

Espoir (32.31 API, 0.33 Sul WT%)

Crude Name:	Espoir	API Gravity	API	32.31	Component	Wt %	Vol %
Crude ID:	ESPOIR2006	Density @15 deg C	KG/L	0.8633	C2 Minus	--	0
Country:	Ivory Coast	Sulfur	WT%	0.33	C3	0.01	0.017
Region:	Africa	Reid Vapor Pressure	kPa	15	IC4	0.13	0.199
State:	--	Nitrogen	ppm	1182	NC4	0.18	0.266
Assay Year:	2006	Pour Point	deg C	0	IC5	0.53	0.733
Assay Library:	COMET	Neut or TAN No.	mgKOH/g	0.05	NC5	--	--
Assay Source:	COMET	Vanadium	ppm	1.6	CycP	--	--
Sulfur Type:	Low	Nickel	ppm	4.5	IC6	--	--
Crude Type:	Light	Viscosity @104 F (40 C)	cSt	7	NC6	--	--
Chemical Class:	Intermediate	Viscosity @122 F (50 C)	cSt	4.8 C	Benzene	--	--

Property	Unit	WC	GAS	NAP1	NAP2	KERO	LDIST	HDIST	LVGO
Initial Boiling Pt	deg C	--	IBP	15	85	175	250	300	360
End Boiling Pt	deg C	--	15	85	175	250	300	360	450
Cut Yield (Vol%)	LV%	100	1.3	4.49	16.34	13.81	10.54	11.57	13.97
Cut Yield (Wgt%)	WT%	100	0.83	3.51	14.51	13.32	10.53	11.74	14.55
API Gravity	API	32.31	125.7	79.28	53.86	39.18	33.25	30.6	26.48
Specific Gravity (@60F)	--	0.8638	0.5502	0.6713	0.7634	0.8291	0.8589	0.8729	0.8957
Density @15 deg C	KG/L	0.8633	0.5502	0.6712	0.7631	0.8286	0.8584	0.8724	0.8952
K-Factor	--	12.14 C	14.23	12.47	11.8	11.51	11.54	11.7	11.84
Molecular Weight	--	220 C	60	81	113	161	205	257	356
Hydrogen	WT%	--	18.5	16	14.3	13.3	13	12.9	12.7
Sulfur	WT%	0.33	0	0.01	0.035	0.079	0.157	0.237	0.367
Mercaptan Sulfur	ppm	1	0	0	1	2	3	4	5
Nitrogen	ppm	1182	0	0	0	0	0	48.3	695.3
Basic Nitrogen	ppm	378	0	0	0	0	0	1.9	199.9
Research Octane clear	--	--	100.3	79.3	59	35.7	21.8	--	--
Motor Octane clear	--	--	99.4	77.4	56.6	33.3	19.5	--	--
Flash Point (API)	deg C	--	--	--	9	67	105	128	149
Reid Vapor Pressure	kPa	15	636.5	111.29	6.37	0.22	0.14	--	--
Paraffins (Total) Vol	LV%	--	98.8	60	31.9	25.6	20.5	20.9	19.1
iso-Paraffins Vol	--	--	--	--	--	--	--	--	--
n-Paraffins Vol	--	--	--	--	--	--	--	--	--
Naphthenes Vol	LV%	--	1.2	37.6	55.5	51.4	51.5	49.5	47.9

Tullow Oil Crude Assay

Property	Unit	WC	GAS	NAP1	NAP2	KERO	LDIST	HDIST	LVGO
Aromatics Vol	LV%	--	0	2.5	12.6	23	28	29.6	33
N + 2A	LV%	--	1.24	42.48	80.74	97.37	107.56	108.65	113.89
Freeze Point	deg C	--	-179	-165	-115	-63	-28	-4	26
Cloud Point	deg C	--	-182	-168	-117	-65	-30	-7	23
Pour Point	deg C	0	-182	-169	-118	-66	-33	-7	24
Naphthalenes	WT%	--	--	--	--	2.6	--	--	--
Smoke Point (ASTM)	mm	--	--	--	31.17	20.25	15.61	14.34	12.22
Aniline Point	deg C	--	56	52	46	54	62	73	87
Neut or TAN No.	mgKOH/g	0.05	0	0	0	0.01	0.03	0.05	0.08
Cetane Index	--	--	16.3	18.6	23	36.7	44.4	47.6	41.3
Cetane Index (D4737)	--	--	155.5	42.3	34.1	37.7	45.5	55.7	63.4
Cetane Index (D4737-B)	--	--	87.5	56.7	43.2	39.6	45	54.6	66.1
Refractive Index @ 20deg C	--	--	1.3504	1.3819	1.4277	1.4642	1.4806	1.4879	1.5001
Refractive Index @ 70deg C	--	--	1.3255	1.3578	1.4048	1.4426	1.4601	1.4684	1.4819
Viscosity @ 68 F (20 C)	cSt	18.5	0.3	0.5	5.8	20.8	18.8	17.9	43.4
Viscosity @104 F (40 C)	cSt	7	0.3	0.4	0.7	1.4	3.1	6.9	28.3
Viscosity @122 F (50 C)	cSt	4.8 C	0.3	0.3	0.4	0.7	1.8	4.8	23.4
Viscosity @212 F (100 C)	cSt	1.4 C	0.3	0.3	0.4	0.7	1.3	2.2	5.4
Viscosity @275 F (135 C)	cSt	0.8 C	0.3	0.3	0.3	0.5	0.9	1.5	3
MCRT carbon number	WT%	1.73	0	0	0	0	0	0.01	0.08
Vanadium	ppm	1.6	0	0	0	0	0	0	0.06
Nickel	ppm	4.5	0	0	0	0	0	0.02	0.21
Vanadium + Nickel Total	ppm	6.1	0	0	0	0	0	0.03	0.27
Iron	--	--	--	--	--	--	--	--	--
Wax	WT%	5.9	0	0	0	0	0.03	6.44	11.26
Asphaltenes	WT%	0.02 C	0	0	0	0	0	0	0

Property	Unit	ARES	HVGO	VRES
Initial Boiling Pt	deg C	360	450	565
End Boiling Pt	deg C	FBP	565	FBP
Cut Yield (Vol%)	LV%	41.96	13.75	14.24
Cut Yield (Wgt%)	WT%	45.56	14.82	16.18
API Gravity	API	20.11	21.26	13.33
Specific Gravity (@60F)	--	0.9333	0.9263	0.977
Density @15 deg C	KG/L	0.9328	0.9257	0.9764
K-Factor	--	11.99	11.96	12

Property	Unit	ARES	HVGO	VRES
Molecular Weight	--	518	507	910
Hydrogen	WT%	12.3	12.4	11.8
Sulfur	WT%	0.568	0.542	0.773
Mercaptan Sulfur	ppm	7	7	10
Nitrogen	ppm	2621.6	1725.7	5175.1
Basic Nitrogen	ppm	882.6	626.2	1731.5
Research Octane clear	--	--	--	--
Motor Octane clear	--	--	--	--
Flash Point (API)	deg C	155	166	172
Reid Vapor Pressure	kPa	--	--	--
Paraffins (Total) Vol	LV%	14.4	15.6	8.6
iso-Paraffins Vol	--	--	--	--
n-Paraffins Vol	--	--	--	--
Naphthenes Vol	LV%	45.5	46	--
Aromatics Vol	LV%	40.1	38.3	--
N + 2A	LV%	125.69	122.69	--
Freeze Point	deg C	--	55	--
Cloud Point	deg C	--	52	--
Pour Point	deg C	32	52	46
Naphthalenes	WT%	--	--	--
Smoke Point (ASTM)	mm	8.6	9.64	6.16
Aniline Point	deg C	103	102	117
Neut or TAN No.	mgKOH/g	0.14	0.15	0.17
Cetane Index	--	19.9	18.6	--
Cetane Index (D4737)	--	--	--	--
Cetane Index (D4737-B)	--	--	--	--
Refractive Index @ 20deg C	--	1.5208	1.5168	1.5449
Refractive Index @ 70deg C	--	1.4989	1.4991	1.5154
Viscosity @ 68 F (20 C)	cSt	518.9	1036	9193.9
Viscosity @104 F (40 C)	cSt	362.5	435.6	16829.4
Viscosity @122 F (50 C)	cSt	307.8	299.7	22760
Viscosity @212 F (100 C)	cSt	26.2	27.3	456.5
Viscosity @275 F (135 C)	cSt	9.6	10.9	89.6
MCRT carbon number	WT%	3.82	0.2	10.5
Vanadium	ppm	3.85	0.17	10.62
Nickel	ppm	11.43	0.47	31.57

Property	Unit	ARES	HVGO	VRES
Vanadium + Nickel Total	ppm	15.28	0.63	42.18
Iron	--	--	--	--
Wax	WT%	12.35	12.04	13.61
Asphaltenes	WT%	0.03	0	0.1

C-Calculated Value

Comments:

(Put comments about crude assay here)

*** The GC Analysis Covers 0.0 LV% of crude up to a TBP of 0.0 deg. C.

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Crude Assay Data from H/COMET Database 9/14/2017 9:16:13 AM

