

Mutineer-Exeter Crude Oil Production Assay

Summary of Major Cuts

	Whole Crude	Naphtha			Kerosene		Distillates		Vacuum Gas Oils	Residues	
Boiling Range °C		18-70	70-140	140-190	140-230	190-230	230-340	230-360	360-510	360+	510+
Boiling Range °F		64-158	158-284	284-374	284-446	374-446	446-644	446-680	680-950	680+	950+
Yield Range vol%		0.11-2.15	2.15-23.19	23.19-40.21	23.19-53.01	40.21-53.01	53.01-81.14	53.01-84.76	84.76-98.71	84.76-100	98.71-100
Yield Range wgt%		0.21-1.93	1.93-20.85	20.85-36.97	20.85-49.67	36.97-49.67	49.67-79.34	49.67-83.27	83.27-98.45	83.27-100	98.45-100
Yield vol%		2.05	21.03	17.03	29.83	12.8	28.13	31.74	13.95	15.24	1.29
Yield wgt%		1.72	18.92	16.12	28.82	12.69	29.68	33.61	15.18	16.73	1.55
API Gravity	43.4	83.9	62.1	53	49.4	44.8	34.2	33.7	29.5	27.8	13.9
Density 15° C g/ml	0.8091	0.6566	0.7305	0.7665	0.7819	0.8023	0.8536	0.8561	0.8784	0.8876	0.9729
Sulphur as Mercaptans ppm	<3	<3	<3	<3	<3						
Total Sulphur wgt %	0.033						0.027	0.035	0.074	0.096	0.269
Total Sulphur ppm		<3	<3	3	13	27					
Total Nitrogen ppm	32							12	62	183	1046
Basic Nitrogen ppm	17							54		80	
Paraffins vol %		97	59	62							
Naphthenes vol%		3	41	32							
Aromatics vol%		0	0.2	3.8							
Unidentified vol%											
Reid Vapour Pressure kPa	9	68.25	12.5								
Reid Vapour Pressure psi	1.3	9.9	1.8								
Total Acid Number mg KOH/g	<0.05				0.011			0.04	0.1	0.13	0.26
Research Octane Number (calc.)		72.5	57.4								
Viscosity -20°C cSt					3.02	4.78					
Viscosity 20°C cSt	3.03				1.44	1.97					
Viscosity 40°C cSt	2.23				1.1	1.43		3.61			
Viscosity 50°C cSt									16.9	21.2	
Viscosity 100°C cSt									4.52	5.65	102.6
Freezing Point °C					<-60	-42					
Smoke Point mm				44	38	30					
Aromatics (FIA) vol%				3.1	6	10.4					
Naphthalenes vol%					0.08	0.2					
Aniline Point °C					64.7			68.4		96.4	
Aniline Point °F					148.5			155.1		205.5	
Aniline Gravity Product					7329			5225		5713	
Flash Point (Abel) °C					40.5						
Cetane Index (D976)								47.6			
Saybolt Colour					30	30					
ASTM colour								L0.5			
Copper Corrosion					1b			1b			
Cloud Point °C								-13	-7		
Pour Point °C	12							-12	-6	39	42
Micro Carbon Residue wgt%	0.2								<0.1	0.9	60
Gross Heating Value MJ/kg	46.15									44.95	13.3
Nett Heating Value MJ/kg	43.22									42.27	
Wax Content wgt%	3							<1	30.8	27.6	
Ash wgt%	0.004									0.014	0.034
Asphaltenes wgt%	0.03								0.02	0.18	3.6
UOP K Factor	11.9								12.2	12.1	
Saturates (HPLC) wgt%							65.2				
Aromatics (1 ring) HPLC wgt%							17.5				
Aromatics (2 ring) HPLC wgt%							8				
PNA (HPLC) wgt%							9.3				
Carbon Content wgt%	84									87.29	
Hydrogen Content wgt%	13.88									13.81	
Nickel ppm	<1								<1	<1	9
Vanadium ppm	<1								<1	<1	8
Iron ppm	<1								<1	1	8
Sodium ppm	2								<1	10	41
Copper ppm	<1								<1	<1	<1
Mercury ppb	3										

Mutineer-Exeter Crude Oil Refining Characteristics

Whole Crude

Mutineer-Exeter is a light, sweet crude of 43.4 API Gravity and 0.03 wt.% sulphur offering up to 62 volume % yield of total middle distillate fractions. The straight-run distillate fractions exhibit very low sulphur contents and are generally naphthenic in character with very good cold-test properties. They require minimal treatments for further processing into premium grade products and blend-stocks. The crude exhibits a pour point of +12° C due to a moderate wax content of 3 wt%, primarily confined to the heavier residue fraction.

Naphtha

Over 20 vol% yield reforming grade naphtha is available from the Mutineer-Exeter crude blend. Although low in aromatics, its highly naphthenic character coupled with a high proportion of iso-paraffins provide an excellent reformer feedstock.

Kerosene

The naphthenic qualities of the stock continue into the kerosene range providing excellent cold-test properties for this fraction. Key properties comprise an exceptionally low sulphur content, high smoke point and low freeze point. With an aromatics content of under 10 vol% and a smoke point in excess of 30 mm, this fraction offers an ideal blendstock for the production of dual purpose kerosene, (DPK).

Gasoil/Diesel

The Mutineer-Exeter crude blend offers a high yield (in excess of 30 vol%) of a low sulphur straight run gasoil. Sulphur content of the 230-360° C fraction is around 350 ppm and this fraction exhibits good cetane quality combined with sub-zero cloud and pour points.

Residue

The Mutineer-Exeter crude blend produces a waxy atmospheric residue, with a low sulphur content of around 0.1 wt%. Being almost free of metals and other contaminants, the residue may be used as feedstock to a residue cracker (RCCU), or it may be vacuum reduced providing a very high yield of waxy vacuum gasoil for use as feedstock to a hydrocracking complex.