

CRITERIA/ MINIMUM REQUIREMENT FOR OIL TESTING FACILITY

EQUIPMENT REQUIREMENT

(i) FOR ENERGY PRODUCTS' TESTING

Sr. No.	Equipment	Purpose	Relevant Method	ASTM/IP
1	Hydrometer (Fuel range) or Digital Densitometer	Specific Gravity/ Relative Density	D-1298/ D-4052/ IP-160	
2	CFR Engine	Octane number (Petrol)	D-2699	
3	Distillation apparatus (manual or automatic)	Distillation	D-86/ D-7344/ D-7345	
4	Vapor Pressure apparatus	Reid Vapor Pressure (RVP)	D-323	
5	Assembled lamp unit/ apparatus or X-ray Fluorescence Analyzer (Energy-dispersive or Wavelength dispersive)	Sulfur (in gasoline)	D-1266/ D-4294/ IP-107	
6	Copper Strip Corrosion Pressure Vessel	Copper Strip Corrosion test	D-130	
7	Jet Evaporation Apparatus	Existent Gum	D-381	
8	Potentiometer	Mercaptan Sulfur/ Acid number strong	D-3227/ IP-104	
9	Oxidation Pressure Vessel and accessories	Induction Period	D-525	
10	Infrared Spectrometer or Gas Chromatograph	Benzene & oxygenates	D-5134/ D-4053/ D-4815/ D-5845	
11	Atomic Absorption Spectrometer or Inductive Coupled Plasma atomic absorption spectrometer	Metals	D-3237/ D-5059/ IP-224/ IP-352	
12	Muffle furnace	Ash	D-482	
13	Conradson carbon apparatus (Crucibles etc.)	Conradson carbon	D-189	
14	Cloud Point tester	Cloud Point	D-2500	
15	Pour Point Tester or Cold Filter Plugging Point (CFPP) Apparatus	Pour Point or CFPP	D-97 Or IP-309	
16	Colorimeter	ASTM color	D-1500	
17	Pensky-Martens Closed Cup Tester	Flash Point	D-93	
18	Extraction apparatus	Sediments	D-473	

Sr. No.	Equipment	Purpose	Relevant ASTM/IP Method
19	X-Ray Fluorescence Analyzer (Energy-dispersive or Wavelength dispersive) or Combustion & Iodate Detection System	Sulfur (in Diesel)	D-1552/ D-2622/ D-4294
20	Viscometer and Viscometer Bath	Kinematic Viscosity	D-445
21	Dean Stark Apparatus	Water	D-95
22	Titration apparatus (burette etc.)	Acid number (total/ strong)	D-974
23	Bomb Calorimeter	Calorific Value	D-240
24	Smoke Point Lamp	Smoke Point (Kerosene & Aviation turbine fuel)	D-1322
25	Abel Flash Point Tester	Flash Point	IP-170
26	Fume Hood, General Glassware, balance, stirrer, Oven, burner, hot plate, thermometer etc.	For general/ various purpose	(General Purpose)

(ii) FOR NON-ENERGY PRODUCTS' TESTING

Sr. No.	Equipment	Purpose	Relevant ASTM or other standard Method
1	Cleveland Open Cup Apparatus (manual or automatic)	Flash point (Lubes)	D-92
2	Pensky-Martens Closed Cup Tester	Flash Point (Transformer oil, Grease)	D-93/ ISO 2719
3	Viscometer and Viscometer Bath (two units for 40°C and 100°C)	Kinematic viscosity/ Viscosity Index (Lubes)	D-445/ D-2270
4	Cold cranking simulator	Low temperature viscosity	D-5293
5	Pour Point Apparatus	Pour point	D-97
6	Copper Strip Corrosion test bomb & accessories	Copper Strip Corrosion test	D-130
7	Atomic Absorption Spectrometer or Inductive Coupled Plasma atomic absorption spectrometer or X-Ray Fluorescence Analyzer	Metals	D-6481/D-7751 or other relevant standard methods for AAS/ ICP
8	Potentiometric Titrimeter	Total Base Number (TBN)	D-2896
9	Muffle Furnace	Ash/ Sulphated Ash	D-482/ D-874

Sr. No.	Equipment	Purpose	Relevant Method	ASTM/IP
10	Hydrometer (lube range) or Digital Densitometer	Specific Gravity/ Relative Density	D-1298/ 12185	ISO 3675/ISO
11	ASTM colorimeter	ASTM color	D-1500	
12	Copper Strip Corrosion apparatus	Copper Strip Corrosion test	D-130	
12	Conradson carbon apparatus (Crucibles etc.)	Conradson carbon	D-189	
13	Titration apparatus (burette etc.)	Total Acid Number	D-974	
14	Saponification Number apparatus	Saponification Number	D-94	
15	Centrifuge and centrifuge tubes	Pentane insoluble	D-893	
16	Penetrometer & accessories	Penetration test (Grease)	D-217	
17	Dropping Point Apparatus	Dropping Point (Grease)	D-566	
17	Pressure Bleeding Test Cell	Oil Separation (Grease)	D-1742	
18	Oxidation Pressure Vessel and accessories (Sample Dish, Dish Holder, Pressure Gage and Oil Bath)	Oxidation Stability (Grease)	D-942	
19	Roll Stability Tester	Roll Stability (Grease)	D-1831	
20	Silver Strip Corrosion Apparatus	Corrosive Sulphur	DIN 51353	
21	Break down voltage apparatus	Break down voltage (transformer oil)	IEC-156/ 60156	
22	Automatic coulometric Karl Fischer apparatus or Moisture apparatus	Water (transformer oil/ Grease)	IEC-60814 or other relevant standard method	
23	General Glassware, balance, stirrer, Oven, burner, hot plate, thermometer, Fume Hood etc.	For general/ various purpose	-----	

HUMAN RESOURCE REQUIREMENT

01 analyst (M.Sc Chemistry level) per location

03 Analysts (B.Sc Level with chemistry) per location

Lab Safety Requirement: as per NFPA 45 (Standard on Fire Protection for Laboratories Using Chemicals)

Personal Protective Equipment (PPE): Goggles, Gloves, Lab Wears etc.

Certification: Minimum level of ISO 9001 (ISO 17025 preferable)