



Middle East

CAPABILITY MANUAL



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We offer the following services

INSPECTION

- Marine survey
- Bunker survey
- De-ballasting monitoring
- On hire/off hire survey
- Inspection of vessel tanks
- Inter tank transfer operation
- Doping operation
- Deslopping operation
- Supervision of Loading
- Discharge supervision
- Loss minimisation
- Investigation of loss/shortage
- Draft survey
- ROB survey
- Sampling
- Stock verification
- Stock monitoring
- Inspection of Pipe lines

ANALYSIS

- ❖ Condensate/Crude oil
- ❖ Potable/ Fresh /Waste water
- ❖ Biological & Microbiological testing
- ❖ Naphtha
- ❖ Aviation fuel
- ❖ Gasoline
- ❖ Bunker, Diesel & Long Residue
- ❖ Asphalt & Bitumen
- ❖ Lubricant, Transformer Oil
- ❖ Gas
- ❖ Petrochemical, Solvent & Aromatics
- ❖ Fertilizer
- ❖ Fire Fighting Foam
- ❖ Food
- ❖ Coolant
- ❖ Detergent
- ❖ Halon
- ❖ Tea
- ❖ Sugar
- ❖ Metals
- ❖ Agricultural products
- ❖ Chemicals
- ❖ Pharmaceuticals
- ❖ Dyes and dye intermediate
- ❖ Processed and packaged food products
- ❖ Stack Monitoring

CALIBRATION

Temperature, Pressure, Weight (Mass) & Storage Tanks

MAN POWER SUPPLY

**TECHNICAL SPECIALISTS, CHEMISTS & LABORATORY TECHNICIANS PROVIDED TO CUSTOMER LOCATIONS TO UNDERTAKE QUALITY CONTROL ANALYSIS.
SPECIAL PROJECTS AT OFFSHORE & ONSHORE FACILITIES.**

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CONDENSATE/CRUDE OIL ANALYSIS

TEST, UNIT	METHOD
Acidity, mg KOH/g	ASTM D 664
Acidity, mg KOH/g	ASTM D 974
Acidity, mg KOH/g	IP 139
API Gravity @ 60 °F	ASTM D 1298
API Gravity @ 60 °F	ASTM D 4052
API Gravity @ 60 °F	ASTM D 5002
API Gravity @ 60 °F	IP 365
Appearance	Visual
Arsenic, ppb	UOP 296
Arsenic, ppb	UOP 387
Ash Content, % Wt	ASTM D 482
Asphaltine Content, % Wt	IP 143
B S & Water, % Vol	ASTM D 1796
B S & Water, % Vol	ASTM D 2709
B S & Water, % Vol	ASTM D 4007
Benzene Content, % Vol	ASTM D 3606
Carbon Residue % Wt	ASTM D 524
Carbon Residue % Wt	IP 14
Carbon Residue on 10 % Residue	ASTM D 189
Carbon Residue on 10 % Residue	IP 13
Cetane Index	ASTM D 976
Chloride Content,ppm	ASTM D 808
Chloride, ppm	ASTM D 4929
Chloride, ppm	ASTM D 5194
Chloride, ppm	MCT
Chloride, ppm	UOP 395
Chloride, ppm	UOP 588
Chloride, ppm	UOP 779
Cloud Point, °C	ASTM D 2500
Cloud Point, °C	IP 219
Colour Saybolt	ASTM D 156
Composition upto C ₃₆ +	GC
Copper Corrosion (3hrs at 100°C),Rating	ASTM D 130
Density, kg/L	ASTM D 1298
Density, kg/L	ASTM D 4052
Density, kg/L	IP 150
Distillation, °C	ASTM D 86
Distillation, °C	IP 123

CONDENSATE/CRUDE OIL ANALYSIS

TEST, UNIT	METHOD
Existing Gum, mg/100 ml	ASTM D 381
Finger Print Analysis	FT IR
Flash Point, °C	ASTM D93
Flash Point, °C	IP 170
Hydrocarbon Types, % Vol,	GC DHA
Hydrogen Sulphide Content, ppm	IP 103 Method B
Hydrogen Sulphide Content, ppm	Mobil MM 787
Hydrogen Sulphide Content, ppm	UOP 169
Hydrogen Sulphide on Vapour Space, ppm	ASTM D 5705
Kinematic Viscosity, cSt	ASTM D 445
Kinematic Viscosity, cSt	IP 71
Kvalue	UOP 375
Lead Content, ppb	IP 224
Lead Content, ppb	UOP 350
Mercaptan Sulphur Content, ppm	ASTM D 3227
Mercaptan Sulphur Content, ppm	ASTM D 5623
Mercaptan Sulphur Content, ppm	IP 104
Mercaptan Sulphur Content, ppm	IP 342
Mercury, ppb	AAS Cold Vapour
Mercury, ppb	UOP 938
Metals (Trace), ppm	UOP 391
Metals Content, ppm	AAS
Metals Content, ppm	ICP
Micro Carbon Residue % Wt.	ASTM D 4530
Micro Carbon Residue on 10% bottom, % Wt	ASTM D 4530
MTBE (Oxygenates), % Wt	ASTM D 4815
Nitrogen (Basic), ppm	UOP 430
Nitrogen Content, % Wt	ASTM D 3228
Nitrogen Content, ppm Wt	ASTM D 4629
Nitrogen Content, ppm Wt	ASTM D 5762
Oxygenates (Trace), ppm Wt	LOWOX-GC
Paraffin wax, %wt	UOP 46
PIONA	G C DHA (ASTM D 6730)
PONA Analysis by GC	ASTM D 5443
Pour Point, °C	ASTM D 97
Pour Point, °C	IP 15
R.V.P @ 100 °F, psi	ASTM D 323
R.V.P @ 100 °F, psi	IP 69
Relative Density	ASTM D 1298

CONDENSATE/CRUDE OIL ANALYSIS

TEST, UNIT	METHOD
Relative Density	ASTM D 4052
Salt Content, ptb	ASTM D 3230
Sediment by Extraction, % Wt.	ASTM D 473
Sediment by Extraction, % Wt.	IP 53
Sediment by Mem. Filtration, % Wt	ASTM D 4807
Sulphur Content, %wt	ASTM D 4294
Sulphur Content, ppm Wt	ASTM D 5453
True Boiling Point (Assay), °C	ASTM D 2892
Water Content, % Vol	ASTM D 4006
Water Content, % Vol	IP 358
Water Content, ppm	ASTM D 4377
Water Content, ppm	ASTM D 4928
Water by distillation, % Vol	ASTM D 95

POTABLE / FRESH WATER ANALYSIS

TEST, UNIT	METHOD
Appearance	APHA 2110 (Visual)
Acidity	APHA 2310 B
Aluminium	APHA 3111 D
Aluminium	APHA 3120 B
Alkalinity	APHA 2320 B
Ammonia	APHA 4500 NH3 B & C
Antimony	APHA 3111 B
Arsenic	APHA 3114 B & C
Selenium	APHA 3114 B & C
Bicarbonate	APHA 2320 B
Barium	APHA 3111 D
Barium	APHA 3120 D
Bismuth	APHA 3111 B
Bismuth	APHA 3120 B
Boron	APHA 3111 D
Boron	APHA 3120 B
Bromide	APHA 4500 Br.B
Cadmium	APHA 3111 B
Cadmium	APHA 3120 B
Calcium	APHA 3111 B
Calcium	APHA 3500 Ca.B
Calcium	APHA 3120B
Carbon Dioxide	APHA 4500 Co2 B, C, D
Carbonate	APHA 2320 B
Chromium (Total)	APHA 3111 B
Chromium (Total)	APHA 3120 B
Chromium (Hexavalent)	APHA 3500 Cr.B
Chloride	APHA 4500 Cl.B
Chlorine	APHA 4500 - Cl B, G
Colour	APHA 2120 B
Copper	APHA 3111 B
Copper	APHA 3120 B
Cobalt	APHA 3111B
Cobalt	APHA 3120 B
Cyanide	APHA 4500 CN-E, D
Cyanide	APHA 4500 CN D
Detergent (Anionic)	APHA 5540
Electrical Conductivity	APHA 2510 B

POTABLE / FRESH WATER ANALYSIS

TEST, UNIT	METHOD
Fluoride	APHA 4500 F-D
Floatables (Particulate)	APHA 2530 B
Fixed and volatile solids ignited @ 550°C	APHA 2540 E
Hydrogen Sulphide	APHA 4500 S ²
Hydroxyl	APHA 2320 B
Hydrazine	UV Spectrometer
Hardness	APHA 2340 B & C
Iron	APHA 3111 B
Iron	APHA 3500 Fe-B
Iodine	APHA 4500 I
Iodide	APHA 4500 I C
Lead	APHA 3111 B
Lithium	APHA 3111 B
Magnesium	APHA 3111 B
Magnesium	EDTA Titrimetry
Magnesium	APHA 3500 Mg.B
Mercury	APHA 3112 B
Molybdenum	APHA 3111 D
Metals (Al, Ba, Be, Ca, Mo, Si, V, Ti)	APHA 3110
Metals (Al, Ba, Be , Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Ni, Ag, Na, Sr, Zn, Mo)	APHA 3111
Metals (Al, Ba, Be , Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Ni, Ag, Na, Sr, Zn, Mo)	APHA 3120 B
Metals by ICP	APHA 3125
Nitrate	APHA 4500 NO3 B
Nitrite	APHA 4500 NO2 B
Nitrogen (Ammonia)	APHA 4500 NH3 B,C
Nitrogen (Organic)	APHA 4500 N Org. B
Nitrogen (Nitrite)	APHA 4500 NO2 B
Nitrogen (Nitrate)	APHA 4500 NO3 B
Odour	APHA 2150 B
Odour	ASTM D - 12 92-86
Oil & Grease	APHA 5520 B, C
Oxygen (Dissolved)	APHA 4500 OC & G
Particle Count	Coulter Counter
Phenols	APHA 5530 C & D
pH	APHA 4500 H+B
Phosphate	APHA 4500 P-C
Phosphorous	APHA 4500 P
Potassium	APHA 3111 B
Potassium	APHA 3120 B
Redox Potential	APHA 2580 B

POTABLE /FRESH WATER ANALYSIS

TEST, UNIT	METHOD
Resistivity	API 2.9
Residual Chlorine	APHA 4500 Cl ₂ G
Settleable solids	APHA 2540 F
Silica	APHA 3111 D
Silica	APHA 4500 Si.C
Silica	APHA 4500 Si.D
Silver	APHA 3111 B
Silver	APHA 3120 B
Sodium	APHA 3111 B
Sodium	APHA 3120 B
Sulfide	APHA 4500 S ₂ D
Sulfide	APHA 4500 S ₂ E
Sulphite	APHA 4500 SO ₃ B
Sulphate	APHA 4500 SO ₄ ²⁻ B
Strontium	APHA 3111 B
Strontium	APHA 3120 B
Surfactants (Anionic)	APHA 5540 C
Salinity	APHA 2520 B/C
Threshold Odour	APHA 2150 B
Tin	APHA 3111 B
Turbidity	APHA 2130 B
Total Hardness	APHA 2340 C
Total Solids	APHA 2540B
Total Suspended Solid	APHA 2540 D
Total Dissolved Solid	APHA 2540 C
Titanium	APHA 3111 D
Titanium	APHA 3120 B
TPH	ASTM 3921
TPH	APHA 5520F

WASTE WATER ANALYSIS

TEST, UNIT	METHOD
Biochemical Oxygen Demand	APHA 5210 D
Biochemical Oxygen Demand	APHA 5210 B
Chemical Oxygen Demand	APHA 5220 B
Chemical Oxygen Demand	APHA 5220 C
Chemical Oxygen Demand	APHA 5220D
Conductivity	APHA 2510 B
Dissolved Oxygen	APHA 4500 O G
Dissolved Oxygen	APHA 4500 O C
Metals (Cu,Cd, Pb, Ni, Zn, Cr, Cu, Fe, Mn & Ag)	APHA 3030
Metals (Cu,Cd, Pb, Ni, Zn, Cr, Cu, Fe, Mn & Ag)	APHA 3111
Metals (Cu,Cd, Pb, Ni, Zn, Cr, Cu, Fe, Mn & Ag)	APHA 3120 B
Oil & Grease	APHA 5520B
Oil & Grease	APHA 5520 C
Oil & Grease	APHA 5520 D
pH	APHA 4500 H ⁺
Total Suspended Solids	APHA 2540 D
Total Dissolved Solid	APHA 2540 C

MICROBIOLOGICAL EXAMINATION

TEST, UNIT	METHOD
IN WATER	
Heterotrophic Plate Count	APHA 9215 D
Total Coliforms	APHA 9222 B
Faecal Coliforms	APHA 9222 D
Faecal Streptococci	APHA 9230 C
Pseudomonas aeruginosa	APHA 9213 E
Salmonella	APHA 9260 D
Legionella	APHA 9260 J
Legionella	FDA-BAM
Sulphate Reducing Bacteria (SRB)	APHA 9240 D
IN SEAFOOD SAMPLE	
Total Bacterial Count	FDA-BAM
Bacillus cereus	FDA-BAM
Staphylococcus aureus	FDA-BAM
Salmonella	FDA-BAM
E.coli	FDA-BAM
Vibrio parahaemolyticus	FDA-BAM
Yeast and Molds	FDA-BAM
IN NON SEA FOOD SAMPLE	
Total Bacterial Count	FDA-BAM
Bacillus cereus	FDA-BAM
Staphylococcus aureus	FDA-BAM
Salmonella	FDA-BAM
E.coli	FDA-BAM
Yeast and Molds	FDA-BAM
IN ICE CUBE SAMPLE	
pH	APHA 4500 H ⁺
Heterotrophic Plate Count	APHA 9215 D
Total Bacterial Count	FDA-BAM
Total Coliforms	APHA 9222 B
Total Coliforms	FDA-BAM
Faecal Coliforms	APHA 9222 D
Faecal Coliforms	FDA-BAM
FROM SWAB SAMPLES	
Total Plate Count	FDA-BAM
Faecal Coliforms	FDA-BAM
Staphylococcus aureus	FDA-BAM

NAPHTHA ANALYSIS

TEST, UNIT	METHOD
Acidity, mgKOH/g	ASTM D 664
Acidity, mgKOH/g	ASTM D 974
Acidity, mgKOH/g	IP 139
API Gravity @ 60 °F	ASTM D 1298
API Gravity @ 60 °F	ASTM D 287
API Gravity @ 60 °F	ASTM D 4052
API Gravity @ 60 °F	IP 365
Appearance	Visual
Arsenic, ppb	Cold Vapour
Arsenic, ppb	UOP 296
Arsenic, ppb	UOP 387
Ash Content, % Wt.	ASTM D 482
Ash Content, % Wt.	IP 4
B S & Water, % Vol	ASTM D 1796 & 2709
Benzene Content, % Vol	ASTM D 3606
Carbon Disulphide	ASTM D5623
Carbon Residue on 10 % bottom, % Wt	ASTM D 189
Carbon Residue on 10 % bottom, % Wt	IP 13
Carbon Residue, % Wt.	ASTM D 524
Carbon Residue, % Wt.	IP 14
Chloride, ppm	ASTM D 4929
Chloride, ppm	ASTM D 5194
Chloride, ppm	UOP 395
Chloride, ppm	UOP 588
Chloride, ppm	UOP 779
Cloud Point, °C	ASTM D 2500
Cloud Point, °C	IP 219
Colour	ASTM D 1500
Colour	IP 196
Colour Saybolt	ASTM D 156
Copper Corrosion Test	ASTM D 130
Copper Corrosion Test	IP 154
Density, kg/L	ASTM D 1298
Density, kg/L	IP 160
Density, kg/L	ASTM D 4052
Distillation	ASTM D 1078
Distillation	ASTM D 86
Distillation	IP 123

NAPHTHA ANALYSIS

TEST, UNIT	METHOD
Doctor Test	IP 30
Flash Point, °C	ASTM D 93
Hydrocarbon Types, % Vol.	FIA
Hydrocarbon Types, % Vol.	GC DHA
Hydrogen Sulphide Content, ppm	ASTM D 5623
Hydrogen Sulphide Content, ppm	IP 103Method B
Hydrogen Sulphide Content, ppm	Mobil MM 787
Hydrogen Sulphide Content, ppm	UOP 163
Hydrogen Sulphide on Vapour Space, ppm	Drager
Lead Content, ppb	IP 224
Mercaptan Sulphur Content, ppm	IP 104
Mercaptan Sulphur Content, ppm	ASTM D 3227
Mercaptan Sulphur Content, ppm	ASTM D 5623
Mercaptan Sulphur Content, ppm	IP 342
Mercury, ppb	Cold Vapour
Mercury, ppb	UOP 938
Metals (Trace), ppm	UOP 391
Metals Content, ppm	AAS
Metals Content, ppm	ICP
Micro Carbon Residue on 10% bottom, % Wt	ASTM D 4530
Micro Carbon Residue, % Wt	ASTM D 4530
MON	ASTM D2700
MTBE (Oxygenates), % Vol	ASTM D 4815
Nitrogen (Basic), ppm	UOP 430 T
Nitrogen (Total),ppm	ASTM D 4629
Nitrogen (Total),ppm	ASTM D 5762
Nitrogen Content, % wt.	ASTM D 3228
Oxygenates (Trace), ppm Wt	LOWOX -GC
PONA	ASTM D 5443
PONA	G C DHA
Pour Point ,°C	ASTM D 97
Pour Point ,°C	IP 15
R V P. @100 °F, psi	ASTM D 323
R V P. @100 °F, psi	IP 69
Residue on Evaporation, mg/100ml	ASTM D 1353
RON	ASTM D 2699
Salt Content, ptb	ASTM D 3230
Salt Content, ptb	IP 265
Salt Content, ptb	IP 77

NAPHTHA ANALYSIS

TEST, UNIT	METHOD
Saturates, Aromatics & Olefins	ASTM D 1319
Saturates, Aromatics & Olefins	IP 156
Sediment by Mem. Filtration, % Wt	ASTM D 4807
Sulphur Content species, ppm	ASTM D 5623
Sulphur Content, % Wt	ASTM D 1266
Sulphur Content, % Wt	ASTM D 4294
Sulphur Content, % Wt	IP 107
Viscosity Kinematic, cSt	ASTM D 445
Water Content, % Vol	ASTM D 95
Water Content, ppm	ASTM D 4377
Water Content, ppm	IP 356
Wax Content, % Wt	UOP 46

AVIATION FUEL ANALYSIS

TEST, UNIT	METHOD
Appearance	Visual
Acidity mgKOH/g	ASTM D 3242
Acidity mgKOH/g	IP 354
Aniline Gravity Product	ASTM D 611
Aniline Gravity Product	IP 2
Bromine Number	IP 129
Bromine Index	ASTM D 2710
Burning Characteristics	ASTM D 187
Calorific Value Gross BTU/lb	ASTM D 1405
Calorific Value Gross BTU/lb	ASTM D 4809
Calorific Value Gross BTU/lb	ASTM D 240
Calorific Value Gross BTU/lb	IP 12
Calorific Value Nett BTU/lb	ASTM D 4868
Char Value	ASTM D 187
Colour Saybolt	ASTM D 156
Conductivity Test	ASTM D 2624
Conductivity Test	IP 274
Copper Content Mg/Kg	IP 225
Copper Corrosion Test Rating	ASTM D 130
Copper Corrosion Test Rating	IP 154
Density, kg/L	ASTM D 1298
Density, kg/L	IP 160
Density, kg/L	ASTM D 4052
Distillation	ASTM D 86
Distillation	IP 123
Doctor Test	ASTM D 4952
Doctor Test	IP 30
Existent Gum mg/100 ml	ASTM D 381
Flash Point, °C	IP 170
Freeze Point, °C	ASTM D 2386
Freeze Point, °C	IP 16
Hydrogen Content, % Wt.	ASTM D 3343
Lead Content, g/US Gal	IP 270
Lead Content, mg/L @ 15 °C	IP 224
Lubricity	ASTM D 5001
JFTOT	ASTM D 3241
Mercaptan Sulphur Content, ppm	ASTM D 3227

AVIATION FUEL ANALYSIS

TEST, UNIT	METHOD
Microbiological Contamination	IP 385
Microseparator (MSEP), rating	ASTM D 3948
Naphthalene Content, % Vol.	ASTM D 1840
Particle Count	IP 564
Particulate Contamination, mg/Ltr	ASTM D 5452
Particulate Matter mg/Ltr	ASTM D 2276
Particulate Matter mg/Ltr	IP 216
Peroxide Number, mg/Kg	ASTM D 3703
Saturates,Aromatics & Olefins	ASTM D 1319
Saturates,Aromatics & Olefins	ASTM D 2159
R.V.P @ 100 °F psi	ASTM D 323
R.V.P @ 100 °F psi	IP 69
Silver Corrosion Test Rating	IP 227
Smoke Point, mm	ASTM D 1322
Smoke Point, mm	IP 57
Specific Energy, net MJ/kg	ASTM D 3338
Sulphide Content, ppm	FED STD 791 B
Sulphur Content, ppm Wt	ASTM D 5453
Sulphur Content, % mass	ASTM D 4294
Sulphur Content, % Wt.*	IP 107
Sulphur Content, % Wt.*	ASTM D 1266
Sulphur Content, % Wt.*	ASTM D 3120
Thermal Stability (JFTOT)	ASTM D 3241
Tube Deposit Rating (Visual)	ASTM D 3241
Viscosity, Kinematic @ - 20 °C, mm ² /s	ASTM D 445
Viscosity, Kinematic @ - 20 °C, mm ² /s	IP 71
Water Content, ppm	ASTM D 4928
Water Content, ppm	IP 386
Water Content, ppm	ASTM D 4377
Water Content, ppm	IP 356
Water Reaction Test Rating	ASTM D 1094
Water Reaction Test Rating	IP 289

GASOLINE ANALYSIS

TEST, UNIT	METHOD
Acidity, mgKOH/g	ASTM D 1093
Alcohol in Gasoline, % Vol.	ASTM D 4815
API Gravity	ASTM D 287
Appearance	Visual
Aromatics Content, %Wt	ASTM D 1319
Aromatics Content, %Wt	ASTM D 5580
Benzene Content, % Vol.	ASTM D 3606
Benzene Content, % Vol.	ASTM D D5580
Bromine Index	ASTM D 2710
Bromine Number	IP 129
Colour	VISUAL
Copper Corrosion Test Rating	ASTM D 130
Copper Corrosion Test Rating	IP 154
Density, kg/L	ASTM D 1298
Density, kg/L	IP 160
Density, kg/L	ASTM D 4052
Distillation	ASTM D 86
Distillation	IP 123
Doctor Test	IP 30
Doctor Test	ASTM D 4952
Existent Gun, mg/100 ml	ASTM D 381
Fuel bound Nitrogen, %wt	ASTM D3228
Nitrogen, ppm Wt	ASTM D 4629
Nitrogen, ppm Wt	ASTM D 5762
Induction Period Mins.	ASTM D 525
Lead	UOP 350
Lead Content g/L @ 15 °C	IP 224
Lead Content, g/US Gall	ASTM D 3341
Lead Content, g/US Gall	ASTM D 3237
Lead Content, mg/US Gall	IP 270
Mercaptan Sulphur Content ppm	ASTM D 3227
Mercaptan Sulphur Content ppm	ASTM D 5623
Mercaptan Sulphur Content ppm	IP 342
MON	ASTM D 2700
MTBE, %Vol	ASTM D 4815
Odour	Olfactory
Olefins, %vol	ASTM D 6293
Potential Gum, mg/100 ml	ASTM D 381

GASOLINE ANALYSIS

TEST, UNIT	METHOD
TVP	ASTM D 5191
R.V.P @ 100 °F psi	IP 69
R.V.P @ 100 °F psi	ASTM D 323
RON	ASTM D 2699
Sulphur, % mass ppm	ASTM D 2622
Sulphur, % Wt. *	ASTM D 1266
Sulphur, ppm Wt	ASTM D 5453
Sulphur, %wt	ASTM D 4294
TV/L 20 (Summer)	ASTM D 4814
Vapour liquid Ratio *	ASTM D 2533
Washed gum, mg/100 ml	ASTM D 381

BUNKER FUEL, DIESEL OIL & LONG RESIDUE

TEST, UNIT	METHOD
Appearance	Visual
Accelerated Stability Test (oxidation stability)	ASTM D 2274
Accelerated Stability Test	IP 388
Strong Acid Number mg KOH/g	ASTM D 974
Strong Acid Number mg KOH/g	ASTM D 664
Aniline Point, °C	ASTM D 611
Aniline Point, °C	IP 2
Aluminium, mg/kg	ASTM D5184
Ash Content, % Wt.	IP 4
Ash Content, % Wt.	ASTM D 482
Asphaltine Content, % Wt.	IP 143
Aniline Point on Distillate Fraction	ASTM D 611
Aniline Point on Distillate Fraction	IP 2
B.S. & Water, % Vol.	ASTM D 1796
B.S. & Water, % Vol.	ASTM D 2701
Bromine Number	IP 130
Bromine Number	ASTM D 1159
Bromine Number on Distillate Fraction	IP 129
Bromine Number on Distillate Fraction	ASTM D 1159
Bromine Number on Distillate Fraction	IP 130
Calorific Value, BTU/Ib (MJ/Kg)	ASTM D 240
Calorific Value, BTU/Ib (MJ/Kg)	IP 12
Calorific Value, BTU/Ib (MJ/Kg)	CALCULATED
Nett Calorific Value (Calc)	ASTM D 4868
Calorific Value	ISO 8217
CCS (Apparent Viscosity)	ASTM D 5293
C.C.A.I	CALCULATED
Cetane Index	ASTM D 976
Cetane Index	ASTM D 4737
Cetane Index	IP 380
Cetane Number	ASTM D 613
Cloud Point, °C	IP 219
Cloud Point, °C	ASTM D 2500
Cold Filter Plugging Point, °C	IP 309
Colour	ASTM D 1500
Colour	IP 196
Compatibility/Stability Test Rating	ASTM D 4740

BUNKER FUEL, DIESEL OIL & LONG RESIDUE

TEST, UNIT	METHOD
Compatibility Test Rating, % Vol.	MOBIL
Carbon Residue	ASTM D 189
Carbon Residue	IP 13
Carbon Residue as 10% bottom, % Wt	ASTM D 189
Carbon Residue as 10% bottom, % Wt	IP 13
Copper Corrosion Test Rating	ASTM D 130
Copper Corrosion Test Rating	IP 154
Density, Kg/L (For F.O - Bunkers)	ASTM D 1298
Density, Kg/L (For F.O - Bunkers)	IP 160
Density, Kg/L	ASTM D 4052
Distillation, °C	ASTM D 86
Distillation, °C	ASTM D 1160
Distillation, °C	IP 123
Explosivity	SCDSTD791B
Flocculation Ratio as Xylene % v/v	SMS 305 FRS
Flash Point, °C	ASTM D 93
Flash Point, °C	IP 34
Furfuraldehyde	IP 297
Hydrogen Content *	ASTM D 3178
Lubricity	ASTM D 6069
Metals, ppm	ASTM D 5863b
Metals	ASTM D 3605
Microbiological Analysis	IP 385
Nitrogen Content, ppm Wt.	ASTM D 4629
Nitrogen Content, ppm Wt.	ASTM D 5762
Nitrogen Content, % Wt.	ASTM D 3228
Particle count/100 ml	ISO 4406
Particulate Matter, mg/Ltr	ASTM D 6217
Particulate Matter, mg/Ltr	IP 440
Poly Aromatic hydrocarbon (PAH)	IP 391
Pour Point, °C	ASTM D 97
Pour Point, °C	IP 15
Peptisation Test	TOTAL 631 LORI
p Value	SMS 1600
Ramsbottom Carbon Residue, % Wt.	ASTM D 524
Ramsbottom Carbon Residue, % Wt.	IP 14
Ramsbottom Carbon Residue on 10% bottom,%wt	ASTM D 524
Ramsbottom Carbon Residue on 10% bottom,%wt	IP 14
Sediment by Extraction, % Wt.	ASTM D 473
Sediment by Extraction, % Wt.	IP 53

BUNKER FUEL, DIESEL OIL & LONG RESIDUE

TEST, UNIT	METHOD
Sediment by Hot Filtration, % Wt.	SMS 2696
Silicon, mg/kg	ASTM D 5184
Silicon, mg/kg	IP 377
Calcium, mg/kg	ASTM D 5184
Calcium, mg/kg	IP 377
Zinc, mg/kg	ASTM D 5184
Zinc, mg/kg	IP 377
Phosphorus, mg/kg	ASTM D 5184
Phosphorus, mg/kg	IP 377
Specific Gravity @ 60/60 °F	ASTM D 1298
Specific Gravity @ 60/60 °F	IP 160
Specific Gravity @ 60/60 °F	ASTM D 4052
Sulphur Content, % Wt.	ASTM D 4294
Sulphur Content, % Wt.	IP 336
Sulphur Content, ppm Wt.	ASTM D 5453
Sulphur Content, % Wt.	ASTM D 129
Toluene Equivalence	EXXON 79-004
Total Sediment, % Wt.	ASTM D 4870
Total Sediment, % Wt.	UOP 413
Total Sediment, % Wt.	IP 375
Total Sediment after Aging, % Wt	IP 390
Total Solids, mg/100ml	ASTM D 2276
Viscosity, Kinematic, mm ² /s	ASTM D 445
Viscosity, Kinematic, mm ² /s	ASTM D IP 7
Vanadium, ppm	ASTM D 5863
Water Content, % Vol.	ASTM D 95
Water Content, % Vol.	IP 74
Wax Content, % Vol.	UOP 46
Xylene Equivalent	BP 230

ASPHALT & BITUMEN ANALYSIS

TEST, UNIT	METHOD
Cement Mixing	ASTM D 6935
Distillation	AASHTO T 78
Distillation	ASTM D 402
Ductility cm @ 25 °C, cm	AASHTO T 51
Ductility cm @ 25 °C, cm	ASTM D 113
Flash Point, °C	T 79
Flash Point, °C	ASTM D 92
Foam on heating	Visual
Flash Point, °C	IP 136
Mixing & compaction temperature	ASTM D 2493
Mixing & compaction temperature	ASTM D341
Penetration mm x 10 (-1)	AASHTO T 49
Penetration mm x 10 (-1)	ASTM D 5
Penetration Index	Calculation
Particle Charge	ASTM D 244
Particle Charge	AASHTO T 59
Rubber content	DM 500
Saybolt Furol, sfs	ASTM D88
Saybolt Furol Viscosity @ 25 °C	AASHTO T 72
Sieve Test	AASHTO T 59
Sieve Test	ASTM D 244
Softening Point C/ F	T 53
Softening Point C/ F	ASTM D 36
Softening Point C/ F	IP 58
Solubility, % Wt.	AASHTO T 44
Solubility, % Wt.	ASTM D 2042
Storage Stability	AASHTO T 59
Storage Stability	ASTM D 244
Specific Gravity @ 60/60 °F	ASTM D 1298
Specific Gravity @ 60/60 °F	AASHTO T 228
Specific Gravity @ 60/60 °F	ASTM D 70
Spot Test	AASHTO T 102
Thin Film Oven Test/L.O.H. % Wt.	AASHTO T 179
Thin Film Oven Test/L.O.H. % Wt.	ASTM D 1754
Viscosity, Kinematic, cSt	AASHTO T 201
Viscosity, Kinematic, cSt	ASTM D 2170
Vacuum viscosity, Pa.S	ASTM D 2171
Water Content, % Vol.	AASHTO T 55
Water Content, % Vol.	ASTM D 95
Wax Content, % Wt.	DIN 52015
Wax Content, % Wt	UOP 46

LUBRICANT ANALYSIS

TEST, UNIT	METHOD
Acid Number, mgKOH/g	ASTM D 664
Acid Number, mgKOH/g	ASTM D 974
Air Release	IP 313
Appearance	Visual
Ash – Sulphated, % Wt.	ASTM D 874
Ash – Sulphated, % Wt.	IP 163
Ash Content, % Wt	ASTM D 482
Ash Content, % Wt.	IP 4
Bacteria	TEST KIT
Base Number, mgKOH/g	ASTM D 2896
Base Number, mgKOH/g	IP 276
Carbon Residue, % Wt.	ASTM D 189
Carbon Residue, % Wt.	IP 13
Cloud Point, °C	ASTM D 2500
Cloud Point, °C	IP 219
Cold Cranking, °C *	ASTM D 5293
Colour	ASTM D 1500
Colour	IP 196
Conradson Carbon Residue, % Wt.	ASTM D 187
Conradson Carbon Residue, % Wt.	IP 13
Demulsibility Test	ASTM D 2711
Density @ 15 °C, Kg/Ltr	ASTM D 1298
Density @ 15 °C Kg/ Ltr	IP 160
Density, kg/L	ASTM D 4052
Dissipation factor /TAN DELTA *	BS 5737
DMSO Extract	IP 346
Emulsion Characteristics	ASTM D 1401
Fire Point	ASTM D 92
Flash Point, °C	IP 36
Flash Point, °C	ASTM D 93
Flash Point, °C	IP 34
Foaming Characteristics	ASTM D 892
Foaming Characteristics	IP 146
Free Chloride, ppm	Argentometry
Filterability	ISO 13357-2
Fuel Dilution	FTIR
Fuel Dilution Test (Gasoline)	ASTM D 322, IP 23
Fuel Dilution Test (Gasoline)	IP 23
Full Scan (13 Elements)	AAS

LUBRICANT ANALYSIS

TEST, UNIT	METHOD
Full Scan (13 Elements)	ASTM D 5185
Full Scan (21 Elements)	AAS
Full Scan (21 Elements)	ASTM D 5185
Glycol Content, % Vol.	FT IR
Insolubles (Pentane), % Wt.	ASTM D 893
Insolubles (Toluene), % Wt.	ASTM D 893
Metals Additive, %wt	ASTM D 4628
Metals Additive, %wt	ASTM D 4951
Microbiological Contamination	TEST KIT
Nitrogen Content, % Wt.	ASTM D 3228
Oxidation / Nitration	FT IR
Oxidation Characteristics	ASTM D 943
Oxidation Stability	IP 280
Particle Count + Sizing (microns)	AS - 4059/ ISO 4406
Particulate Matter, mg/100 ml	ASTM D 2276
Particulate Matter, mg/100 ml	IP 216
Phosphorous, % Wt	ASTM D 4951
Phosphorous Content, % Wt.	ASTM D 1091
Phosphorous Content, % Wt.	ASTM D 4047
Pour Point, °C	ASTM D 97
Pour Point, °C	IP 15
PQ Index	PQ Analyzer
Rotating pressure vessel oxidation test (RPVOT)	ASTM D 2272
Rust Prevention Characteristics	ASTM D 655
Rust Prevention Characteristics	IP 135
Sediments, %Vol	ASTM D 2273
Sulphur Content, % Wt.	ASTM D 129
Sulphur Content, % Wt.	ASTM D 4294
Sulphur, % mass	ASTM D 129
Total Solids, % Wt.	IP 316
Total Solids, %wt	ASTM D 2274
Varnish Potential	ASTM C.02
Patch Test	ASTM C.02
Viscosity Index	ASTM D2270
Viscosity Kinematic, cSt	ASTM D 445
Viscosity Kinematic, cSt	ASTM D 7042
Viscosity, Kinematic, cSt	IP 71
Water Content, % Vol.	ASTM D 95
Water Content, ppm	ASTM D 6304

GREASE ANALYSIS

TEST, UNIT	METHOD
Alkalinity	ASTM D 974
Appearance	Visual
Consistency	ASTM D 217
Complete Analysis	ASTM D 128
Drop Point °C	ASTM D 566
Drop Point °C	IP 132
Evaporation Loss % Wt.*	ASTM D 972
Oil Content	ASTM D 128
Oil Separation % Wt.*	ASTM D 1742
Penetration (Unworked)	ASTM D 217
Penetration (Unworked)	IP 58
Penetration (Worked) 10,000 Strokes	ASTM D 217
Penetration (Worked) 10,000 Strokes	IP 58
Penetration (Worked) 60 Strokes	ASTM D 217
Penetration (Worked) 60 Strokes	IP 58
Soap Content	ASTM D 128

BASE OIL ANALYSIS

TEST, UNIT	METHOD
Appearance	Visual
Ash Content	ASTM D 482
Ash Content	IP 4
Carbon Residue	ASTM D 189
Carbon Residue	IP 13
Colour	ASTM D 1500
Colour	IP 196
Demulsibility	IP 19/1997
Pour Point	ASTM D 97
Pour Point	IP 15
Rust prevention characteristics	ASTM D655
Viscosity Index	ASTM D 2270
Viscosity, Kinematic cSt	ASTM D 445
Viscosity, Kinematic cSt	ASTM D 7042
Viscosity, Kinematic cSt	IP 71
Water , ppm	ASTM D 1123B
Water , ppm	ASTM D 6304
Water content %wt	ASTM D 6308
Water Separability, mins	ASTM D 1401

TRANSFORMER OIL ANALYSIS

TEST, UNIT	METHOD
Appearance	Visual
Breakdown Voltage	IEC 60156
Colour	ASTM D 1500
Copper Content	ICP
Corrosive Sulphur	ASTM D 1275
Density @ 15 °C kg/Ltr	BS 148
Dissipation Factor @ 90° C	IEC 60247
Flash Point	ASTM D 93
Furan Analysis	IEC 61198
Furan Analysis	ASTM D 5837
Induction period @120°C (Oxidation Stability)	IEC 601125 b
Inhibitor Content, % Wt	IEC 60666
Interfacial tension	ASTM D 971
Neutralization value	ASTM D 974
Particle Count/100 ml	ISO 4406
Particle Count/100 ml	AS 4059
PCA	IP 348
PCB Content	IEC 61619
Pour Point °C	ASTM D97
Resistivity @ 90° C	ASTM D 1169
Sulphur Content	ASTM D 4294
Sludge	ASTM D 1698
Viscosity, Kinematic cSt	ASTM D445
Wear Metals	ASTM D 5185
Water Content	ASTM D 1533
Water Content	IEC 60814
Dissolved Gas Analysis	ASTM D 3612
Dissolved Gas Analysis	IEC 60567

PETROCHEMICALS, SOLVENTS & AROMATICS

TEST, UNIT	METHOD
Acetone Content % Vol.	ASTM D 1612
Acid Acceptance Test	ASTM D 2106
Acidity	Qualitative
Acidity as Acetic Acid % Wt.	ASTM D 1613
Acid Wash Colour	ASTM D 848
Aldehyde Content % Wt.	BS 506
Aldehyde Content % Wt.	ASTM D 2119
Aldehyde Content % Wt.	ASTM D 2192
Aldehyde Content % Wt.	ASTM D 329
Alkalinity as NH ₃ % Wt.	ASTM D 1614
Alkalinity & oil content, % mass	ASTM D 128
Apperance	Visual
Arsenic	AAS cold vapour
Ash Content % Wt.	ASTM D 482
Aromatic content %Vol	ASTM D 3257
Bromine Number	IP 129
Bromine Index	D 2710
Carbonisable Substances Test	ASTM E 346
Chloride Content ppm	Turbidimetry
Chloride Content % Wt.	UOP 779
Colour (Hazen)	ASTM D 1209
Colour (Saybolt)	ASTM D 156
Copper Corrosion Test	ASTM D 130
Copper Corrosion Test	ASTM D 849
Density Kg/Ltr	ASTM D 4052
Distillation °C	ASTM D 850
Distillation °C	ASTM D 1078
Doctor Test	ASTM D 4952
Ester Value	ASTM D 1617
Ethyl Benzene	GC
Flash Point °C	IP 170
Flash Point °C	ASTM D 92
Flash Point °C	ASTM D 93
Flash Point °C *	ASTM D 56
Gas Chromatograph Analysis % Vol., %Wt	G C
Heptane Miscibility Test	ASTM D 1476
Hydroxyl Number mgKOH/gm	ASTM D 1957
Hydroxyl Number mgKOH/gm	ASTM D 4274

PETROCHEMICALS, SOLVENTS & AROMATICS

TEST, UNIT	METHOD
Hydroxyl Number mgKOH/gm	SMS2116
Hydrocarbons in Alcohols ppm	BS 506
Inhibitor Content , ppm	ASTM D 3125
Inhibitor Content , ppm	ASTM D 4590
Iron Content ppm	AAS, ICP
Lead Content ppb	IP 224
Glycol Content	MIL-1-85470(AS)
Metals ppm	AAS/ICP
Metals ppb	UV Spectroscopy
Non Volatile Matter mg/ 100 mls	ASTM D 1353
Non aromatics	ASTM D 2360
Odour	Sensory Evaluation
Oxidation Stability Mins	ASTM D 525
Permanganate Time Mins	ASTM D 1363
Peroxide Content ppm	ASTM D 2340
PH Value	Meter
Polymer Content , ppm	ASTM D 2121
Purity of glycols, %m/m	ASTM E202
Purity, %wt	GC
Residual Odour	ASTM D 1296
Residue on Evaporation % Wt.	ASTM D 1353
Refractive Index @ 20 °C *	ASTM D 1218
Saponification Value mgKOH/gm	IP 136
Saponification Value mgKOH/gm	ASTM D 94
Solid content, %wt	FTIR shell method
Solidification Point °C	ASTM D 852
Solubility	ASTM D 1722
Specific Gravity @ 60/60 °F	ASTM D 4052
Total Sulphur ppm	ASTM D 3120
Total Sulphur ppm	ASTM D 5453
Thiophene & Carbon di Sulphide	ASTM D 5623
UV Transmittance Test	UV Spectroscopy
Viscosity, Kinematic cSt	ASTM D 445, IP 71
Water Content %wt,	ASTM D 1364
Water Content ppm	ASTM E 1064
Water Content %wt,	ASTM E 203
Water Content %wt,	ASTM E 1062
Water miscibility	ASTM D 1722

GAS ANALYSIS

LIQUIFIED PETROLEUM GASES / NATURAL GAS

TEST, UNIT	METHOD
Component Analysis % Vol,	GC
Composition upto c6+, %mol	ASTM D1945
Composition upto C14+, % mol	ASTM D1945
Composition upto C30+, % mol (stabilised)	GC
Composition upto C36+, % mol	GC
Composition upto C30+, % mol (pressured)	GC
Copper Corrosion Test	ASTM D 1838
Cp Specific Heat @60°F, BTU/lb	Calculated
Evaporation Temp. F (95%)	ASTM D 2158
Evaporation Temp. F (95%)	IP 317
Gross Heat Value, BTU/SCF@0.60°F	ISO 6976 calculated
Gross Heat Value, BTU/SCF@0.60°F	GPA 2172
Hydrogen Sulphide ppm	UOP 403
Hydrogen Sulphide ppm	ASTM D 5504
Hydrogen Sulphide ppm	ASTM D 4810 (Dragger)
Liquified Petroleum Gases and Propane Concentration	ASTM D 2163
Mercaptan Sulphur ppm	UOP 403
Mercaptan Sulphur ppm	ASTM D 5623
Mercury	ISO 6958
Molecular weight	Calculation,
Molecular weight	ASTM D 3588
Moisture Test	ASTM D 2713
Moisture Test	IP 395
Net Heat Value, BTU/SCF@0.60°F	ISO 6976 calculated
Net Heat Value, BTU/SCF@0.60°F	GPA 2172
Oil Stain Test	ASTM D 2158
Oil Stain Test	IP 317
R.V.P. @) 100 °F Psig	ASTM D 1267
Specific Gravity @ 60/60 °F	ASTM D 1070
Specific Gravity, air=1	ISO 6976 calculated
Specific Gravity, air=1	GPA 2172
Sulphur Content ppm	ASTM D 5504
Sulphur Content ppm	ASTM D 6667
Total Sulphur	ASTM D3246
Volatile Residue	ASTM 1837
Water, ppm	Shaw moisture meter (ASTM D5454)
Wobbe Index	ISO 6976 calculated
Wobbe Index	GPA 2172
BTX analysis, % vol	GPA 2286

FERTILIZER ANALYSIS

TEST, UNIT	METHOD
Biuret Content	AOAC, 2.088
Chloride Content	IS2764
Magnesium Chloride	AAS
Moisture Content	AOAC 2.056
Nitrogen Content	AOAC 2.056
Nitrogen (Ammoniacal)	KJELDAHL
Phosphorous	AOAC 2.020
Phosphorous (Citrate Soluble)	AOAC 2.044
Phosphorous (Water Soluble)	AOAC 2.040
Potassium Oxide	AOAC 2.119
Sodium Content	AOAC 2.178
Sodium Chloride	AAS
Sieve Test	AOAC
Urea Content	AOAC

FIRE FIGHTING FOAM ANALYSIS

TEST, UNIT	METHOD
Appearance	Visual
Density @20°C, kg/L	ASTM D 4052
25% drainage time(3% blend), min	Volumetric
Expansion Coefficient	Volumetric
Foam Concentration	Refractometer
pH Value (30% Blend)	Meter
pH Value (Neat)	Meter
Purity %vol	GC
Sedimentation Value % Vol.	ASTM D 2709
Specific Gravity @ 60/60 °F	ASTM D 4052
Specific Gravity @ 60/60 °F	ASTM D 1298
Stability Test	Volumetric
Viscosity, Kinematic cSt	ASTM D 445
Viscosity, Kinematic cSt	IP 71

FOOD ANALYSIS

TEST, UNIT	METHOD
Acid Value	AOAC Da 14-48
Acid Value	AOAC Te 1a-64
Amine value	AOAC Tf 2b-64
Amine value	AOAC Tf 1b-64
Amine value	AOAC Tf 3b-64
Ash Insoluble in dil.HCl	AOAC 941.12
Colour *	AOAC Tb-64
Ethyl Alcohol content	AOAC 926.03
Foreign matter	AOAC 971.32
Gluten *	AOAC 38.12
Hydroxyl value	AOAC Cd 4-40
Iodine value.	AOAC Cd 1-25
Melting Point	AOAC Cc1-25
Metals (Cu, Cr, Fe & Ni)	AOCS Ca 15
Moisture	AOAC 925.10
Moisture	AOAC CaZe - 84
Peroxide value	AOCS cd 8 - 53
Phosphorous	AOCS Ja 5-55,Ca 12-55
Refractive index *	AOCS Cc-7-25
Residue on Evaporation	AOAC 940.09
Saponification value	AOAC Cd 3c 1-25
Saponification value	AOAC T1 1a-64
Total Ash	AOAC 941.12
Total Protein *	AOAC 920.87
Volatile acids as acetic acid	AOAC 940.15
Weeviled grains	AOAC 977.16

COOLANT ANALYSIS

TEST, UNIT	METHOD
Reserve Alkalinity, ml	ASTM D1121
Chloride	ASTM D 5827
Glycol Content, %wt	GC
Equilibrium boiling point	ASTM D 1120
Water Content	E 203
Freezing Point	ASTM D 2386
Foaming	ASTM D 1881
pH	ASTM D 1287

DETERGENT ANALYSIS

TEST, UNIT	METHOD
Moisture, %Wt	SASO/ gulf std.

HALON ANALYSIS

TEST, UNIT	METHOD
Purity (Exclusive of N2), mol%	ASTM D 5632
Acidity, ppm/mass	ASTM D 5632
Water content, ppm/mass	ASTM D 5632
Non Volatile residue, %m/m	ASTM D 5632
Halogen Ion,	ASTM D 5632
Suspended matter or sediment,	ASTM D 5632

TEA ANALYSIS

TEST, UNIT	METHOD
Moisture Content, %wt/wt	SSA 274
Water Extract, %wt/wt	SSA 274
Total Ash % by mass	SSA 274
Ash soluble in Water, % of total ash	SSA 274
Acid insoluble ash	SSA 274
Alkalinity of water soluble ash	SSA 274
Crude Fibre	SSA 274
Dust %	SSA 274
Metal magnetic impurities	SSA 274
Lead, mg.Kg	ICP

SUGAR ANALYSIS

TEST, UNIT	METHOD
Colour	SASO 276
Polarization,OZ	SASO 276
Moisture, %Wt	SASO 276
Ash content, %wt	SASO 276
Invertase in Sugar	SASO 276

AMBIENT AIR QUALITY/ INDOOR AIR QUALITY / NOISE MONITORING

Description	Method
(1) AMBIENT AIR QUALITY MONITORING BY MOBILE STATION	
Respirable Dust (PM10)	EPA-EQPM 0798-122
Sulphur dioxide, SO ₂	EPA RFCA 0193-092
Hydrogen Sulphide, H ₂ S	UV-FLUORESCENCE
Oxides of Nitrogen, NO _x	EPA RFNA 1292-090
Carbon monoxide, CO	EPA RFCA 09923-088
Ozone, O ₃	EPA EQOA 0193-091
Methane & Non Methane Hydrocarbon	FID GC
<u>Meteorological Data</u> : Atmospheric Temperature, Relative Humidity, Wind Speed, Wind Direction,	Meteorological Sensor
Note 1: The foregoing tests are conducted by the analyzers mounted in a mobile vehicle	

(2) INDOOR AIR QUALITY MONITORING	
Respirable Dust (PM10)	Cyclonic Flow
Total Suspended Particles, TSP	
Sulphur dioxide, SO ₂	West & Gaeke
Oxides of Nitrogen, NO _x	Sodium Arsenite
Carbon monoxide, CO	Electro Chemical Sensor
Total Volatile Organic Compounds, VOC's	PID
Note 2: The above suggested parameters and test methods can be applied on short- term ambient air quality monitoring.	

(3) NOISE MONITORING	
AMBIENT & INDUSTRIAL NOISE MONITORING	SOUND LEVEL METER

STACK /FLUE GAS MONITORING

Reporting Parameters	Test Method
Average flue gas temperature	USEPA -2
Average meter temp	USEPA -2
Flue or Stack gas pressure	USEPA -5
Volume of metered gas	USEPA -5
Total volume of condensate (Filter and probe wash)	USEPA -4
Pitot tube correction factor	--
Average stack gas velocity	USEPA -2
Average pressure differential across orifice meter	USEPA -2
Diameter of sampling nozzle used	USEPA -5
Diameter of the stack	--
Cross sectional area of stack	USEPA -5
Area of nozzle used	USEPA -5
Meter calibration factor Y	--
Elapsed time of test	USEPA -5
CO ₂	ELECTRO CHEMICAL SENSOR
O ₂	ELECTRO CHEMICAL SENSOR
Total particulate matter	USEPA - 5
SO ₂	USEPA -6 & 8
NO ₂	USEPA -7
CO	ELECTRO CHEMICAL SENSOR
Stack height	--
Load of the unit during test	--
Fuel Consumption during the test run	--
Iso Kinetic rate for the sampling run	USEPA -5

MISCELLANEOUS ANALYSIS

TEST	METHOD
<u>Cereals Pulses & Spices</u>	
Full Physical Analysis	Visual/GRAVIMETRY
<u>Cement</u>	
Full Chemical Analysis	ASTM C 114
<u>Lime Stone</u>	
Full Chemical Analysis	ASTM C 25
<u>Sulphur</u>	
Full Chemical Analysis	B.S. 4113
(Excluding Teliurium, Selenium, Arsenic)	

CALIBRATION			
Calibration Field	Calibrator	Range & Specification	Best Capability
		Temperature	
Liquid in Glass Thermometer	Fluke 9170	-45° C to + 140° C	±0. 1°C
	Fluke 9173	+50° C to + 700° C	±0. 15°C
Digital Thermometer	Fluke 9170	-45° C to + 140° C	±0. 1°C
	Fluke 9173	+50° C to + 700° C	±0. 15°C
Infra Red Thermometer	Fluke 9132	+50° C to + 500° C	±0. 65°C
Test Method used : BS 5074 : 1974			
		Pressure	
Hydraulic pressure Gauge/module	DH-Budenberg 580EHX	1 to 1400bar (Dead Weights)	0.025% of reading
Pneumatic pressure Gauge/module	DH-Budenberg PPS42	0 to 40bar (pressure Module)	0.025% of reading
Test Method used : BS EN 60051-1: 1999			
		Weight Sets	
Weighing Balance	Mettler Toledo Class - F 1	1 mg to 20 kg	0.02% of reading
Test Method used : OIML R111-1: 2004			
		Reference Thermometer	
Temperature indicator	Fluke 1523	PRT: -200°C to +1000°C Thermocouple: - 200°C to + 2315°C Precision Thermistors: - 50°C to + 150° C	±0. 011°C ±0. 24°C for j,k,l,m ±0. 002°C
Test Method used : BS 5074: 1974			
		Total Station	
Storage Tanks	Leica	n/a	0.005% of reading
Test Method used : EODR & API MPMS Chapter 2.2 A & 2.2 B			