

OIL & PETROLEUM TESTING INSTRUMENT

1201. 'MSI' REDWOOD VICOMETERS

These viscometers are designed for viscosity tests of petroleum products. They confirm to requirements of IP-70 (Former). Two adoption of Red Wood viscometer are available No. 1 for liquids having Red Wood flow 20 sec. To 2000 sec. And No.-II for liquids whose flow time exceeds 2000 sec. The complete Out fit comprises Stainless steel bath with electrical heating arrangement suitable to operate at 220 V AC mains with tap, silver plated oil cup with precision S.S. jet, cup cover, ball valve, thermometer clip. Stirrer and MS sheet stand with leveling screws.

Redwood Viscometer No. 1

Cat. No.	Size
MSI-8001	Electrically Heated with Energy Regulator
MSI-8002	Gas Heated (Without Gas Burner)
MSI-8003	Electrically Heated with Voltage Barrier
MSI-8004	With Electronic Digital Ind. & Cont. & FHP Motor Stirrer



Redwood Viscometer

Redwood Viscometer No. 2

Cat. No.	Size
MSI-8007	Electrically Heated with Energy Regulator
MSI-8008	Gas Heated (Without Gas Burner)
MSI-8009	Electrically Heated with Voltage Barrier
MSI-8010	With Electronic Digital Ind. & Cont. & FHP Motor Stirrer

1202. 'MSI' REDWOOD VICOMETERS MULTIPLE APPARATUS

It consists, Two Red Wood No.1 cup and Two Red Wood No.2 cup are installed in the bath. The bath is made from S.S. Sheet. The temperature is controlled by Electronic Digital Temperature Controller. The stirring is done by FHP electric motor in the heating compartment. The unit has 4 sets of oil cup covers, thermometer clip and ball valve. Suitable to operate on 220 volts AC Circuits.

Cat. No.	Size
MSI-8013	Redwood Viscometer Multiple Apparatus

Optional at Extra cost

- A. IP 8C (0/45 °C x 0.2 °C) Low range Thermometer
- B. IP 9C (40/85 °C x 0.2 °C) Medium range Thermometer
- C. IP 10C (76/122 °C x 0.2 °C) High range Thermometer
- D. Flask Receiver 50ml capacity
- E. Polish wooden case for Redwood No.1 Apparatus
- F. Spare cup with valve for Redwood No.1
- G. Spare cup with valve for Redwood No.2
- H. Polish wooden case for Redwood No.2 Apparatus
- I. Spare Heater for Redwood No.1 Apparatus
- J. Spare Heater for Redwood No.2 Apparatus
- K. Spare Ball Valve for Redwood No.1 and no.2 App.
- L. Stop Watch Electronic Model
- M. OP 101 m Stop Clock Table Model



1203. 'MSI' TAR VISCOMETER APPARATUS

As per IP 72 and is 1206 standards. It is used for determination the viscosity of road oil and Cut back bitumen. It consists S.S Bath with cup of 10 mm or 4 mm orifice and sleeve, Stirrer with lifting clip and ball. The assembly kept on Suitable stand with leveling Screws. Suitable to operate on 220 Volts AC Mains.

Cat. No.	Size
MSI-8016	Electrically Heated with Energy Regulator
MSI-8017	Electrically Heated with Voltage Barrier (Copper Coil)

1204. 'MSI' TAR VISCOMETER MULTIPLE APPARATUS

Consist 2 cups in S.S Water Bath mounted on Stand with leveling feet. Fitted with 1000 watts ISI marked heater. Temperature is controlled by DIGITAL ELECTRONIC CONTROLLER with F.H.P. electric motor with valves. Spare Silver Plated Cup 10 mm or 4 mm Orifice

Cat. No.
MSI-8220

Optional at Extra cost

- A. Spare Silver Plated Cup 10mm or 4mm orifice
- B. Measuring Cylinder 100 ml cap.
- C. IP 8C (0/45 °C x 0.2 °C) Low range Thermometer
- D. IP 9C (40x85 °C x 0.2 °C) Medium range Thermometer
- E. IP 10C (76x122 °C x 0.2 °C) High range Thermometer
- F. Polish wooden case
- G. Spare Heater 400 W
- H. Electronic Stop Watch



1205. 'MSI' ENGLER VISCOMETER APPARATUS

As per IP 212 and ASTM D-490. Used for determining the Viscosity of lubricating and fuel oils.

Cat. No.	Size
MSI-8023	Electrically Heated with Energy Regulator
MSI-8024	Electrically Heated with Voltage Barrier (Copper Coil)

Optional at Extra cost

- A. Engler ASTM 24C Thermometer (39/54 °C x 0.2 °C)
- B. Engler ASTM 25C Thermometer (95/105 °C x 0.2 °C)
- C. Engler Valve
- D. Spare wooden valve
- E. Flask 200 ml. capacity
- F. Wooden case for above Apparatus
- G. Spare Heater for above

1206. 'MSI' SAYBOLT VISCOMETER APPARATUS

Made as per ASTM-88 specification with Universal and Furol Jets made of Stainless Steel. Stirring is done by hand with turn table arrangement (without Strainer, withdrawal Tube and glass wares.) suitable to operate on 220 volts AC mains.

Cat. No.	Size
MSI-8027	Electrically Heated with Energy Regulator
MSI-8028	Electrically Heated with Voltage Barrier (Copper Coil)
MSI-8029	Two Saybolt tubes Viscometer Elect. Heating with Cont. Panel (Double Walled) with Digital Elect. Cont. & F.H.P. Stirrer

Optional at Extra cost

- A. Strainer for filtering oil
- B. Withdrawal Tube (Metal)
- C. Spare Cup without jets
- D. Spare jet Universal
- E. Flask 60 cc.
- F. Polish Wooden Case for above App
- G. ASTM 17C Range 19 to 27°C Thermometer
- H. ASTM 18C Range 34 to 42°C Thermometer
- I. ASTM 19C Range 49 to 57°C Thermometer
- J. ASTM 20C Range 57 to 65°C Thermometer
- K. ASTM 21C Range 79 to 87°C Thermometer
- L. ASTM 22C Range 95 to 103°C Thermometer
- M. COMMON RANGE Thermometer 0-100 °C



1207. 'MSI' KINEMATIC VISCOMETER BATH (IP-71 AND IS 1448)

This viscometer bath is used to maintain the correct constant Temperature for estimating kinematic Viscosity of Oils & Petroleum product. In this type of bath Various Viscometers may be fixed as internal part of bath. The bath is rectangular in shape. Inside stand made of Stainless steel sheet. On two sides toughened glass provided for full visibility of objects. The bath is controlled by an electronic relay and contact thermometer. Temperature range 5°C above room temperature to 100°C. accuracy $\pm 0.1^\circ\text{C}$ Stirring is done by a F.H.P. elect. Motor stirrer. It is Supplied with viscometer tube holders and S.S cover.

Cat. No.	Size
MSI-8032	Kinematics Viscometer Bath of chamber size 12"x9"x12" Deep for 4 Viscometer with Digital Temp. Ind. & Cont.
MSI-8033	Kinematics Viscometer Bath of chamber size 12"x12"x12" Deep for 6 Viscometer with Digital Temp. Ind. & Cont.
MSI-8034	Kinematics Viscometer to accommodate 3 Glass Viscometer tubes with glass Vessel. Digital Temp. Controller with Indicator suitable up to 120°C Temp. accuracy $\pm 0.1^\circ\text{C}$.

Optional at Extra cost

- A. Viscometer U tube BS/U
Size A, B, C, D, E, F, G & H
- B. Viscometer U Tube Reverse Flow (For Opaque Liquids)
Size 2, 3, 4, 5, 6, 7, 8, 9, 10 & 11 Viscometer Cannon Fenske,
- C. Direct Flow BS/IP/CF Viscosity Range
Size 25, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500 & 600
- D. Viscometer Cannon Fenske, Reverse Flow
Size 100, 150, 200, 300, 350, 400, 450, 500 & 600
- E. Spare Viscometer Holder.
- F. Electronic Stop Watch
- G. Stop Clock Table Model.
- H. Lighting Attachment.

Note :Please mention size and Viscosity range of Viscometer tube with indent. The Viscometers supplies with Constant Certificate.

1208. 'MSI' FLOW CUP VISCOMETER

This type of cup has been in popular use for many years and confirms to IS 3944-1965 specifications. These are available in following sizes.

Cat. No.	Size
MSI-8037	Flow Cup Viscometer
MSI-8038	Spare brass cup with any size Jet.

1209. 'MSI' ABLES FLASH POINT APPARATUS

This apparatus is suitable for determining the close cup flash point of petroleum and mixture according to IP 33 and IP 170 also IS 1448 (Part I) 1985 (P:20). It is suitable for oils whose flashes below 70°C. it is supplied with oil cup, cover fitted with stirrer, thermometer socket S.S. Water Bath, Stand. An electric heater is fitted at bottom for operation on 220 Volts AC Circuits.

- A. Ables Flash Point Apparatus, Elect. Heating With Energy Regulator Control.

Cat. No.	Size
MSI-8041	Oil Test Jet
MSI-8042	Gas Test Jet

- B. Same as above- Heating with energy Regulator& concealed Hot Plate.

Cat. No.	Size
MSI-8043	Oil Test Jet
MSI-8044	Gas Test Jet

C. Ables Flash Point Apparatus, Elect. Heating With Voltage Barrier.

Cat. No.	Size
MSI-8045	Oil Test Jet
MSI-8046	Gas Test Jet

D. Same as above- But with F.H.P. Elect. Driven Stirrer.

Cat. No.	Size
MSI-8047	Oil Test Jet
MSI-8048	Gas Test Jet

E. Ables Flash Point App. With Voltage Barrier Digital Temp. Indicator.

Cat. No.	Size
MSI-8049	Oil Test Jet
MSI-8050	Gas Test Jet

F. Same as above- with F.H.P. Elect. Driven Stirrer.

Cat. No.	Size
MSI-8051	Oil Test Jet
MSI-8052	Gas Test Jet

G. Ables Flash Point Apparatus Temp range -18°C to + 70°C with refrigeration system as per IP-170 with oil Test Jet & Gas Test jet Combine System.

Cat. No.
MSI-8053

Optional at Extra cost

- (a) Abel Oil Cup Thermometer (-35/70 °C x 0.5 °C) IP 74 °C
- (b) Abel Water Bath Thermometer (-30/80 °C x 0.5 °C) IP-75 °C
- (c) Polish Wooden Case
- (d) Spare cup for above Apparatus.
- (e) Spare top (Cover Assemble) with Shutter mechanism
- (f) Spare Nichrome Heating element.
- (g) Pendulum for Measuring Time in Strokes.
- (h) Concealed hot Plate with Housing.

1210. 'MSI' PENSKY MARTEN FLASH POINT APPARATUS

This apparatus is made as per IP 34, ASTM-D-93 and IS 1448 (Part I) 1270 (P.21) and IS 1209-1953 method B. the apparatus consists of brass test cup with handle removable cup cover with spring operated rotating Shutter having Oil Test Jet/Gas Test Jet Flame Device, stirrer with flexible shaft. The assembly rests in Air Bath which is covered with Dome shape metal top. The cup is fitted with insulated Handle and locking arrangement near Cup flange. The assemble is kept on round shape electric heater with temp. regulator. Suitable for operation on 220 Volt 50 cycle Ac Circuits.

A. Pensky Martens Flash App. Elect. Heating with Energy Regulator.

Cat. No.	Size
MSI-8056	Oil Test Jet
MSI-8057	Gas Test Jet

B. P.M. Flash Point App. Elect. Heating with Concealed Hot Plate & Energy Regulator.

Cat. No.	Size
MSI-8058	Oil Test Jet
MSI-8059	Gas Test Jet



C. P.M. Flash Point App. With energy Regulator & Hot plate. FHP. Motor Stirrer.

Cat. No.	Size
MSI-8060	Oil Test Jet
MSI-8061	Gas Test Jet

D. P.M. Flash Plate App. Elect. With Voltage barrier And Concealed hot Plate.

Cat. No.	Size
MSI-8062	Oil Test Jet
MSI-8063	Gas Test Jet

E. P.M. Flash Plate App. Voltage Variac with F.H.P. Elect. Motor Stirrer.

Cat. No.	Size
MSI-8064	Oil Test Jet
MSI-8065	Gas Test Jet

F. A Pensky Martens Flash App. Elect. With voltage Variac with Electronic. Digital Temp. Indicator.

Cat. No.	Size
MSI-8066	Oil Test Jet
MSI-8067	Gas Test Jet

G. Semi Automatic Flash Point Apparatus with Electronic Temp. Controller, Automatic Dipping cycle with Remote Control Oil Test Jet or Gas Test Jet.

Cat. No.
MSI-8068

Optional at Extra cost

- (a) Open clip for Converting Close Model To Open Cup Test model as per IP 35
- (b) IP 15C low range (-7/110C \times 0 $^{\circ}$ 5C) Thermometer
- (c) IP 16C High range (90/370C \times 2 $^{\circ}$ C) Thermometer
- (d) Polish wooden case
- (e) Spare cup with handle.
- (f) Spare Cover Assembly.
- (g) Spare Nichrome heating element
- (h) Spare Concealed Hot Plate with housing.

1211. 'MSI' CEAVELAND FLASH POINT & FIRE POINT APPARATUS

This apparatus is used for determination of flash point and fire point of petroleum products except fuel oil with open cup flash below 80 °C as per specification IP 36 and IS:1448 (P:69) 1969. The apparatus consists of a cup, heating plate to specific dimension thermometer clip and test flame attachment with swivel joint for passing over test liquid surface in the prescribed manner, Heating is controlled by means of energy regulator fitted to the apparatus, Suitable for operation on 220V 50 cycle AC circuit.

Cat. No.	Size
MSI-8072	Cleveland flash point & fire point apparatus Electrical heating With energy regulator Gas Test Jet.
MSI-8073	With Oil wick Arrangement.
MSI-8074	-do- with Gas Jet & Oil Wick Arrangement Combined Model.
MSI-8075	Cleveland flash & fire point apparatus voltage. Variac (Copper Coil) Combine Model.
MSI-8076	Same as above- with Digital Temp. Indicator

Optional at Extra cost

- (a) Thermometer IP 28C (-5°C to 400°C)
- (b) Polish wooden Case
- (c) Spare Cup with Handle
- (d) Spare Nichrome element
- (e) L.P.G. Test flame container with Valve

1212. 'MSI' PENETROMETER APPARATUS

[As per IP 4, 50 & 167 specifications and also per IS 1448 (P:92) & (P:93)]

This apparatus is used for penetration test on a wide variety of materials such as greases, petroleum, bitumen, tar, wax, polish, food stuff, rubber asphalts and pharmaceutical creams. A given force is applied over a given period of times and the depression is made in the Sample which is measured in tenths of a millimeter and expressed as penetration. It consists of a head Support mounted on a vertical rod which can be adjusted for height. A rack and pinion and pointer assembly provides fine adjustment of needle tip to Sample and in Corporate a Slipping clutch mechanism which make reading of penetration and subsequent resetting a sample and accurate operation. The dial graduate from 0-400 in one tenth millimeter Sub Division. The Instrument is supplied with two sample containers.

Cat. No.	Size
MSI-8079	Penetrometer Apparatus with containers and weighs having penetration Needle.
MSI-8080	Penetrometer Apparatus with containers and weighs having penetration Needle (ECONOMIC TYPE).
MSI-8081	Penetrometer Apparatus with containers and weights having penetration CANE HOLLOW type.
MSI-8082	Penetrometer Apparatus with Electronic TIMMER & electrical arrangement with Brass Cone & Needle
MSI-8083	Penetrometer Apparatus with Electronic TIMMER & Electric arrangement with Brass Cone & Needle With DIGITAL TIMEMR DEVICE (Adjustable)



Optional at Extra cost

- (a) Spare penetration Needle (pack of Two)
- (b) Spare penetration solid cone
- (c) Spare penetration Brass hollow cone
- (d) Grease worker hand operated
- (e) Grease worker hand operated Big handle (Lever Type)
- (f) Grease cutter as per IP 50.
- (g) Transfer Dish

1213. 'MSI' DISTILLATION APPARATUS

[As per IP 123, 191 and IS 1448 P : 18 specifications]

This apparatus is used for determinations of distillation characteristics of petroleum products. The instrument consists of metal shield to support distillation flask with GEARED HEIGHT ADJUSTABLE DEVICE. It has a slot for vapor tube. A glass window is provided in front side for clear view of inside objects. It also has cooling bath or condenser with M.S. black painted stand. Electrically heated. The instrument is supplied with two square asbestos board with 50mm and 70 mm holes. (without glass wares)

Cat. No.	Size
MSI-8086	Single Distillation Apparatus electrically heated with Energy Regulator with Gear device.
MSI-8087	Single Distillation Apparatus with Voltage Barrier (Copper Coil) with Gear device.
MSI-8088	Twin (Duplex) Distillation Apparatus elect. Heated model with two energy Regulators with Gear device.
MSI-8089	Twin (Duplex) Distillation Apparatus with two voltage Varies (Copper Coil) with Gear Device.
MSI-8090	Distillation Apparatus for Crude Petroleum as per IP-24 With One glass Condenser Elect., with Energy. Regulator control.

Optional at Extra cost

- (a) Distillation Flask 125ml
- (b) Distillation Flask 250ml.
- (c) Measuring Cylinder 100ml.
- (d) Spare Asbestos Board 38mm or 50mm or 70mm Dia Hole.
- (e) Thermometer IP 5C (-2/300°x1C)
- (f) Thermometer IP 6C (-2/400°x1C)

1214. 'MSI' CARBON RESIDE APPARATUS (RAMSBOTTOM)

It is made as per IP 14, ASTM 524 and IS 1448 (P:8) – 1967 Standards. It is used to determine the amount of carbon deposited when an oil evaporated under specified condition. The apparatus consists of a solid metal bath having 5 wells to accommodate cocking bulbs, the heavy duty heating elements provided around the bath. Supplied with 5 cocking bulbs and on syringe.

Cat. No.	Size
MSI-8093	Rams bottom Carbon Residue Apparatus with temp. regulation By energy Regulator, thermocouple and Digital Temp.
MSI-8094	Rams bottom Solid state electronic digital temperature Controller PID type in separate unit.

Optional at Extra cost

- (a) Spare Cocking bulb
- (b) Spare heating element for above.
- (c) Spare syringe.
- (d) Stainless Steel Tong.

1215. 'MSI' CARBON RESIDE APPARATUS (CONRADSON)

It is made as per IP 13, ASTM D-189 Specifications. It is useful to determine amount of Carbon Residue when an oil is evaporated under Specified Conditions. The Carbon residue values of crke Oil, residual etc. these are useful in the manufacture of various lubricants. The apparatus consists of spun sheet iron crucible 25 c Capacity, Sheet Iron and sheet iron block on a stand, gas Burner.

Cat. No.	Size
MSI-8097	Conradson Carbon Residue single Test Apparatus.
MSI-8098	Conradson Carbon Residue Four Test Apparatus with Gas Burner.

1216. 'MSI' CLOUD AND POUR POINT APPARATUS

This is made according to specification laid by IP 15 & IS 1448 (P:10) 1970. The pour point is lowest temperature at which the Oil will just fail to flow. The apparatus Consists main cooling bath made out of S.S. sheet and stand unit with drain plug and cover has provision for fitting thermometer and a filling aperture for adding freezing mixture. A Glass jar for containing oils, Jacket, disc and gasket as specified are also provided.

Cat. No.	Size
MSI-8101	Cloud & Pour Single with Insulated Body.
MSI-8102	Cloud & Pour Point Double Test with Insulated Body.
MSI-8103	Cloud & Pour Point Four with Insulated Body.
MSI-8104	Cloud Pour Point App. WITH REFRIGERATION SYSTEM (for 2 test App.) Temp. upto - 30°C.

Optional at Extra cost

- (a) Cloud & Pour Point Thermometer IP IC.
- (b) Cloud & Pour Point Thermometer IP 2C.
- (c) Spare Glass Jar with cork.
- (d) Spare Metal jacket.
- (e) Polish wooden case for above.
- (f) Rexene Dust Cover for refrigeration Unit.

1217. 'MSI' SOFTENING POINT APPARATUS

For determination of softening point of bituminous materials according to IP 58 and IS 1205-1958. Softening point is that temperature at which the specimen under test becomes soft enough to allow a steel ball of specific dimension to fall a required distance under test condition. The apparatus consists of glass beaker, ring Stand, two steel balls with rings and ball guides, hand Stirrer.

Cat. No.	Size
MSI-8107	Softening Point Apparatus (without Glass Beaker)
MSI-8108	Softening Point Apparatus with Glass Beaker.
MSI-8109	Softening Point Apparatus with F.H.P. elect. Motor driven Stirrer and electric heater with temp. Regulator Control.
MSI-8110	Same as Above- with DIGITAL CONTROLLER UNIT.

Optional at Extra cost

- (a) Thermometer IP 60 C.
- (b) Thermometer IP 61 C
- (c) Spare Ring with Ball-Centering Guide and Steel Ball (pack of 2) without Beaker.

1218. 'MSI' DROP POINT OF GREASE APPARATUS

[As per IP 31 and 132 and ASTM D –566 Specifications]

As per IP 31 the apparatus Consists of Brass Sleeve and case with metal cup and a glass Boiling tube with Cork fitted to a bath 600 ml beaker is provided. The assembly is kept on heater with energy Regulator control and stand with F.H.P. elect Stirrer. As per IP 132 the unit Comprises a glass breaker with fiber Cover together with glass test tube with three indentations to receive Chromium plated brass cup, cork for tube and a 1.5 mm diameter Brass rod. The assembly is kept on heater with energy regulator and stand with F.H.P. motor stirrer.

Cat. No.	Size
MSI-8113	Drop Point Apparatus as per IP 132 & ASTM D 566. without Thermameter complete with Beta & Stirrer
MSI-8114	Drop Point Apparatus as per IP 31.

Optional at Extra cost

- (a) IP 40C Low range Thermometer.
- (b) IP 41C High range Thermometer.
- (c) IP 62C Drop Point Special Thermometer.

1219. 'MSI' MELTING POINT APPARATUS

This apparatus consists of a cylindrical block of Aluminum with a built in electrical heating element. The mounted Alum. block illuminates from below by a lamp fixed in its housing. The aluminum block accept three capillary tubes and mercury thermometer. The temperature is controlled by rotary switch. He magnifying lenses provided for viewing objects clear. Suitable for operation on 220 Volts AC circuits.

Cat. No.	Size
MSI-8117	Melting Point Apparatus of Petroleum as per IP 55
MSI-8118	-do- Digital Temp. Indicator with Cooling Plug.
MSI-8119	IP 63C Thermometer.

1220. 'MSI' REID VAPOUR PRESSURE TEST APPARATUS

Made as per IP 69 & IS 1448 (P:39). 1967 elect. Heated with FHP motor Stirrer temp. controlled by Electronic Digital Temp. Controller and Indicator. (without Bomb. and accessories)

Cat. No.	Size
MSI-8122	Single Test Bath
MSI-8123	Double Test Bath

Optional at Extra cost

- (a) Vapor Pressure Bomb Consisting of one Air Chamber One Gasoline Chamber without Cork.
- (b) Gasoline Chamber with Cock (if Required)
- (c) Spare Air chamber without cock.
- (e) NP Pressure Gauge for above

1221. 'MSI' COPPER STRIP CORROSION TEST APPARATUS

Double walled stainless steel chamber bath outer chamber made of mild steel sheet attractive painted. As per IP 154 and IS 1448 (P-15) to accommodate 6 Bombs. Temperature is controlled by Electronic Digital Controller (Without S.S. Bomb)

Cat. No.	Size
MSI-8126	With Digital Temp. Controller & Indicator only bath for 6 bombs (50°C & 100°C)

Optional at Extra cost

- (a) Stainless Steel Bomb.
- (b) Vice Single Strip
- (c) Vice Six Strip.
- (d) Copper Strip (pack of 3)
- (e) Test Tube 1" x 6"
- (f) Copper Strip Comparison Chart (Indigenous).
- (g) Inspection Tube (Flat).

1222. 'MSI' SMOKE POINT APPARATUS

Cat. No.	Size
MSI-8129	Smoke Point Apparatus as per IP 57 & IS 1448 (P-31) & ASTM D 1322.
MSI-8130	Spare Candle.
MSI-8131	Spare Wick.

1223. 'MSI' BURNING TEST APPARATUS

Cat. No.	Size
MSI-814	Burning Test Lamp as per IP 10 7 IS 1440 (P-5) & ASTM D 187-82.
MSI-8135	Spare Wick.
MSI-8136	Spare Chimney.