 ÷ 0,12
Bromine number	gBr/100g	IP 130:92	± 0,13*x ^{-2/3}
Distillation of Petroleum Products	°C	ASTM D 86:96	method (tab. 7)
Gas Chromatography of Naphthas	%m/m	ASTM D 5134:92	method (tab. 3)
Hydrocarbon types by FIA	%v/v	ASTM D 1319:95	± 0,3 ÷ 2,1
Naphthenes	%v/v	ASTM D 2159:93	± 1%
Aromatics hydrocarbon types	%m/m	IP 391:90	method (9.1)
Molecular weight		ASTM D 2502:92	± 3
Smoke Pt.	°C	ASTM D 1322:97	± 2 mm
Freezing Pt.	°C	ASTM D 2386:97	± 0,8°C
Cloud Pt.	°C	ASTM D 2500:91	± 2°C
Pour Pt.	°C	ASTM D 97:93	± 3°C
Pour Pt.	°C	ASTM D 5853:95	± 3°C
Cetane Index		ASTM D 4737:96	† established
Nickel	ppm	IP 288:95	0,375*x ^{-0,801}
Vanadium	ppm	IP 288:95	0,150*x ^{-0,976}
Sodium	ppm	IP 288:95	0,186*x ^{-0,914}
Iron	ppm	ASTM D 5863:95	± 0,98
Wax content	%m/m	BP 237:55	† established
P. Value		SMS 1600-1:83	0,05 ÷ 0,25
R.C.C.	%m/m	ASTM D 4530:93	0,0770*x ^{-2/3}
Ash	%m/m	ASTM D 482:95	0,003 ÷ 0,007
Asphaltenes in NC7	%m/m	IP 143:90	± 0,1*x
HFT (esistenti)	%m/m	IP 375:94	± 0,123*√x
HFT (potenziali)	%m/m	IP 390:94	± 0,123*√x
Penetration @ 25°C	dmm	CNR BU 24:71	1 dmm ÷ 3 %
UOP K Factor		UOP 375:59	† established

[^] WHERE X IS THE AVERAGE OF RESULTS BEING COMPARED

	CRUDE OIL	YELDS AND CHARACTERISTICS OF PRODUCTS												
		GAS	NAPHTHAS			KEROSES		GASOILS		V.DIST.	RESIDUES			
		C1-C4	C5+70	70+160	70+180	160+230	180+230	230+370	370+410	370+530	370 +	410 +	530 +	
TBP Range :														
TBP Yield %wt		1,29	2,88	9,74	12,07	9,28	6,95	23,16	6,44	21,46	53,65	47,21	32,19	
TBP Yield %vol		2,12	3,91	11,74	14,41	10,33	7,67	23,83	6,32	20,58	48,45	42,13	27,87	
Density @15°C	Kg/l	0,8890	0,5393	0,6566	0,7374	0,7449	0,7984	0,8056	0,8642	0,9054	0,9269	0,9843	0,9962	1,0268
API Gravity @ 60°F		27,6												
Viscosity @ 20°C	cSt	31,45												
Viscosity @ 50°C	VBN						3,73	4,83	16,14	25,72	30,29	40,58	42,69	47,44
Sulphur	%wt	2,78		0,0491	0,0920	0,1469	0,6400	0,7284	2,32	2,91	2,99	3,92	4,06	4,54
Mercaptan Sulphur	ppm			314	154	285	324							
Hydrogen Sulphide	%wt	< 0,001		0,0025	0,0017		0,0012							
Acidity	mgKOH/g	0,17					0,06		0,08	0,11	0,09			
Paraffins	%vol			91,4	63,5	61,6								
Naphtenes	%vol			8,0	32,1	33,0								
Aromatics	%vol			0,6	4,4	5,4	17,3	19,9						
N+2A				9,2	40,9	43,8								
Smoke Pt.	mm						25	24						
Freezing Pt.	°C						-53	-48						
Cloud Pt.	°C								-5	26				
Pour Pt.	°C	-24							-6	21		30	33	66
Cetane Index									50,2	57,8				
Total Nitrogen	%wt													
Basic Nitrogen	ppm													
Nickel	ppm	38,2									< 0,14	71,3	81,0	118,8
Vanadium	ppm	122,7									< 1,9	228,8	260,0	380,9
P.Value												2,5	2,7	3,3
Asphaltenes in NC7	%wt	2,40										4,47	5,08	7,45
R.C.C.	%wt	6,08								0,25		11,33	12,88	18,72
Penetration @ 25°C	dmm													95
UOP K Factor		11,80									11,65	11,50	11,45	

TBP Distillation	
Cut Point	%Wt Cum
C1	
C2	0,03
C3	0,54
IC4	0,79
NC4	1,29
IC5	1,86
NC5	2,58
70	4,17
100	6,91
120	8,81
140	11,02
160	13,91
180	16,24
210	20,38
230	23,19
250	26,30
270	29,58
290	32,66
320	38,36
350	43,14
370	46,35
390	49,73
410	52,79
530	67,81
550	70,19

DataBook Riferimenti

Agip Petroli SpA
Laboratorio di Ravenna

	URAL HEAVY		27,6
State	RUSSIA	Report	URHE93-03RA

Tab. 8: SUMMARY

	CRUDE OIL	YIELDS AND CHARACTERISTICS OF PRODUCTS													
		GAS		NAPHTHAS			KEROSENES		GASOILS			V. DIST.			RESIDUES
TBP Range :		C1-C4	C5-80 [c]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+		
TBP Yield %m/m		0,25	2,76	4,16	5,76	6,63	5,03	23,83		20,83	62,37		41,54		
TBP Yield %v/v		0,45	3,80	5,13	7,05	7,75	5,83	26,05		20,92	56,88		35,96		
Density @15°C Kg/l	0,9451	0,5162	0,6871	0,7663	0,7725	0,8086	0,8150	0,8643		0,9412	1,0364		1,0918 [c]		
API Gravity @ 60°F	18,1														
Viscosity @ 20°C mm ² /s	7246														
Viscosity @ 50°C VBN						1,98	4,26	16,28		32,87	50,85		59,86		
Sulphur %m/m	2,25		0,0021	0,0301	0,0468	0,1947	0,2257	0,85		1,46	3,19		4,06		
Mercaptan Sulphur ppm	25														
Hydrogen Sulphide %m/m															
Acidity mgKOH/g	0,89							0,15		1,19					
Paraffins %v/v			75,3	50,2	50,5										
Naphthenes %v/v			20,5	26,4	25,6										
Aromatics %v/v			4,2	23,4	23,9	18,4	16,2								
N+2A			29,0	73,2	73,4										
Smoke Pt. mm						21	20								
Freezing Pt. °C						-55	-34								
Cloud Pt. °C								-8							
Pour Pt. °C	-9							-9		+27	+62		+51		
Cetane Index								50,7							
Total Nitrogen %m/m										0,10	0,46		0,64		
Basic Nitrogen ppm															
Nickel ppm	57									< 1 [c]	91		137		
Vanadium ppm	6									< 2 [c]	10		15		
P.Value											2,5		0,0		
Asphaltenes in NC7 %m/m	11,6										18,60		27,95		
R.C.C. %m/m	12,6									0,5	20,2		30,0		
Penetration @ 25°C dmm															
UOP K Factor	11,8									11,6	11,2				

TBP Distillation	
Cut Point	%m/m Cum
C1	0,00
C2	0,04
C3	0,08
IC4	0,12
NC4	0,25
IC5	0,49
NC5	0,80
80	3,01
100	4,33
120	5,10
140	6,01
160	7,17
180	8,77
210	11,63
230	13,80
250	16,41
270	19,95
290	23,44
320	29,43
350	34,78
370	37,63
530	58,46
550	59,96

NB: see corresponding tabs for notes associated to each cut.

[c] calculated value PAGINA 13 DI 14



Lab. Caratterizzazione Materie Prime e Semilavorati
 Via F. Maritano, 26 - 20097 S. Donato Milanese
 Telefax: 02520.56612 Telefono: 0252046774
 e-mail: silvia.pavoni@euron.eni.it

	VEGA BLEND				18,1	
State	ITALIA	Report	R.464	Record	VEG01.2005.07.ET	