FLAMMABILITY

ASTM D 56 - IP 304
AUTOMATIC FLASH POINT BY TAG CLOSED TESTER

ASTM D 92 - ISO NF EN 22592 - ISO 2592 - IP 36 - DIN 51376
FULLY AUTOMATIC CLEVELAND OPEN CUP (COC) FLASH POINT TESTER
HALF AUTOMATED CLEVELAND FLASH POINT
MANUAL CLEVELAND FLASH POINT

ASTM D 93 - EN 22719 - IP 34 - ISO 2719 - NF EN 22719 - NF M07019 - DIN 51758 - GBT 261
FULLY AUTOMATIC PENSKY MARTENS FLASH POINT TESTER
HALF AUTOMATED MODEL PENSKY-MARTENS FLASH TESTER
MANUAL MODELS PENSKY-MARTENS FLASH TESTER

IP 170 - ISO 13016 - NFT 66009 - DIN 51755
AUTOMATIC ABEL FLASH POINT TESTER

ASTM D 3828 - ISO 3679 - IP 303
NEW "GO / NO GO" FLASH POINT IN CLOSED CUP - MODEL NPV 310
NEW "GO / NO GO" FLASH POINT IN CLOSED CUP - MODEL NPV 220

NFT 60103 LUCHAIRE
NEW DESIGN LUCHAIRE FLASH POINT TESTER AUTOMATIC VERSION
NEW DESIGN LUCHAIRE FLASH POINT TESTER HALF AUTOMATED MODEL
NEW DESIGN LUCHAIRE FLASH POINT TESTER MANUAL VERSION

ASTM D 1322 - ISO 3014 - IP 57 - DIN 51406
DETERMINATION OF THE SMOKE OF KEROSINE AND AVIATION TURBINE FUEL

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ASTM D 56 - IP 304

SCOPE:
This method covers the determination of the flash point of liquids having a viscosity below 5,5 Cst at 40°C and a flash point below 93°C.

AUTOMATIC FLASH POINT BY TAG CLOSED TESTER
FULLY AUTOMATIC TAG FLASH POINT TESTER
- MODEL NTA 440 –
- REF 40600 -

MAIN CHARACTERISTICS

- ✓ Test Temperature Range: For Flash point below 93°C
- ✓ Double Flash and Fire point detection by ionisation ring and thermocouple
- ✓ Data Storage: 200 results
- ✓ Quick access to calibration parameters
- ✓ Auto diagnostic
- ✓ Liquid bath as per standard method
- ✓ Optional low gas cartridge to work in all types of environments
- ✓ Automatic Gas cut-off at the end of the test
- ✓ Optional cryostat required for samples having a FP below 40°C

SUPERVISOR SOFTWARE

Supervisor software delivered on CD-Rom for real-time data downloading on PC computer running Windows (c) 98 - 2000 - XP / possibility to collect the data for a LIMS

OPTIONAL ACCESSORIES

REF 40613 Electric ignitor for flame lightening

REF 23203 Cryostat for test below ambient - TLC30/5 litres (-30/+60 ±0.1°C)
OR
REF 23204 Cryostat for test below ambient - TLC40/11 litres (-45/+20 ±0.1°C)

REF 14110 Tube for propane gas 6 x12 mm (10 m)
REF 40483 Gas cartridge case and 1x 100 ml gas cartridge
REF 40484 100 ml Gas cartridge for optional case

SPARE PARTS

REF 40390 Printer paper for Seiko DPU 414
REF 40614 Pt 100 probe
REF 40611 Heating element 250 W (each)
REF 40610 Cup without cover

SCOPE OF DELIVERY

NTA 440 delivered ready to use with SEIKO ticket printer, cup and cover, Pt 100 probe, detection cable, insulated tubing for connexion to cryostat, and RS232C output. Supervisor Software included

DIMENSIONS

For use on AC 230V - 50Hz - 4A - (W) 260x (D) 535x (H) 500 mm (±20 kg) –

MAIN INSTRUMENT

REF 40600 : NTA 440
REF 40600/115V : Same as above for 115V 50/60 Hz

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ASTM D 92 - ISO NF EN 22592 - ISO 2592 - IP 36 - DIN 51376

SCOPE:
This test method is applicable to determine the flash point and fire point of all petroleum products having a flash point between 79°C and 400°C

PRODUCTS:
All petroleum products with flash points above 79°C and below 400°C except fuels.

FULLY AUTOMATIC CLEVELAND OPEN CUP (COC) FLASH POINT TESTER
- MODEL NCL 440 -
- REF 40400 -

MAIN CHARACTERISTICS

- ✓ Test Temperature Range: Ambient to 400°C
- ✓ Flash and Fire point detection by ionisation ring
- ✓ Data Storage: 200 results
- ✓ Automatic Flame Lightening and extinguishing
- ✓ Optional low gas cartridge to work in all types of environments
- ✓ Automatic Gas cut-off at the end of the test
- ✓ Emergency safety switch

SUPERVISOR SOFTWARE

Supervisor software delivered on CD-Rom for real-time data downloading on PC computer running Windows (c) 98 - 2000 - XP Possibility to collect the data for a LIMS

OPTIONAL ACCESSORIES

REF 40440 6 cups automatic sampler
REF 40483 Gas cartridge case and 1x 100 ml gas cartridge
REF 40484 100 ml Gas cartridge for optional case

SPARE PARTS

REF 40154 Heating element, 1000 W
REF 40380 Electric ignitor for NCL 440 & NPM 440
REF 40390 Printer paper roll for Seiko DPU 414
REF 40437 Insulated plate - fixed
REF 40417 Standard Cleveland cup
REF 40439 Insulated plate - mobile
REF 40441 Pt 100 probe
REF 40443 Ionisation ring flash point
REF 40444 Ionisation ring fire point

SCOPE OF DELIVERY

NCL 440 delivered ready to use with SEIKO ticket printer, cup,
Pt 100 probe, detection cable, gas tubing and RS232C output.
Supervisor Software included

For use on AC 230 V - 50 Hz - 0.3 A - 320x580x360 mm (±17 kg)
– 115 V on request

MAIN INSTRUMENT

REF 40400: NCL 440 ready to use 230V
REF 40400/115V: Same as above 115V

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HALF AUTOMATED CLEVELAND FLASH POINT
– MODEL NCL 220 –
- REF 942610 -

The NEW semi-automatic NCL 220 Cleveland flash tester is used for determining fire and flash points by open cup method. The Cleveland method applies to the petroleum products whose flash point in open cup is higher than 79°C, except fuel oils, which are generally tested with the closed cup method.

The apparatus is equipped with a brass crucible, a Pt 100 probe, electronic regulator and a manual scanner flame. The temperature slope is also automatically controlled through electronic regulation.
The NCL 220 is delivered ready for use.

For use on AC 230 V, 50 Hz - 0.3 A -
External dimensions : 350x250x330 mm (±10 kg)

SPARE PARTS

REF 941609 Gas tubing, dia. 2x4 mm (1 m)
REF 941613 Cleveland cup with handle
REF 941615 Stoptherm insulating board
REF 9417908 Pt 100 probe (70 x 3 mm)
REF 40154 Heating element (1000 W)

SCOPE OF DELIVERY

The NCL 220 is delivered ready for use.
For use on AC 230 V, 50 Hz - 0.3 A -
External dimensions: 350x250x330 mm (±10 kg)

MANUAL CLEVELAND FLASH POINT
– MODEL NCL 120 –
- REF 942611 –

NEW DESIGN Manual Cleveland tester, comprising:

- ✓ Cleveland cup with handle
- ✓ ASTM 11C Thermometer
- ✓ electric heating
- ✓ Pilot flame
- ✓ older for thermometer

For use on AC 230 V, 50 Hz - 0.3 A -
External dimensions - 350 x 250 x 430 mm (±7 kg)

SPARE PARTS

REF 941609 Gas tubing, dia. 2x4mm (1 m)
REF 941613 Cleveland cup with handle
REF 941615 Stoptherm insulating board
REF 11498 ASTM thermometer (11 C), range from -6 to +400°C in 2°C
REF 40154 Heating element, 1000 W

230 V- 50 Hz – 1000 W
Dimensions 350x250x4300 mm (+/- 7kg)

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ASTM D 93 - EN 22719 - IP 34 - ISO 2719 - NF EN 22719 - NF M07019 - DIN 51758 - GBT 261

SCOPE:
These test methods cover the determination of the flash point of petroleum products in the temperature range from 40 to 360°C by manuals or automated Pensky-Martens closed cup apparatus.

PRODUCTS:
Method A: homogeneous petroleum liquids, fuels (diesel, kerosene, heating oil, turbine fuels) and new lubricant oils.
Method B: residual fuel oils, cut back residua, used lubricating oils, mixture of petroleum liquids with solids

FULLY AUTOMATIC PENSKY MARTENS FLASH POINT TESTER
- MODEL NPM 440 -
- REF 40300 -

MAIN CHARACTERISTICS

- ✓ Test Temperature Range : Ambient to 400°C
- ✓ Double Flash point detection by ionisation ring and thermocouple
- ✓ Data Storage: 200 results
- ✓ Quick access to calibration parameters
- ✓ Auto diagnostic
- ✓ Automatic Flame extinguishing
- ✓ Methods available: A, B, QUICK A, BITUMEN, UNKNOWN PRODUCT, B MODIFIED, AMBIENT, and user programmable
- ✓ Optional low gas cartridge to work in all types of environments
- ✓ Automatic Gas cut-off at the end of the test

SUPERVISOR SOFTWARE

Supervisor software delivered on CD-Rom for real-time data downloading on PC computer running Windows (c) 98 - 2000-XP / possibility to collect the data for a LIMS

OPTIONS ACCESSORIES

REF 14110 Tube for propane gas 6 x12 mm (10 m)
REF 40483 Gas cartridge case and 100 ml gas cartridge
REF 40484 100 ml Gas cartridge for optional case

SPARE PARTS

REF 40346 Cup for NPM 440 made of brass
REF 40347 Cover without probe for NPM 440
REF 40349 Stirring connection cable
REF 40351 Detection cable for thermocouple
REF 40353 Pt 100 probe for NPM 440
REF 40380 Electric ignitor
REF 40390 Printer paper for Seiko DPU 414
REF 40366 Detection ring (ionization)
REF 40390 Printer paper for Seiko

SCOPE OF DELIVERY

NPM 440 delivered ready to use with SEIKO ticket printer, cup
and cover, Pt 100 probe, detection cable, Stirrer flexible,
electric ignitor and RS232C output.
Supervisor Software included

REF 40300 NPM 440 For use on AC 230V - 50Hz - 4A - (W) 260x (D) 535x (H) 500 mm (±20 kg)
REF 40300/115V Same as above for 115V 50/60 Hz

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HALF AUTOMATED MODEL PENSKY-MARTENS FLASH TESTER
- NPM 221 –
- REF 942619 -

METHOD A AND B - BY QUICK SWITCH

- Electrically heated
- Automatic stirring with rotating speed according to the specified method
- Temperature range from ambient to 360°C
- Temperature measurement by Pt 100 Probe
- Automatic heating slope
- Automatic stirring
- Cooling by compressed air
- Gas ignition
- Temperature safety by thermostat
- Heating power: 1200 W -Delivered with forged brass cup, cover, , Pt 100 probe and stirring flexible

For use on AC 230V, 50Hz, 6 A (350x250x380 mm) ± 10 kg

ECONOMICAL VERSIONS NPM 220 A OR NPM 220 B

REF 942617 same description as p/n 942619 but for method A
REF 942618 same description as p/n 942619 but for method B

SPARE PARTS

REF 941609 Gas tubing (1 m) - 2/4 mm dia.
REF 941621 Heating cartridge 230 V (400 W)
REF 9411930 Cup for NPM 120 & 121, 220 & 221
REF 9411931 Cover with opening mechanism for NPM 120 & 121, 220 & 221
REF 9417908 Pt 100 probe (70x3 mm)

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MANUAL MODELS PENSKY-MARTENS FLASH TESTER
- NPM 121 –
- REF 942616 -

METHOD A AND B - BY QUICK SWITCH

- Electrically heated
- Automatic stirring with rotating speed according to the specified method
- Temperature range from ambient to 360°C
- Temperature measurement by thermometer
- Manual heating slope
- Cooling by compressed air
- Gas ignition
- Temperature safety by thermostat
- Heating power : 1200 W

Delivered with forged brass cup, cover, ASTM thermometers 9C & 10C and stirring flexible
For use on AC 230V, 50Hz, 6 A (350x250x380 mm) ± 10 kg

ECONOMICAL VERSIONS NPM 120 A OR NPM 120 B

REF 942614 same description as p/n 942616 for method A
REF 942615 same description as p/n 942616 for method B

SPARE PARTS

REF 941609 Gas tubing (1 m) - 2/4 mm dia.
REF 941621 Heating cartridge 230 V (400 W)
REF 9411930 Cup for NPM 120 & 121, 220 & 221
REF 9411931 Cover with opening mechanism for NPM 120 & 121, 220 & 221
REF 9417908 Pt 100 probe (70x3 mm)
REF 11496 ASTM Thermometer 9C
REF 11497 ASTM Thermometer 10C

How to chose The most suitable Pensky Martens NPM series?

Summary of the main specifications:

	NPM 120	NPM 121	NPM 220	NPM 221	NPM 440
Temperature Range	Ambient to 360°C	Ambient to 360°C	Ambient to 360°C	Ambient to 360°C	Ambient to 400°C
Temperature measurement	By thermometer	By thermometer	Digital - PT 100	Digital - PT 100	PT 100
Methods available	A or B	A & B	A or B	A & B	A, B and others
Heating slope	Manual	Manual	Automatic	Automatic	Automatic
Stirring	Automatic	Automatic	Automatic	Automatic	Automatic
Detection	Visual	Visual	Visual	Visual	Automatic
Cooling	By compressed air	By compressed air	By compressed air	By compressed air	Fan or water
Ignition	Gas	Gas	Gas	Gas	Gas & electricity
Temperature safety	Thermostat	Thermostat	Thermostat	Thermostat	Thermostat + Sofw are
Dimensions in mm	350x250x380	350x250x380	350x250x380	350x250x380	320x580x360
weight in Kg	10	10	10	10	17
Reference	942614 (A) 941615 (B)	942616	941617 (A) 941618 (B)	942619	40300

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IP 170 - ISO 13016 - NFT 66009 - DIN 51755

SCOPE:
This test method covers the determination of the closed cup flash point of petroleum products and other liquids having flash point between -30 and 110°C.

AUTOMATIC ABEL FLASH POINT TESTER
- MODEL NAB 440 –
- REF 41300 -

MAIN CHARACTERISTICS

- ✓ Test Temperature Range: -30°C to 110°C
- ✓ Double Flash point detection by ionisation ring and thermocouple
- ✓ Data Storage: 200 results
- ✓ Quick access to calibration parameters
- ✓ Auto diagnostic
- ✓ Optional low gas cartridge to work in all types of environments
- ✓ Automatic Gas cut-off at the end of the test
- ✓ Optional cryostat required for samples having a FP below 40°C

SUPERVISOR SOFTWARE

Supervisor software delivered on CD-Rom for real-time data downloading on PC computer running Windows (c) 98 - 2000 - XP / possibility to collect the data for a LIMS

OPTIONAL ACCESSORIES

REF 40613 Electric ignitor for flame lightening
REF 23203 Cryostat - model TLC 30 (-35 to +60°C ±0.1)
REF 23204 Cryostat - model TLC 40 (-45 to + 20 °C ±0.1)
REF 14110 Tube for propane gas 6 x12 mm (10 m)
REF 40483 Gas cartridge case and 1x 100 ml gas cartridge
REF 40484 100 ml Gas cartridge for optional case

SPARE PARTS

REF 41301 Abel cup
REF 41303 Abel cover
REF 41306 Stirrer flexible
REF 40613 Electric ignitor
REF 41309 Detection cable thermocouple
REF 41310 Pt 100 probe
REF 40390 Roll of Seiko DPU 414 printer paper

SCOPE OF DELIVERY

NAB 440 delivered ready to use with SEIKO ticket printer, cup and cover, Pt 100 probe, detection cable, Stirrer flexible, insulated tubing for connexion to cryostat, and RS232C output. Supervisor Software included

For use on AC 230V - 50Hz - 4A - (W) 260x (D) 535x (H) 500 mm (±20 kg) / **REF 41300/115V** : Same as above for 115V 50/60 Hz

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MANUAL ABEL FLASH POINT APPARATUS, WITH ELECTRIC HEATER AND GAS TEST JET
- MODEL NAB 110 -
- REF 941601 -

A traditional copper water bath, with oil cup, gas test jet, manual stirrer, thermometers.
Strictly in accordance with IP 170 and corresponding methods.

OPTIONAL ACCESSORIES

REF 941143 Energy regulator
REF 941597 Dry ice machine

SPARE PARTS

REF 941604 Cup
REF 9416041 Lid shutter and stirrer with gas test jet
REF 21227 IP thermometer (74 C) with collar
REF 21228 IP thermometer (75 C) with collar
REF 21229 IP thermometer (2 C)

AC 230V, 50 Hz, 2A, 250 x 280 x 420 mm (±7 kg)

ASTM D 3828 - ISO 3679 - IP 303

SCOPE:
This test method covers the determination of the closed cup flash point in the temperature range from -30 up to 300°C.

PRODUCTS:
Paint, varnish, laque, solvent, cosmetics, perfume. Biodiesels

NEW "GO / NO GO" FLASH POINT IN CLOSED CUP - MODEL NPV 310- –HALF AUTOMETED VERSION - - REF 942691 -

MAIN CHARACTERISTICS

- ✓ Temperature Range: from -30°C to 300°C
- ✓ Automatic slope 6°C per minute
- ✓ Digital display
- ✓ PID regulator
- ✓ Sample stabilisation 60 or 120 sec digital control
- ✓ Automatic flame presentation - Auto flash point detection
- ✓ Temperature measurement by Pt probe with resolution at 1/10°C
- ✓ Programmable high temperature safety
- ✓ Flash point detection by thermocouple
- ✓ Optional external cooling system for low temperature flash point

2 MÉTHODS AT CHOICE

• Standards equilibrium method
• Method with controlled heating rate of 5°C/minute and flame presentation until flash point detection.

NECESSARY ACCESSORIES

REF 21604 Pack of 100 loading syringes 2 ml
REF 25826 Pack of 100 loading syringes 5 ml

OPTIONS

REF 23203 Small circulating cryostat for operating in higher room temperatures - Model TLC 30 - 5 litres (-30 to +60°C/±.1)
REF 22001 Insulated tubing (1 m) for connexion between tester and cryostat
REF 26075 Mercury thermometer for calibration purposes range from -30 to +110°C, graduated in 0.5°C ±0.2°C
REF 40483 Gas cartridge case and 1x 100 ml gas cartridge
REF 40484 100 ml Gas cartridge for optional case

SCOPE OF DELIVERY

NPV 310 Ready to use - Loading syringes to be ordered separately

For use on AC 230V, 50/60 Hz - 5A - 320x260x460 mm (± 12 kg) / 115V on request

MAIN MODELS

REF 941691 NPV 310 with gas ignition
REF 941692 NPV 310 Gas and electric ignition

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NEW "GO / NO GO" FLASH POINT IN CLOSED CUP - MODEL NPV 220 - - EQUILIZIUM METHOD - HALF AUTOMATED VERSION - REF 942690 -

MAIN CHARACTERISTICS

- ✓ Temperature Range: from -30°C to 300°C
- ✓ Digital display
- ✓ PID regulator
- ✓ Sample stabilisation 60 or 120 sec digital control
- ✓ Automatic flame presentation - Auto flash point detection
- ✓ Temperature measurement by Pt probe with resolution at 1/10°C
- ✓ Programmable high temperature safety
- ✓ Detection by ionization ring
- ✓ Gas ignition
- ✓ Optional external cooling system for low temperature flash point

NECESSARY ACCESSORIES

REF 21604 Pack of 100 loading syringes 2 ml
REF 25826 Pack of 100 loading syringes 5 ml

SPARE PARTS

REF 41401 Detector lead
REF 90-010072 Heating cartridge, 250 W

OPTIONAL ACCESSORIES

REF 23203 Small circulating cryostat for operating below room temperatures - Model TLC 30 - 5 litres (-30 to +60°C/±.1)
REF 22001 Insulated tubing (1 m) for connexion between tester and cryostat
REF 26075 Mercury thermometer for calibration purposes
range from -30 to +110°C, graduated in 0.5°C ±0.2°C
REF 40483 Gas cartridge case and 1x 100 ml gas cartridge
REF 40484 100 ml Gas cartridge for optional case

SCOPE OF DELIVERY

NPV 220 Ready to use -
Loading syringes to be ordered separately

For use on AC 230V, 50/60 Hz - 5A - 240x260x350 mm (± 7 kg) / 115V on request

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NFT 60103 LUCHAIRE

SCOPE

This method covers the Flash point determination of lubricating oils and fuel oils in closed cup.

NEW DESIGN LUCHAIRE FLASH POINT TESTER AUTOMATIC VERSION
- MODEL NLU 440 -
- REF 40200 -

MAIN CHARACTERISTICS

- ✓ Test Temperature Range: Ambient to 400°C
- ✓ Automatic Flash point detection
- ✓ Data Storage: 200 results
- ✓ Automatic Flame Lightening and extinguishing
- ✓ Optional low gas cartridge to work in all types of environments
- ✓ Automatic Gas cut-off at the end of the test
- ✓ Emergency safety switch

TEST PRINCIPLE

The samples tested through the LUCHAIRE flash point method are heated up at a rate of 2 to 3°C per minute.
The lowest temperature at which the vapors are fired by the dipping pilot flame is defined as the Luchaire Flash point.

SUPERVISOR SOFTWARE

Supervisor software delivered on CD-Rom for real-time data downloading on PC computer running Windows (c) 98 - 2000-XP / possibility to collect the data for a LIMS

SCOPE OF DELIVERY

- ✓ Luchaire cup for temperatures above 100°C
- ✓ Luchaire cup for temperatures below 100°C
- ✓ Printer
- ✓ Pt 100 probe
- ✓ RS 232 C output
- ✓ Insulated plate

For use on AC 230 V - 50 Hz - 0.3 A -
320x580x360 mm (±17 kg) –
115 V on request

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NEW DESIGN LUCHAIRE FLASH POINT TESTER HALF AUTOMATED MODEL
- MODEL NLU 210 –
- REF 9426222 -

MAIN CHARACTERISTICS

- ✓ Electrically heated
- ✓ Temperature measurement by Pt 100 probe
- ✓ Automatic heating slope
- ✓ Pilot burner with needle valve for fine adjustment of the flame
- ✓ Gas ignition
- ✓ Temperature safety by thermostat

SPARE PARTS

REF 40154 Heating element 1000 W
REF 9426223 Luchaire cover
REF 9426224 Luchaire cup for temperatures < to 100°C
REF 9426225 Luchaire cup for temperatures > to 100°C
REF 9426226 PT 100 Probe

SCOPE OF DELIVERY

- 1 Cup for temperatures < à 100°C
- 1 Cup for temperatures > à 100°C
- 1 Pt 100 probe
- 1 Pair of protective gloves

For use on AC 230 V - 50/60 Hz - 1100 W
Dimensions: 410 x 360 x 400 mm - Weight: ±8 kg

NEW DESIGN LUCHAIRE FLASH POINT TESTER MANUAL VERSION
- MODEL NLU 110 -
- REF 9426221 -

MAIN CHARACTERISTICS

- ✓ electric heating with energy regulator,
- ✓ Gas flame with control valve,
- ✓ stand and thermometer holder
- ✓ Gas ignition Pilot burner with needle valve for fine adjustment of the flame

SPARE PARTS

REF 40154 Heating element 1000 W
REF 9426223 Luchaire cover
REF 9426224 Luchaire cup for temperatures < to 100°C
REF 9426225 Luchaire cup for temperatures > to 100°C
REF 13627 Main thermometer graduated from -20 to +420°C
REF 10200 Correction thermometer graduated from -10 to +110°C

For use on AC 230 V - 50/60 Hz - 1100 W
Dimensions 390 x 360 x 420 mm - Poids : ±8 kg

SCOPE OF DELIVERY

- 1 Cup for temperatures < to 100°C
- 1 Cup for temperatures > to 100°C
- 1 Statif support for thermometer
- 1 Main thermometer graduated from -20 to +420°C
- 1 Correction thermometer graduated from -10 to +110°C

ASTM D 1322 - ISO 3014 - IP 57 - DIN 51406

SCOPE:
This test method covers a procedure for determination of the smoke point of kerosene and aviation turbine fuel.

DETERMINATION OF THE SMOKE OF KEROSINE AND AVIATION TURBINE FUEL - REF 941680 -

MAINS CHARACTERISTICS

Smoke point apparatus; complete as per the above mentioned standard methods specifications, delivered with one interchangeable oil container.

DIMENSIONS 200 x 200 x 400 mm - (±4 kg)

SPARE PARTS AND CONSUMABLES

REF 9416801 Candle (oil container)
REF 9416802 Pack of 12 wicks

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VOLATILITY

ASTM D 86 - D 850 - D 1078 - ISO 3405 - NFM 07002 - IP 123 - IP 195 - DIN 51751

AUTOMATIC ATMOSPHERIC DISTILLATION OF PETROLEUM PRODUCTS
HALF AUTOMATED DISTILLATION OF PETROLEUM PRODUCTS
MANUAL INSTRUMENT – ECO VERSION

ASTM D 1160 - ISO 6616 - DIN 51567

HALF-AUTOMATED D1160 INSTRUMENT

ASTM D 323 - ISO EN 12 - ISO 3007 - IP 69 - DIN 51754 - NFM 07007

DETERMINATION OF "REID" VAPOUR PRESSURE OF PETROLEUM PRODUCTS

ASTM D 86 - D 850 - D 1078 - ISO 3405 - NFM 07002 - IP 123 - IP 195 - DIN 51751

SCOPE:
This test method covers the atmospheric distillation of petroleum products.
Natural, motor and aviation gasolines, aviation turbine fuels, special boiling point spirits, naphtas, white spirit, kerosene, gas oils, distillate fuel oils.

AUTOMATIC ATMOSPHERIC DISTILLATION OF PETROLEUM PRODUCTS
- MODEL NDI 440 –
- REF 40000 -

Sand alone mode works without PC 17 plat screen - keyboard and mouse are connected to the Built-in CPU.

MAIN CHARACTERISTICS

- ✓ Temperature measurement range: Ambient to 450°C
- ✓ Temperature accuracy: 0.05°C
- ✓ Condenser temperature: 0 to 60°C
- ✓ Built-in Cooling System
- ✓ Level follower accuracy: 0.02 ml
- ✓ Receiver compartment temperature: ambiant to 30°C
- ✓ Determination of DECOMPOSITION Point and HESITATION point
- ✓ Powerful heating element

SAFETY FEATURES

- ✓ DOUBLE Fire detection: optical and thermal
- ✓ Automatic fire extinguishing operated with nitrogen

SOFTWARE FEATURES

- ✓ Runs storage capacity: 60 (unlimited with WINDOWS version)
- ✓ Program files: 25 (unlimited with WINDOWS version)
- ✓ Result comparison and analysis
- ✓ Ready for Biodiesels analysis
- ✓ A mouse can be connected
- ✓ Multilanguage software (English, French, Spanish...)
- ✓ A colour printer can be connected
- ✓ LIMS compatible

Distillation NDI Can be monitored as a remote version through the connexion of an external computer.

4 NDI Can be connected to the same computer

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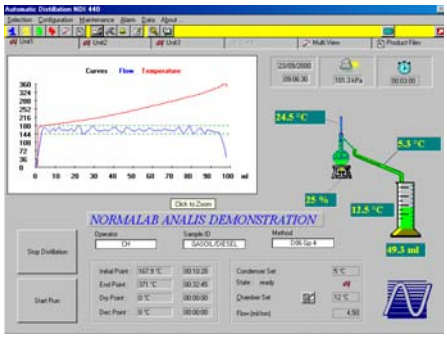
OPTIONS

REF 40074 FREMOTE CONTROL UNIT allows the connection of up to 4 NDI 440 units, comprising:

- ✓ Pentium PC (MOXA Board included for connexion of 4 instruments) with color screen
- ✓ WINDOWS software
- ✓ Color Printer

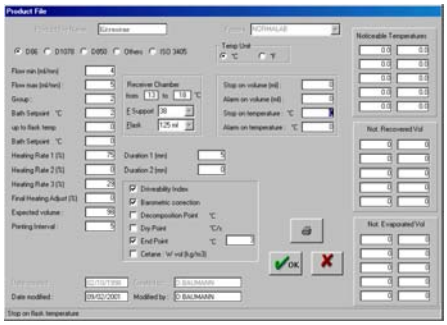
REF 11493N WINDOWS SOFTWARE CD ROM



MAIN MENU

MAIN CONSUMABLES

REF 19096 Pack of 10 seepage fingers
REF 19420 100 ml distillation flask (ASTM D 86)
REF 19422 200 ml distillation flask (ASTM D 850)
REF 40043 200 ml black bottom flask (ASTM D 1078)
REF 24019 125 ml distillation flask (ASTM D 86)
REF 26111 100 ml graduated receiver with glass foot
REF 40052 125 ml black bottom flask
REF 40390 Roll of Seiko DPU 414 printer paper (with color printer, standard A4 paper can be used)



PROGRAMME FILE

SPARE PARTS

REF 12609 5 ml graduated cylinder (ASTM D 86)
REF 40049 Pack of 50 bored silicone stoppers for condenser side
(lower dia.: 10 mm - upper dia.: 15 mm - 23 mm long)
REF 40064 Teflon stopper for PT 100 probe and dry point (D86)
REF 40076 Pt 100 temperature measuring probe
REF 40073 Dry point thermocouple (for both D86 and D1078)
REF 27581 Ceran board hole 25 mm
REF 21218 Ceran Board hole 32 mm
REF 20347 Ceran Board hole 38 mm
REF 20348 Ceran board hole 50 mm
REF 21944 Ceran board hole 100 mm
REF 40078 Karanape board (38 mm)
REF 40079 Karanape board (32 mm)
REF 40065 Teflon stopper for Pt 100 probe (D86)
REF 40067 Teflon stopper for dry point thermocouple (D1078)
REF 40101 Heating element (1000 W)

DATA BASE

SCOPE OF DELIVERY

Basic unit delivered ready to use for all mentioned standards with SEIKO ticket printer, screen, keyboard, distillation flasks and Ceran boards as per mentioned methods, 100 ml receiver, 5 ml residue receiver, Pt 100 probe, Pt 100 probe centring device, automatic dry point determination kit for D1078 and D86, boiling chips and condenser cleaning cable

AC 230 V, 50/60 Hz - 9 A - 480 x 660 x 550 mm (±60 kg) / **REF 40000/115V** : Same as above for 115V 50/60 Hz

HALF AUTOMATED DISTILLATION OF PETROLEUM PRODUCTS
- MODEL NDI 210 -
- REF 942228 -

MAIN CHARACTERISTICS

- ✓ Easy control of the condenser bath through a regulation device including heating control and overheating safeties
- ✓ The condenser bath is ready to be connected to a cryostat for temperatures below ambient
- ✓ Level of the condenser bath can be checked quickly with measuring stopper
- ✓ Cooling of the heating compartment with compressed air
- ✓ Overheating safety
- ✓ Heating element 1000 W

OPTIONS

REF 941251 Glass cooling bath (2 l) for receiver temperature control
REF 23206 Cryostat TLC 5 (-15°C to 60°C) for bath cooling

REF 942228DIGIT NDI 210 with digital temperature control

MAIN CONSUMABLES

REF 19425 100 ml graduated receiver, type B (D 86)
REF 24019 125 ml distillation flask, type B (D 86)
REF 19422 200 ml distillation flask (ASTM D 1078)
REF 40049 Pack of 50 silicone stoppers for condenser side
REF 40050 Pack of 50 silicone stoppers for thermometer side

SPARE PARTS

REF 20348 Ceran board with hole ø 50 mm
REF 20347 Ceran Board hole 38 mm
REF 20349 Ceran board with hole ø 100 mm
REF 40078 Karanape board (38 mm)
REF 40079 Karanape board (32 mm)
REF 27581 Ceran board hole 25 mm
REF 11494 ASTM thermometer 7C, range from -2 to +300°C
REF 11495 ASTM thermometer 8C, range from -2 to +400°C

SCOPE OF DELIVERY

- ✓ One distillation flask - 125 ml capacity
- ✓ One graduated receiver - 100 ml capacity
- ✓ One silicone stopper for flask
- ✓ One silicone stopper for thermometer
- ✓ One thermometer ASTM 7C, range from -2 to +300°C
- ✓ One thermometer ASTM 8C, range from -2 to +400°C
- ✓ One Ceran board with hole ø 50 mm
- ✓ One Ceran board with hole ø 100 mm
- ✓ One support for graduated receiver.

For use on AC 230V, 50/60 Hz - 380 x 490 x 620 mm (± 21kg)

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MANUAL INSTRUMENT – ECO VERSION

REF 941227

Front View distillation apparatus, single unit (receiver on left) with electric heater and temperature control by variotronic complete with:
- ✓ one graduated receiver (100ml)
- ✓ one distillation flask (125ml)
- ✓ one Ceran board 50mm
- ✓ one Ceran board 100mm and 2 thermometers

AC 230 V, 50 Hz - 6 A - (±23 kg) - 500x450x470 mm

REF 941228

Front View distillation apparatus, single unit (receiver on right) with electric heater and temperature control by variotronic complete with:
- ✓ one graduated receiver (100ml)
- ✓ one distillation flask (125ml)
- ✓ one Ceran board 50mm
- ✓ one Ceran board 100mm and 2 thermometers

AC 230 V, 50 Hz - 6 A - (±23 kg) - 500x450x470 mm

OPTIONS

REF 941251 Glass cooling bath (2 l) for receiver temperature control

MAIN CONSUMABLES

REF 19422 200 ml distillation flask (ASTM D 1078)
REF 19425 100 ml graduated receiver, type B (D 86)
REF 24019 125 ml distillation flask, type B (D 86)
REF 40049 Pack of 50 silicone stoppers for condenser side
REF 40050 Pack of 50 silicone stoppers for thermometer side

SPARE PARTS

REF 20348 Ceran board with hole ø 50 mm
REF 20347 Ceran Board hole 38 mm
REF 20349 Ceran board with hole ø 100 mm
REF 40078 Karanape board hole, 38 mm, type B
REF 40079 Karanape board, hole 32 mm, type A
REF 27581 Ceran board hole 25 mm
REF 40101 Heating element, 1000 W
REF 11494 ASTM thermometer 7C, range from -2 to +300°C
REF 11495 ASTM thermometer 8C, range from -2 to +400°C

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ASTM D 1160 - ISO 6616 - DIN 51567

SCOPE:
This test method covers the determination, at reduced pressures, of the range of boiling points for petroleum products that can be partially or completely vaporized at a maximum liquid temperature of 400°C.

HALF-AUTOMATED D1160 INSTRUMENT
- REF 9411280 -

MAIN CHARACTERISTICS

- ✓ Test Temperature Range: Ambient to 400°C
- ✓ Computerized regulation of temperature and pressure (1 to 50 mmHg)
- ✓ Sample identification
- ✓ Data is recorded and printed: temperature, Volume, pressure, AET, flowrate
- ✓ The operator only follows the volume in receiver and adjusts the heating power

SAFETY FEATURES

- ✓ Operator protection by panels
- ✓ Nitrogen degassing at end of test or by watchdog button in case of fire

OPTIONS

REF 941597 Dry ice machine
REF 23478 Quartz flask with THERMOWELL (500 ml)
REF 9411305 Distillation column for Quartz flask

SPARE PARTS

REF 21694 Heating controller
REF 41604 Set of glassware
REF 41606 Heating block and mantle (1000 W)
REF 41609 500 ml glass flask with THERMOWELL
REF 41611 200 ml cylinder for vacuum distillation
REF 41612 Distillation column and condenser
REF 41613 Dual cold trap
REF 9411304 Vacuum/temperature adapter (top of column)
REF 9411301 Distillation column "O" ring
REF 9411311 Seal gasket for Pt 100
REF 9411306 Set of vacuum pipes
REF 19011 Light recovery cylinder (12 ml)
REF 9417906 Pt 100 probe GDR (170 x 2 mm)
REF 11495 ASTM thermometer (8 C), range from -2 to +400°C

SCOPE OF DELIVERY

Half-automated D1160 instrument is delivered complete and is built on a dedicated frame including water circulator, vacuum pump, , printing dump of distillation report according to standard and full glassware

For use on AC 230 V, 50 Hz, 16 A, 1000x600x800 mm (±105 kg) / 115V on request

ASTM D 323 - ISO EN 12 - ISO 3007 - IP 69 - DIN 51754 - NFM 07007

SCOPE:
Determination of "Reid" vapour pressure of petroleum products.

DETERMINATION OF "REID" VAPOUR PRESSURE OF PETROLEUM PRODUCTS - REF 941432 -

MAIN CHARACTERISTICS

Electronic constant thermostatic bath, 3 vessels capacity, with thermometer and digital display.
Temperature range: Ambient to 100°C
Equipped with adjustable stirring device, low water cut-off, cooling coil for external cryostat and drain cock
For use on AC 230 V, 50 Hz - 16 A - 470x470x860 mm (± 30 kg)

REID VESSELS WITH SCREW COUPLING

REF 941401 RVP screw coupling test vessel (below 26 lb)
REF 941405 RVP screw coupling test vessel (above 26 lb)

REID VESSELS WITH QUICK COUPLING

REF 941411 RVP quick coupling test vessel (below 26 lb)
REF 941415 RVP quick coupling test vessel (above 26 lb)

REID VAPOUR PRESSURE GAUGES (psi and kPa)

REF 941420 Metallic manometer 0 to 5 psi/34 kPa
REF 941421 Metallic manometer 0 to 15 psi/100 kPa
REF 9414211 Metallic manometer 0 to 30 psi/200 kPa
REF 941422 Metallic manometer 0 to 45 psi/300 kPa
REF 941423 Metallic manometer 0 to 60 psi/400 kPa
REF 941424 Metallic manometer 0 to 100 psi/650 kPa

OPTIONAL ACCESSORIES

REF 941410 Safety burst disc (add on test vessel price)

SPARE PARTS

REF 941402 Air chamber (screw)
REF 941403 Gasoline chamber with one opening (screw)
REF 941407 Gasoline chamber with two openings and valves (screw)
REF 941413 Gasoline chamber with one opening (quick coupling)
REF 941417 Gasoline chamber with two valves (quick coupling)
REF 941427 Pack of 2X12 Teflon gaskets for test vessel and manometer (12 for test vessel + 12 for manometer)
REF 941435 Heating element for bath (2000 W)
REF 9414101 Spare disc for safety capsule
REF 9417905 Pt 100 probe (250 x 5 mm)

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VISCOSITY

ASTM D 7279
AUTOMATIC HOUILLON VISCOMETER

ASTM D 445 - ISO 3104 - IP 71 - DIN 51366
AUTOMATIC VISCOMETER WASHER

IP 70
REWOOD VISCOSITY

ASTM D 88
SAYBOLT VISCOSITY

ASTM D 1665 - IP 212 - DIN 51560
ENGLER VISCOMETER FOR BITUMEN

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ASTM D 7279

SCOPE
This test method covers the determination of kinematic viscosity of transparent and opaque liquid such as fresh and used engine oils using and automated Houillon viscometer.

APPLICATIONS
Fresh and used oils, Research and development labs, Lubricating oil blending, metal industry.

AUTOMATIC HOUILLON VISCOMETER
- MODEL NVH 450 -
- - REF 60100 -

MAIN CHARACTERISTICS

- ✓ 4 simultaneous tests
- ✓ Viscosity range : 0,2 to 5000 cSt
- ✓ Bath working temperature range: from ambient up to 120°C
- ✓ Bath temperature accuracy: 0.015°C
- ✓ Accuracy of flow measurement: 0.01S.
- ✓ Solvent tanks included (1 or 2 solvents)
- ✓ Automatic tube cleaning one by one
- ✓ Easy calibration (12 tubes can be stored) by reference fluid
- ✓ Possibility to calculate the VI from 2 different tests or between 2 connected
- ✓ Easy tube replacement and adjustment
- ✓ EV resisting to hard solvent in standard

- ✓ All parameters accessible by touch screen
- ✓ Unique cleaning system
- ✓ 2 calibration procedure steps
- ✓ QUICK: 50 to 200 seconds per run
- ✓ ECONOMICAL
  - Small volume samples between 100µL and 400µL injected by micro pipette
  - Small solvent consumption to clean the tubes (between 5 and 10mL).

Touch screen interface
Storage of 200 results
Stand alone or network multiple via ETHERNET connection
WINDOWS® Platform

SCOPE OF DELIVERY

NVH 450 – reference 60100 -cleaning system and pump included.
Silicone oil, tubes and pipettes to be ordered separately

Bath features
Capacity : 11 liters
Medium type : silicon oil 200-10 or water
Temperature range : 40 to 120°C
Stability : ± 0.02°C

Bath refrigeration : by built-in cooling coil
Nature of coolant : WATER or external chiller
Temperature rising time from ambient to 120°C : 1h30
Temperature lowering time from
120°C to ambient with coolant : ± 2 h

Electrical features
Frequency : 50/60 Hz
Power supply : 115/230 V
Power consumption : 2 kW

Dimensions
Length : 540 mm
Depth : 340 mm
Height : 762 mm
Weight : ±75 kg

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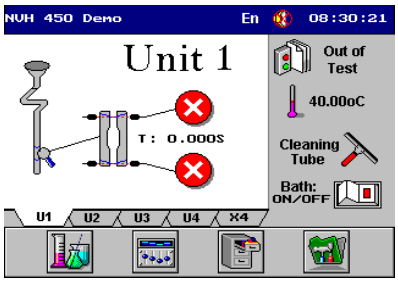
ACCESSORIES

REF 24022 Glass tube for sampling and sample introduction
REF 24958 Micro pipette to measure the sample
REF 24960 Cone for Pipette (pack of 1000)
REF 60101 Silicone oil - can of 20 litres (for operating full temperature range)
We recommend the use of this oil for the best results and longer life operation above 50°C
REF 27775 Demineralised water - can of 20 litres (for testing below 50°C only)



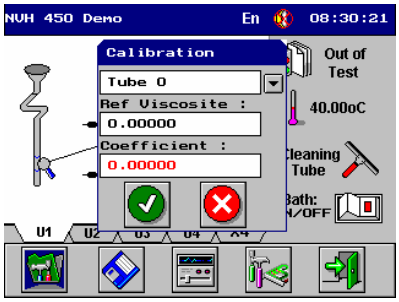
MAIN MENU

OPTIONAL ACCESSORIES

REF 23207 CRYOSTAT TLC 2 when ambient temperature is above 30°C
REF 60116 Printer Kit complete (printer, cable, power supply)
REF 40390 Roll of Seyko DPU 414 printer paper
REF 60135 Modified 120 C thermometer for NVH 450
REF 60136 Modified 121 C thermometer for NVH 450

SPARE PARTS

REF 40806 Vacuum Pump PM 9999
REF 60103 Burker EV 2 ways
REF 60104 Burker EV 3 ways
REF 60114 Complete cleaning clamp
REF 60107 Waste bottle with cover and gasket
REF 60108 Solvent bottle with cover and gasket
REF 60113 Safety waste bottle with cover and gasket
REF 60105 Gasket for cleaning clamp



CALIBRATION

DETECTION OF CLEAR AND DARK PRODUCTS WITH THE SAME TUBES

HOUILLON VISCOMETER TUBES without certificate

REF 60151 Houillon tube size 50
REF 60152 Houillon tube size 75
REF 60153 Houillon tube size 100
REF 60154 Houillon tube size 150
REF 60155 Houillon tube size 200
REF 60156 Houillon tube size 300
REF 60157 Houillon tube size 350
REF 60158 Houillon tube size 400
REF 60159 Houillon tube size 450
REF 60160 Houillon tube 45 cSt

Série	Approximative Tube Constant	Viscosity in cSt	
		Mini	Maxi
50	0,016	0,8	3,2
75	0,032	1,6	6,4
100	0,06	3	12
150	0,14	7	28
200	0,4	20	80
300	1	50	200
350	2	100	400
400	4,8	240	960
450	10	500	2000

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ASTM D 445 - ISO 3104 - IP 71 - DIN 51366

SCOPE

This test method specifies a procedure for the determination of the kinematic viscosity of liquid petroleum products, both transparent and opaque, by measuring the time for a volume of liquid to flow under gravity through a calibrated glass capillary viscometer.

TV 2000 VISCOMETER BATH

MAIN CHARACTERISTICS

Bath can be operated from ambient +5 up to +230 °C (41..446 °F). With the use of the built-in cooling coil, span lies 5°K above the temperature of the cooling liquid. Bath volume 20 liters. The TV 2000 offers two rows of 3 and 2 lids. These openings of 50 mm dia. will accommodate glass capillary in holders.

Range	..230°C/..482°F
Reading	Standard °C, °F on request
Used materials inside bath	Stainless Steel 304, PTFE
Setting ±	0.1°C
Offset	0.01°C
Stability* ±	0.01°K
Heating	2800 W
Heaters	3
Bath volume	20 L
Number of lids	3 L
Window	140 * 285 mm
Opening lid	51(dia) mm
Opening bath	130*165 mm

SCOPE OF DELIVERY

TV 2000 – Ref.23202

For use on AC 230 V, 50/60Hz – 12A-
Dimensions (wxdxh) 465x300x585 mm
Weight : ±40 kg

TV 4000 VISCOMETER BATH

MAIN CHARACTERISTICS

Bath can be operated fro m ambient +5 up to +230 °C (41..446 °F). With the use of the built-in cooling coil, span lies 5°K above the temperature of the cooling liquid. Bath volume 40 liters. In the stainless steel bath cover 7 openings with lids. These openings of 50 mm dia. will accommodate glass capillary in holders.

Range	..230°C/..482°F
Reading	Standard °C, °F on request
Used materials inside bath	Stainless Steel 304, PTFE
Setting ±	0.1°C
Offset	0.01°C
Stability* ±	0.01°K
Heating	2800 W
Heaters	3
Bath volume	40 L
Number of lids	4 + 3 or 4 + 4 L
Window	270 * 285 mm
Opening lid	51(dia) mm
Opening bath	260 * 240 mm

SCOPE OF DELIVERY

TV 4000 – Ref.23200

For use on AC 230 V, 50/60Hz – 12A-
Dimensions (wxdxh) 590x300x585 mm
Weight : ±41 kg

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AUTOMATIC VISCOMETER WASHER
- MODEL ALV 110 –
- - REF 18450 -

Application
Designed in order to eliminate hand cleaning of glass kinematic viscometer tubes

MAINS CHARACTERISTICS
Viscometer washer supplied with 6 nozzle stoppers. It allows external and internal washing of all current types of viscometer tubes. Viscometer tubes are suspended in BIOSANE T215 solvent vapors at 80°C

- ➲ Very fast cleaning (5 to 15 min) for 6 viscometer tubes
- ➲ Negligible solvent consumption

SPARE PARTS

REF 18453 Heating element
REF 18454 Injector stopper
REF 18455 Glass cleaning bath
REF 21694 Heating controller

RECOMMENDED SOLVENT (Health safe)

REF 25699 Biosane T 215 solvent (per can of 5 l)

SCOPE OF DELIVERY

ALV 110 – Ref. 18450 - Ready to use -
For use on AC 230V, 50/60 Hz - 5A -
Dimensions (wxdxh) 240x260x350 mm
Weight : ± 7 kg / 115V on request

VISCOMETER TUBES with calibration certificate

UBBELOHDE VISCOMETER for transparent liquids

REF 14030 Size number 0 - Viscosity range from 0.3 to 1 cSt
REF 14031 Size number 0C - Viscosity range from 0.6 to 3 cSt
REF 14032 Size number 0B - Viscosity range from 1 to 5 cSt
REF 14034 Size number 1 - Viscosity range from 2 to 10 cSt
REF 14035 Size number 1C - Viscosity range from 6 to 30 cSt
REF 14036 Size number 1B - Viscosity range from 10 to 50 cSt
REF 14037 Size number 2 - Viscosity range from 20 to 100 cSt
REF 14038 Size number 2C - Viscosity range from 60 to 300 cSt
REF 14039 Size number 2B - Viscosity range from 100 to 500 cSt
REF 14041 Size number 3 - Viscosity range from 200 to 1000 cSt
REF 14042 Size number 3C - Viscosity range from 600 to 3000 cSt
REF 14043 Size number 3B - Viscosity range from 1000 to 5000 cSt
REF 14044 Size number 4 - Viscosity range from 2000 to 10000 cSt
REF 14045 Size number 4C - Viscosity range from 6000 to 30000 cSt
REF 13993 Size number 4B - Viscosity range from 10000 to 50000 cSt
REF 13994 Size number 5 - Viscosity range from 20000 to 100000 cSt

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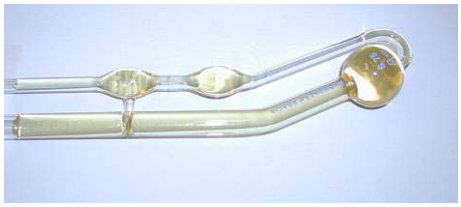
CANNON-FENSKE ROUTINE VISCOMETER for transparent liquids



REF 14002 Size number 25 - Viscosity range from 0.4 to 2 cSt
REF 14003 Size number 50 - Viscosity range from 0.8 to 4 cSt
REF 14004 Size number 75 - Viscosity range from 1.6 to 8 cSt
REF 14005 Size number 100 - Viscosity range from 3 to 15 cSt
REF 14006 Size number 150 - Viscosity range from 7 to 35 cSt
REF 14007 Size number 200 - Viscosity range from 20 to 100 cSt
REF 14008 Size number 300 - Viscosity range from 50 to 200 cSt
REF 14009 Size number 350 - Viscosity range from 100 to 500 cSt
REF 14010 Size number 400 - Viscosity range from 240 to 1200 cSt
REF 14011 Size number 450 - Viscosity range from 500 to 2500 cSt
REF 14012 Size number 500 - Viscosity range from 1600 to 8000 cSt
REF 14013 Size number 600 - Viscosity range from 4000 to 20000 cSt
REF 14014 Size number 650 - Viscosity range from 10000 to 40000 cSt
REF 14015 Size number 700 - Viscosity range from 20000 to 80000 cSt

VISCOMETER TUBES with calibration certificate

CANNON-FENSKE VISCOMETER REVERSE FLOW TYPE for opaque liquids

REF 14016 Size number 25 - Viscosity range from 0.4 to 2 cSt
REF 14017 Size number 50 - Viscosity range from 0.8 to 4 cSt
REF 14018 Size number 75 - Viscosity range from 1.6 to 8 cSt
REF 14019 Size number 100 - Viscosity range from 3 to 15 cSt
REF 14020 Size number 150 - Viscosity range from 7 to 35 cSt
REF 14021 Size number 200 - Viscosity range from 20 to 100 cSt
REF 14022 Size number 300 - Viscosity range from 50 to 200 cSt
REF 14023 Size number 350 - Viscosity range from 100 to 500 cSt
REF 14024 Size number 400 - Viscosity range from 240 to 1200 cSt
REF 14025 Size number 450 - Viscosity range from 500 to 2500 cSt
REF 14026 Size number 500 - Viscosity range from 1600 to 8000 cSt
REF 14027 Size number 600 - Viscosity range from 4000 to 20000 cSt
REF 14028 Size number 650 - Viscosity range from 10000 to 40000 cSt
REF 14029 Size number 700 - Viscosity range from 20000 to 80000 cSt

BS/IP U RF VISCOMETER for opaque liquids

REF 18670 Size number 1 - Viscosity range from 0.6 to 3 cSt
REF 18671 Size number 2 - Viscosity range from 2 to 10 cSt
REF 18672 Size number 3 - Viscosity range from 6 to 30 cSt
REF 18673 Size number 4 - Viscosity range from 20 to 100 cSt
REF 18674 Size number 5 - Viscosity range from 60 to 300 cSt
REF 18675 Size number 6 - Viscosity range from 200 to 1000 cSt
REF 18676 Size number 7 - Viscosity range from 600 to 3000 cSt
REF 18677 Size number 8 - Viscosity range from 2000 to 10000 cSt
REF 18678 Size number 9 - Viscosity range from 6000 to 30000 cSt
REF 18679 Size number 10 - Viscosity range from 20000 to 100000 cSt
REF 18680 Size number 11 - Viscosity range from 60000 to 300000 cSt

VISCOMETER TUBES with calibration certificate

HOUILLON VISCOMETER for transparent liquids

REF 13932 Viscosity range at 3.2 cSt
REF 13933 Viscosity range at 6.4 cSt
REF 13934 Viscosity range at 12 cSt
REF 13935 Viscosity range at 28 cSt
REF 13936 Viscosity range at 80 cSt
REF 13937 Viscosity range at 200 cSt
REF 13938 Viscosity range at 400 cSt
REF 13939 Viscosity range at 960 cSt
REF 13940 Viscosity range at 2000 cSt

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BS/IP SL VISCOMETER for transparent liquids

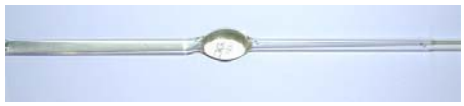
REF 19283 Viscosity range at 10 cSt
REF 19284 Viscosity range at 30cSt
REF 19285 Viscosity range at 100 cSt
REF 19286 Viscosity range at 300 cSt
REF 19287 Viscosity range at 1000 cSt
REF 19288 Viscosity range at 3000 cSt
REF 18289 Viscosity range at 10000 cSt
REF 19290 Viscosity range at 30000 cSt
REF 19291 Viscosity range at 100000 cSt

S.I.L. VISCOMETER for transparent liquids

REF 19631 Viscosity range at 3 cSt
REF 19632 Viscosity range at 10cSt
REF 19497 Viscosity range at 30 cSt
REF 19498 Viscosity range at 100 cSt
REF 19499 Viscosity range at 300 cSt
REF 19500 Viscosity range at 1000 cSt
REF 19501 Viscosity range at 3000 cSt
REF 19502 Viscosity range at 10000 cSt

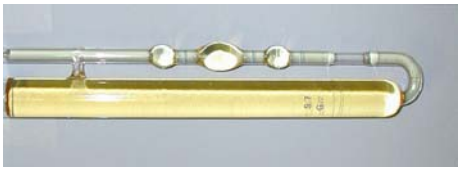
VISCOMETER TUBES with calibration certificate

BAUME VIGNERON VISCOMETER for transparent liquids



REF 14740 Viscosity range at 0.63 cSt
REF 14741 Viscosity range at 1 cSt
REF 14742 Viscosity range at 1.6 cSt
REF 14743 Viscosity range at 2.5 cSt
REF 14744 Viscosity range at 4 cSt
REF 14745 Viscosity range at 6.3 cSt
REF 14746 Viscosity range at 10 cSt
REF 14747 Viscosity range at 15 cSt
REF 14748 Viscosity range at 25 cSt
REF 14748 Viscosity range at 40 cSt
REF 14750 Viscosity range at 63 cSt
REF 14751 Viscosity range at 100 cSt
REF 14752 Viscosity range at 180 cSt
REF 14753 Viscosity range at 250 cSt
REF 14754 Viscosity range at 400 cSt
REF 14755 Viscosity range at 630 cSt
REF 14756 Viscosity range at 1000 cSt
REF 14757 Viscosity range at 1600 cSt
REF 14758 Viscosity range at 2500 cSt
REF 14759 Viscosity range at 4000 cSt
REF 14760 Viscosity range at 6300 cSt

CANNON MANNING VACUUM VISCOMETER for bitumen



REF 18892 Viscosity range at 0.8 cSt
REF 18893 Viscosity range at 2.4 cSt
REF 18894 Viscosity range at 8 cSt
REF 18895 Viscosity range at 24 cSt
REF 18896 Viscosity range at 80 cSt
REF 18897 Viscosity range at 240 cSt
REF 18898 Viscosity range at 800 cSt
REF 18899 Viscosity range at 2400 cSt
REF 18900 Viscosity range at 8000 cSt
REF 18901 Viscosity range at 24000 cSt
REF 18902 Viscosity range at 8000 cSt

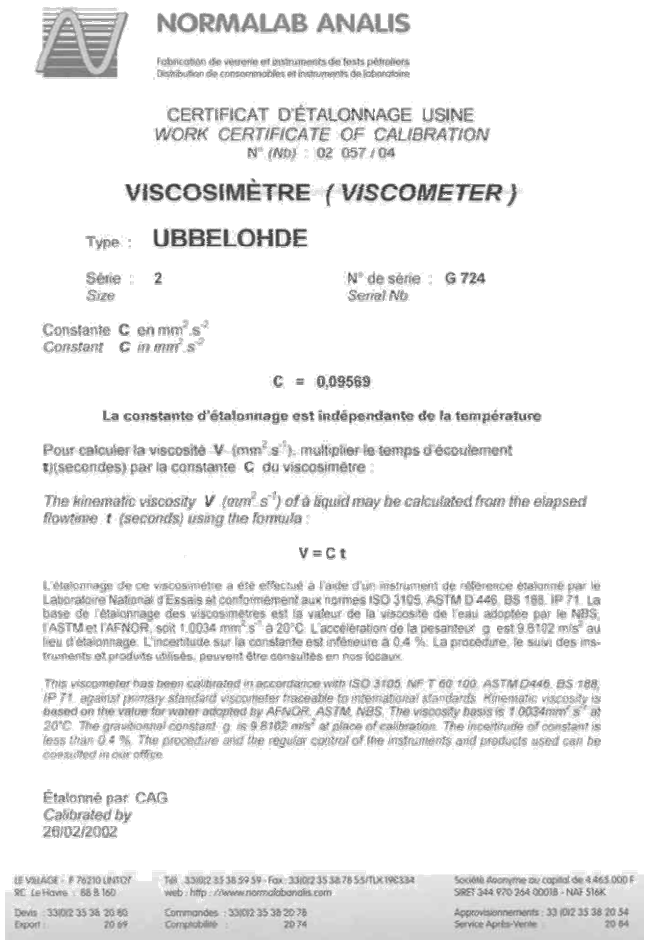
VISCOMETER TUBES FOR AUTOMATIC VISCOMETER

CANNON UBBELOHDE VISCOMETER for transparent liquids without connection to the washer

REF 15253 0.003 (approx. constant)
REF 15255 0.005 (approx. constant)
REF 15256 0.01 (approx. constant)
REF 15257 0.03 (approx. constant)
REF 15259 0.1 (approx. constant)
REF 15260 0.3 (approx. constant)
REF 15263 1 (approx. constant)
REF 15264 3 (approx. constant)
REF 15266 10 (approx. constant

CANNON UBBELOHDE VISCOMETER for transparent liquids with connection to the washer

REF 22882 0.005 (approx. constant)
REF 22883 0.003 (approx. constant)
REF 22884 0.01 (approx. constant)
REF 22885 0.03 (approx. constant)
REF 22886 0.1 (approx. constant)
REF 22887 0.3 (approx. constant)
REF 22888 1 (approx. constant)
REF 22889 3 (approx. constant)
REF 22890 10 (approx. constant)



NORMALAB ANALIS

Fabrication de verrerie et instruments de tests pétroliers
Distribution de consommables et instruments de laboratoire

CERTIFICAT D'ÉTALONNAGE USINE
WORK CERTIFICATE OF CALIBRATION
N° (Nb) : 02 057 / 04

VISCOSIMÈTRE *(VISCOMETER)*

Type : UBBELOHDE

Série : 2 *Size*
N° de série : G 724 *Serial Nb*

Constante C en $mm^2.s^{-2}$
Constant C in $mm^2.s^{-2}$

C = 0,09569

La constante d'étalonnage est indépendante de la température

Pour calculer la viscosité V ($mm^2.s^{-1}$), multiplier le temps d'écoulement t(secondes) par la constante C du viscosimètre :

The kinematic viscosity V ($mm^2.s^{-1}$) of a liquid may be calculated from the elapsed flowtime t (seconds) using the formula :

V = C t

L'étalonnage de ce viscosimètre a été effectué à l'aide d'un instrument de référence étalonné par le Laboratoire National d'Essais et conformément aux normes ISO 3105, ASTM D 446, BS 188, IP 71. La base de l'étalonnage des viscosimètres est la valeur de la viscosité de l'eau adoptée par le NBS, l'ASTM et l'AFNOR, soit 1.0034 $mm^2.s^{-1}$ à 20°C. L'accélération de la pesanteur g est 9.8102 m/s^2 au lieu d'étalonnage. L'incertitude sur la constante est inférieure à 0.4 %. La procédure, le suivi des instruments et produits utilisés, peuvent être consultés en nos locaux.

This viscometer has been calibrated in accordance with ISO 3105, NF T 60 100, ASTM D446, BS 188, IP 71, against primary standard viscometer traceable to international standards. Kinematic viscosity is based on the value for water adopted by AFNOR, ASTM, NBS. The viscosity basis is 1.0034$mm^2.s^{-1}$ at 20°C. The gravitonnal constant g is 9.8102 m/s^2 at place of calibration. The incertitude of constant is less than 0.4 %. The procedure and the regular control of the instruments and products used can be consulted in our office.

Étalonné par CAG
Calibrated by
26/02/2002

LE VILLAGE - F 76210 LINTOT
RC Le Havre : 88 B 160
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Société Anonyme au capital de 4.465.000 F
SIRET 344 970 264 00018 - NAF 516K
Devis : 33(0)2 35 38 20 60
Export : 20 69
Commandes : 33(0)2 35 38 20 78
Comptabilité : 20 74
Approvisionnements : 33 (0)2 35 38 20 54
Service Après-Vente : 20 64

REFERENCE FLUIDS

Catalog number	Viscosity standard	VISCOSITY STANDARDS (Flask of 500 mL) - with UKAS certificate Approximate Kinematic Viscosity in mm^2/s (Centistokes)								
		20°C	25°C	37.78°C	40°C	50°C	60°C	80°C	98.89°C	100°C
17398	N.4(b)	0.47	0.45	0.41	0.40	-	-	-	-	-
17399	N.8(b)	0.74	0.70	0.61	0.60	-	-	-	-	-
27706	N1.0(b)	1.3	1.2	1.0	0.97	0.91	-	-	-	-
17409	N2	2.9	2.6	2.1	2.0	1.7	-	-	-	-
17400	S3(a)	4.6	4.0	3.0	2.9	2.4	-	1.5	1.2	1.2
17413	N4	6.7	5.8	4.2	4.0	3.2	-	1.9	1.5	1.5
17401	S6	11	8.9	6.0	5.7	4.4	-	2.4	1.8	1.8
17414	N7.5	14	12	8.0	7.5	5.8	-	3.1	2.3	2.3
27495	N10	21	17	11	10	7.3	-	3.5	2.7	2.7
17415	N14	30	25	15	14	10	-	5.0	3.5	3.4
17402	S20	44	34	20	18	13	-	5.6	3.9	3.8
17416	N26	57	46	27	25	18	-	7.9	5.3	5.2
27494	N35	87	66	35	32	21	-	8.5	5.4	5.3
17417	N44	110	86	48	44	30	-	12	7.7	7.5
17403	S60	160	120	60	54	35	-	12	7.7	7.5
17418	N75	200	150	82	75	50	-	19	12	12
20752	N100	330	230	110	97	60	-	19	11	11
17419	N140	400	300	160	140	90	-	31	19	18
17404	S200	660	460	200	180	105	-	30	17	16
17424	N250	770	570	280	250	160	-	51	30	29
17425	N350	1300	850	350	310	170	-	46	24	23
17426	N415	1400	990	470	415	250	-	77	43	41
17405	S600	2400	1600	600	520	280	-	67	34	33
17427	N750	2600	1900	850	750	440	-	130	68	66
27707	N1000	3400	2400	-	940	550	350	150	-	80
17428	N1400	5100	3600	-	1400	820	510	220	-	120
17406	S2000	8300	5300	1900	1600	800	-	160	75	72
17429	N2500	8400	6000	-	2500	1500	950	430	-	230
25969	N4000	20000	12000	-	3400	1600	850	290	-	120
17430	N5100	28000	18000	-	5100	2500	1300	420	-	170
17407	S8000	41000	25000	8000	6700	3200	-	530	-	240
17431	N10200	58000	36000	-	10200	4900	2500	775	-	300
25970	N15000	77000	47000	-	13000	6100	3000	980	-	360
17432	N18000	103000	64000	-	18000	8500	4300	1320	-	500
17408	S30000	-	79000	28000	23000	11000	-	1700	-	630

IP 70
- REF 27241 -

SCOPE

This method is primarily intended for the determination of the viscosity of any petroleum product which flow in a Newtonian manner, i.e. possesses a linear relationship between shearing stress and rate of shear under the conditions of the test.

REWOOD VISCOSITY

MAIN CHARACTERISTICS

1-place Redwood viscometer for determination of viscosity as a time of flow (30-2000s)

- ✓ Electronic temperature controller with digital display
- ✓ Test temperature range from room up to 93.3°C (±0.2°C)
- ✓ Polished brass calibrated cup with cover & stainless steel orifice
- ✓ Water bath with cover and cooling coil

Apparatus delivered without accessory

NECESSARY ACCESSORIES

REF 521341 Redwood flask 50 ml
REF 521367 IP thermometer 8C
REF 521369 IP thermometer 9C

SCOPE OF DELIVERY

Ref. 27241 – 1 place Redwood viscometer

For use on AC 230 V, 50Hz – 2A –
Dimensions (wxdxh) 350x270x420 mm

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ASTM D 88
- REF 27238 -

SCOPE

This method covers the empirical procedures for determining the Saybolt Universal or Saybolt Furol Viscosities of petroleum products at specified temperatures between 21 and 99°C.

SAYBOLT VISCOSITY

MAIN CHARACTERISTICS

1-place Saybolt viscometer, automatic control of the temperature, possibility to cool down the bath by means of an external cooling system, equipped with:

- ✓ Electric heater
- ✓ Stirring motor for water circulation

Apparatus delivered without accessory

NECESSARY ACCESSORIES

REF 27243 Universal Saybolt tube <1000 sec
REF 27244 Furol Saybolt tube >1000 sec
REF 11438 Saybolt flask 60 ml

SCOPE OF DELIVERY

REF 27238 – 1 place Saybolt viscometer
For use on AC 230 V, 50Hz – 2A -
Dimensions (wxdxh) 260x260x540 mm
Weight: ± 8kg

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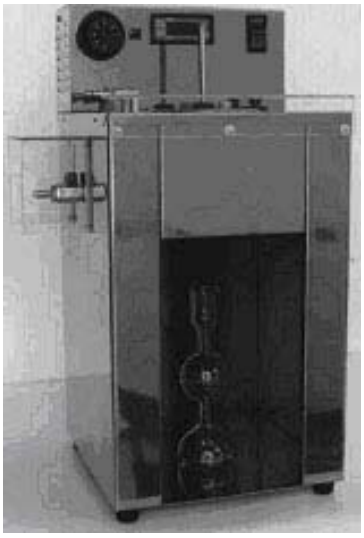
ASTM D 1665 - IP 212 - DIN 51560

SCOPE

This test method covers the determination of specific viscosity of tars and their fluids products. It does not determine absolute viscosity, but is an empirical flow test. Only by conforming strictly to requirements of the test method are reproducible results obtained.

ENGLER VISCOMETER FOR BITUMEN
- REF 27235 -



MAIN CHARACTERISTICS

- ✓ place Engler viscometer
- ✓ Electric heating
- ✓ Temperature digital display
- ✓ Temperature from room up to +99.9°C
- ✓ Polished brass test cup with stainless steel efflux tube
- ✓ Water bath motor stirrer 2800 rpm
- ✓ Safety thermostat
- ✓ Cooling coil

Apparatus delivered without accessories

NECESSARY ACCESSORIES

REF 521155 Universal Saybolt tube <1000 sec
REF 27251 Engler thermometer with ring +10/+55°C/0.5°C
REF 27252 Engler thermometer with ring +10/+110°C/1°C
REF 27253 Engler flask 100+100 ml
REF 27254 Engler flask 200+40 ml

SCOPE OF DELIVERY

REF 27235 1 place Engler viscometer

For use on AC 230 V, 50Hz – 2A –
DIMENSIONS 330x270x540 mm
Weight: ± 8kg

COLD FLOW PROPERTIES

ASTM D 97 - D2500 - ISO 3015 & 3016 - IP 15 & IP 219

FULLY AUTOMATED CLOUD AND POUR POINT TESTER
CLOUD AND POUR POINT TEST CABINET WITH INTEGRATED COOLING
CLOUD AND POUR POINT BATH

ASTM D 6371 – IP 309 – ISO EN 116

FULLY AUTOMATED COLD FILTER PLUGGING POINT
MANUAL BATH

ASTM D 1177

FREEZING POINT OF AQUEOUS ANTIFREEZE SOLUTION

ASTM D 2386 - ISO 3013 - IP 16 - DIN 51421 - NFM 07048

FREEZING POINT OF AVIATION FUELS

ASTM D 97 - D2500 - ISO 3015 & 3016 - IP 15 & IP 219

SCOPE:
The Pour point describes a procedure for testing the fluidity of a petroleum product at a specified temperature. The Cloud point is defined as the temperature of a liquid specimen when the smallest observable cluster of wax crystals first appears upon cooling under prescribed conditions.

APPLICATIONS:
Lubricating oils, distillate and residual oils, Biodiesels.

FULLY AUTOMATED CLOUD AND POUR POINT TESTER
- MODEL NTE 450 –
- REF 60300 -

MAIN FEATURES

- ✓ Mimics the standard methods
- ✓ Detection by specific optical fibre for CLOUD Point
- ✓ Detection by ultra sonic sensor for POUR Point
- ✓ Visualisation of the different cooling steps – detection every 3°C or every 1°C
- ✓ Programmable cooling slope
- ✓ Quick fixation on measuring head
- ✓ Stand alone or network multiple
- ✓ Easy access to maintenance parameters by software
- ✓ Easy access to hardware maintenance

SOFTWARE

- ✓ Computer interface through a user friendly software accessible by touch screen
- ✓ Connexion of external PC by Ethernet cable
- ✓ Storage of 200 results in stand alone
- ✓ Stand alone or network multiple

ZOOM on Detection Head

SCOPE OF DELIVERY

REF 60300 NTE 450 CPP for determination of CLOUD AND POUR POINT is delivered complete with Printer, 1 cloud and 1 Pour point tube, instruction manual.
CRYOSTAT to be ordered separately

REF 60300/115V Same as above for 115V / 60Hz

NECESSARY ACCESSORY

REF 23205 Cryostat TLC 80 11 liters (-80°c / +20°C)

CONSUMMABLES

REF 21146 Test tube for Pour Point
REF 21147 Test tube with glass mirror for Cloud and Pour Point
REF 21150 Test tube with platinum mirror for Cloud and Pour Point

TOUCHSCREEN interface
Storage: 200 results
Stand Alone unit or network multiple through ETHERNET connexion (unlimited!!)
WINDOWS Platform

COOLING BY CRYOSTAT

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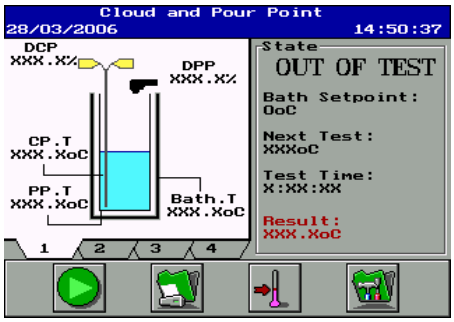
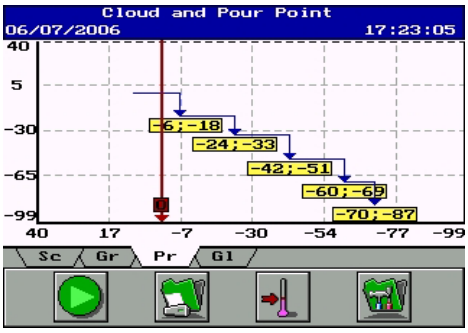
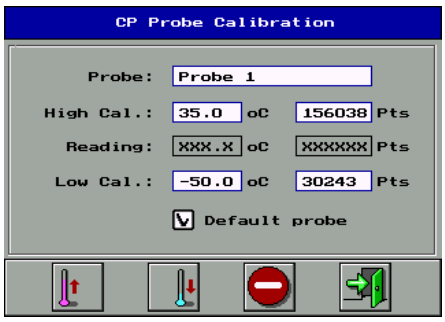
- HIGHLY COMPREHENSIVE SOFTWARE BASED ON WINDOWS PLATFORM -



MAIN MENU



COOLING STEPS GRAPH



PROBE CALIBRATION

- **Quick and easy to master**
- **Simple icons**
- **Intuitive software**
- **Direct access by shortcuts**
- **QUICK TEST LAUNCH available**
- **Fresh design**

TECHNICAL SPECIFICATIONS

GENERAL

- ✓ Visualisation of the detection level
- ✓ Adjustable bath temperature at stand by position
- ✓ Pt 100 sample temperature
- ✓ Jacket temperature
- ✓ Visualisation of the cooling levels
- ✓ Apparatus and sensors status
- ✓ Easy access to the service parameters
- ✓ Storage of the 200 last tests results
- ✓ Sample identification
- ✓ Operator's name
- ✓ Maintenance and calibration protected by password
- ✓ Programme files: 15 (5 standards and 10 parametrable)

POUR POINT

- ✓ Detection by ultrasonic sensor
- ✓ Temperature range from -75°C to 51°C (Lowest temperature depends on the cryostat type)
- ✓ Temperature measurement resolution : 1°C
- ✓ Tilting intervals : every 3°C or 1°C (parametrable)

CLOUD POINT

- ✓ Detection by optical fibre
- ✓ Intervals of 1°C
- ✓ Temperature measurement resolution : 0,1°C
- ✓ Temperature range from -75°C to 49°C (Lowest temperature depends on the cryostat type)

ALTERNATIVE MODELS

REF 60301 NTE 450 PP For determination of POUR POINT only
REF 60302 NTE 450 CP For determination of CLOUD POINT only

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CLOUD AND POUR POINT TEST CABINET WITH INTEGRATED COOLING - HALF AUTOMATED MODEL - - REF 941592 -

MAIN CHARACTERISTICS

Cloud and pour test cabinet, mechanically refrigerated by CFC free gases, with electronic controller and temperature digital display, **4 compartments** (0, -17, -34-51°C), each with 4 sleeves.
Delivered with test tubes, felts, 15 ASTM thermometers 5C and 5 ASTM thermometers 6C.

For use on AC 230V, 50 Hz - 16A
Dimensions : 900 x 625 x 1200 mm (±125 kg)

CONSUMABLES

REF 19439 Test tube
REF 9415901 Pack of 10 felt discs
REF 9415902 Pack of 10 felt rings
REF 11492 ASTM thermometer (5C), range from -38 to +50°C
REF 11493 ASTM thermometer (6C), range from -80 to +20°C
REF 11530 ASTM thermometer (61C), range from +32 to +127°C

CLOUD AND POUR POINT BATH - MANUAL MODEL - - REF 941584 -

MAIN CHARACTERISTICS

Cloud and pour point apparatus, single temperature bath with 5 wells, stirrer and one set of 6 thermometers 5C, cooled by dry ice or cryostat.

For use on AC 230 V, 50 Hz - 1 A -
Dimensions : 290 x 360 x 250 mm (± 9 kg)

CONSUMABLES

REF 19439 Test tube
REF 9415901 Pack of 10 felt discs
REF 9415902 Pack of 10 felt rings
REF 11492 ASTM thermometer (5C), range from -38 to +50°C
REF 11493 ASTM thermometer (6C), range from -80 to +20°C
REF 11530 ASTM thermometer (61C), range from +32 to +127°C

For COOLING:
REF 941597 Dry Ice Machine

REF 23205 Cryostat TLC 80 11 liters (-80°c / +20°C)

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ASTM D 6371 – IP 309 – ISO EN 116 –

SCOPE:
This test method covers the determination of the cold filter plugging point (CFPP) of diesel and domestic heating fuels using automated equipment.
The results expresses an estimation of the lowest temperature at which a fuel will freely flow within a fuel system.

APPLICATIONS:
Diesels and heating fuels, Biodiesels

FULLY AUTOMATED COLD FILTER PLUGGING POINT
- Model NTL 450 -
- REF 60200 -

MAIN FEATURES

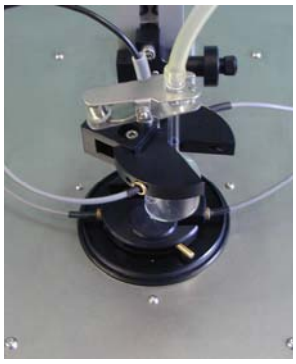
Detection by specific optical cells
Visualisation of the different cooling steps
Possibility to use a programmed linear cooling slope
Quick fixation on measuring head
Stand alone or network multiple
Visualisation of the sucking up time & release time sample
Easy access to maintenance paramaters by software
Easy access to hardware maintenance
Electronic vacuum regulation with 15 l/h

SOFTWARE

° Computer interface through a user friendly software accessible by touch screen
° Connexion of external PC by Ethernet cable
° Storage of 200 results
° Stand alone or network multiple

NECESSARY ACCESSORY

REF 23205 Cryostat TLC 80 - 11 litres
- Température range: -80 to +20°C
- Offset: +/- 0.1 °C
- Capacity: 11 Liters



SPARE PARTS

REF 17885 CFPP sample tube
REF 21916 CFPP Pipet
REF 40809 Basket for tube (set of 2)
REF 20882 filtration assembly
REF 40822 45µ Filter on ring

SCOPE OF DELIVERY

NTL 450 is delivered complete with necessary glassware, temperature probe pipette, instruction manual.
CRYOSTAT to be ordered separately

Supply 230 V / 50 Hz 270x500x600 + or - 25kg

TOUCHSCREEN interface
Storage: 200 results
Stand Alone unit or network multiple through ETHERNET connexion (unlimited!!)
WINDOWS Platform

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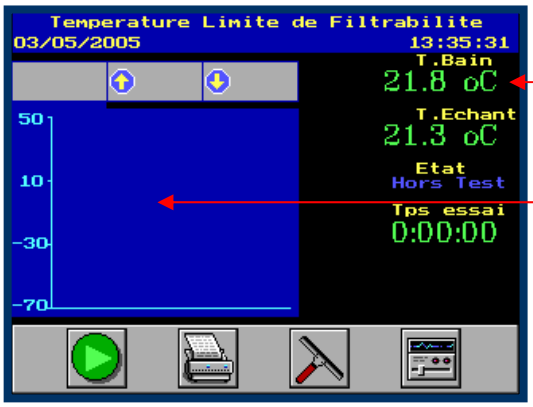
EXTERNALLY COOLED

ALL DATA ACCESSIBLE BY TOUCHSCREEN

SOFTWARE MAIN MENU:



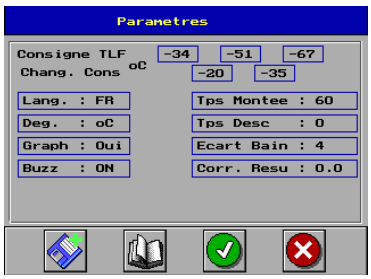
Bath temperature can be changed by simple click

Click on graph : all test parameters can be viewed (sucking time, sample temperature, bath …)

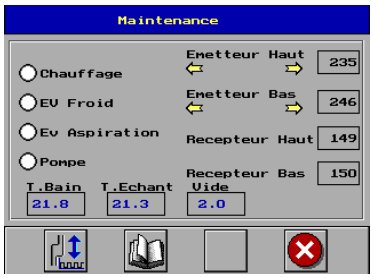
Test Start **Data storage** **Cleaning programme** **Parameters**

TECHNICAL SPECIFICATIONS

- ✓ Visualisation of the % of optical detection of the fork
- ✓ Vacuum visualisation
- ✓ Pt 100 sample temperature
- ✓ Jacket temperature
- ✓ Time at the rise and at the descent of the product
- ✓ Visualisation of the cooling levels
- ✓ Apparatus and captors status
- ✓ Adjustable bath temperature at stand by position
- ✓ Result of the last tests
- ✓ Sample identification
- ✓ Operator's name



Configuration parameters



Maintenance parameters

MANUAL BATH
- REF 20878 -

MAIN CHARACTERISTICS

Complete manual model, single unit including double wall bath with insulation, jacket, test tube, insulating ring and spaces, jacket stand , 3-hole stopper, pipette, filtration set and thermometers
- COOLED BY DRY ICE -

NECESSARY ACCESSORIES

For VACUUM

REF 27502 Vacuum pump with switch and wire, 230 V, 50 Hz
REF 20879 Vacuum regulator with manometer and 3-way cock
REF 941597 Dry Ice Machine

ALTERNATIVE

REF 20886
Complete manual model, single unit including double wall bath with insulation, jacket, test tube, insulating ring and spaces, jacket stand , 3-hole stopper, pipette, filtration set and thermometers
- CONNECTION TO A CRYOSTAT -

NECESSARY ACCESSORIES

For VACUUM

REF 27502 Vacuum pump with switch and wire, 230 V, 50 Hz
REF 20879 Vacuum regulator with manometer and 3-way cock

For COOLING

REF 23205 Cryostat TLC 80 11 litres (-80°c / +20°C)
REF 21130 Insulated tubing (1 m) for connexion between tester and cryostat

CONSUMABLES

REF 17885 CFPP test tube
REF 20880 Jacket
REF 20881 Pipette for manual apparatus
REF 20882 Filtration device
REF 11492 ASTM thermometer (5 C), range from -38 to +50°C
REF 11493 ASTM thermometer (6 C), range from -80 to +20°C

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ASTM D 1177

SCOPE:
This test method covers the determination of the freezing point of engine antifreeze products.

FREEZING POINT OF AQUEOUS ANTIFREEZE SOLUTION - REF 9411520 -

MAIN CHARACTERISTICS

Freezing point apparatus of engine antifreeze, complete with thermometer –
For use on AC 230 V, 50 Hz - 0.3 A - ± 6 kg
(200x300x600mm)

NECESSARY ACCESSORY

REF 941597 Dry ice machine

SPARE PARTS

REF 23239 Dewar freezing tube (200 ml)
REF 9411522 Dewar cooling bath
REF 15351 ASTM thermometer (75 F), range from -35 to +35°F
REF 15352 ASTM thermometer (76 F), range from -65 to +5°F

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ASTM D 2386 - ISO 3013 - IP 16 - DIN 51421 - NFM 07048

SCOPE:
This test method covers the determination of the temperature below which solid hydrocarbon crystals may form in aviation turbine fuels and aviation gasoline.

APPLICATIONS:
Aviation turbine fuels and aviation gasoline.

FREEZING POINT OF AVIATION FUELS
- REF 513461 -

Complete freezing point apparatus, comprising:

- ✓ jacketed sample tube
- ✓ brass packing gland for stirrer
- ✓ brass wire stirrer
- ✓ vacuum flask unsilvered
- ✓ with support and thermometer
- ✓ Dimensions : 200 x 200 x 450 mm –
- ✓ Weight: ± 5 kg.

NECESSARY ACCESSORY

REF 941597 Dry ice machine

REFERENCE FLUID

REF 60025 Congealing point (kerosene) @ - 48,9°C

SPARE PARTS

REF 513462 Jacketed sample tube, double walled
REF 9415562 Gland, brass packing for stirrer
REF 9415563 Stirrer
REF 9415564 Vacuum flask unsilvered
REF 11566 ASTM thermometer (114 C), range from -80 to +20°C
RE 513463 Cork for sample tube

AUTOMATIC EQUIPMENT ON REQUEST

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LUBRICANTS

ASTM D 877- ISO NF EN 60156 - IP 295 - NFC 27221

DIELECTRIC BREAKDOWN VOLTAGE OF INSULATING FLUIDS

ASTM D 892 - ISO 6247 - IP 146 - NFT 60129

FOAMING CHARACTERISTICS OF LUBRICATING OILS

ASTM D 1401 - ISO 6614 -NFT 60125

AUTOMATED DEMULSIBILITY TESTER, WATER SEPARABILITY OF PETROLEUM OILS AND SYNTHETIC FLUIDS

SEMI-AUTOMATIC DEMULSIBILITY TESTER, WATER SEPARABILITY OF PETROLEUM OILS AND SYNTHETIC FLUIDS

ASTM D 2112 & D 2272 - IP 229

OXIDATION STABILITY OF STEAM TURBINE OIL & MINERAL INSULATING OILS BY ROTATING TEST CYLINDER

ASTM D 3427 – IP 313 – DIN 1381

AIR RELEASE VALUE – IMPINGER METHOD

ASTM D 892 - D 6082 - ISO 6247 - IP 146

HIGH TEMPERATURE FOAMING CHARACTERISTICS OF LUBRICATING OILS

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ASTM D 877- ISO NF EN 60156 - IP 295 - NFC 27221

SCOPE:
This test method covers the determination of the dielectric breakdown voltage of insulating fluids.

APPLICATIONS:
Insulating fluids.

DIELECTRIC BREAKDOWN VOLTAGE OF INSULATING FLUIDS - REF 23797 -

MAIN CHARACTERSTICS

Complete tester for dielectric breakdown voltage - Model OTS60AF/2 delivered with oil test vessel fitted with spherical electrodes and oil test set preparation kit comprising: stirrers, mushroom and cylindrical electrodes, electrode spacing gauge and protective cover.

For use on 230 V, 50Hz - 259 mm x 247 mm x 373 mm (±19 kg)

The OTS 60 Oil Test Set is a fully automatic oil test set that reduces the operator's tasks of preparing and loading the oil sample into the test chamber and initiating the required test sequence.

On completion, the mean breakdown value of tests in the sequence is given and the value for each individual test may be recalled. Standard deviation calculations are automatically carried out and displayed when specified by the test standard.

Maximum test voltage for the test set is 60 kV. The test set is microprocessor- controlled. Test sequences for many national and international standards are programmed into the test set memory.

The parameters programmed into the test set include stand times, stir times, rate-of-rise of applied voltage and number of tests. A five-minute test sequence is available for rapid assessment of the condition of the oil sample.

ALTERNATIVE

REF 27196 Portable tester for routine analysis - Model OTS60PB - delivered with 4 oil vessels, 1 pair of spherical, mushroom and cylindrical electrodes, spacing gauge and protective carrying case

SPARE PARTS

REF 23798 Test container + electrodes for using with ASTM D 877
REF 23799 Test container + electrodes for using with NFC 27221

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ASTM D 892 - ISO 6247 - IP 146 - NFT 60129

SCOPE:
This test method covers the determination of the foaming characteristics of lubricating oils at 24°C and 93.5°C. Means of empirically rating the foaming tendency and the stability of the foam are described.

APPLICATIONS:
Lubricating oils.

FOAMING CHARACTERISTICS OF LUBRICATING OILS

MAIN CHARACTERISTICS

REF 941643
Foaming test apparatus, 2 test unit, complete, with 2 thermosta-tically controlled test baths at 24 and 93.5°C, delivered with 2 thermometers, 2 sets of glassware tubing, 4 calibrated diffuser stones, 4 accurate flowmeters and 4 test cylinders.

For use on AC 230 V, 50 Hz - 16 A - 680 x 340 x770 mm (± 36 kg)

REF 941640
Foaming test apparatus, single test unit for both 24 and 93.5°C, with immersion heater, stirring motor, controller and pilot lights mounted on the cover, thermometer, delivered with 2 diffusers, 2 test cylinders & 2 flowmeters.

For use on AC 230 V, 50 Hz

REF 941643 Foaming Tester - 2 Temperatures -

OPTION

REF 9416431
Automatic time sequencer to monitor soaking, blowing and settling periods for all four samples.
This sequencer helps the operator to limit his presence nearby the instrument using audible and visual alarm.

For use on AC 230 V, 50 Hz - 2 A - 250 x 320 x 150 mm (± 5 kg)

REF 9416431 Automatic Sequencer

ACCESSORIES

REF 941644 Wet test gas meter, type OO - 260x260x460 mm - (± 5 kg)
REF 23203 Small circulating cryostat for operating in higher room temperatures - Model TLC 30 - 5 litres (-30 to +60°C/±1)
REF 9416412 Graduated cylinder (1000 ml) with ring ballast
REF 9416433 Air compressor
REF 9416401 Drying tower - Ready to use -

SPARE PARTS

REF 24795 Diffuser stone, calibrated (with certificate)
REF 941435 Heating element (2000 W)
REF 19371 Graduated cylinder (1000 ml)
REF 24803 Stainless steel diffuser stone
REF 9411302 Borosilicate glass jar (300x450 mm)
REF 9417904 Pt 100 probe (160 x 5 mm)
REF 11499 ASTM thermometer (12 C), range from -20 to +102°C

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ASTM D 1401 - ISO 6614 -NFT 60125

SCOPE: This test method covers measurement of the ability of petroleum oils or synthetic fluids to separate from water.

APPLICATIONS:
Petroleum Oils and Synthetic Fluids.

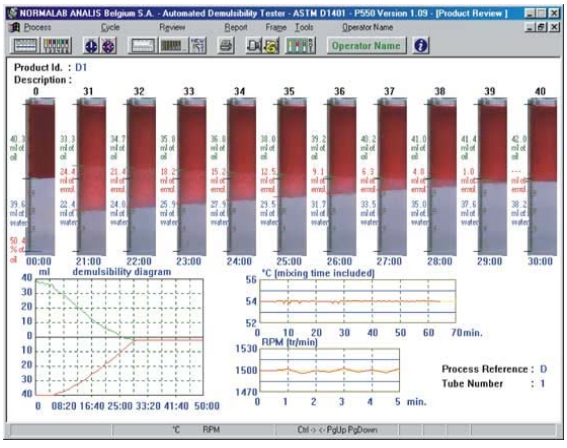
AUTOMATED DEMULSIBILITY TESTER, WATER SEPARABILITY OF PETROLEUM OILS AND SYNTHETIC FLUIDS
- REF 941550 -

MAIN CHARACTERISTICS

- ✓ Water bath with holders for 6 samples and equipped with a drain cock.
- ✓ Temperature range from 15 °C above the ambient temperature to +95°C
- ✓ Temperature regulation by PID, probe Pt 100 for temperature measurements.
- ✓ Lighting by daylight fluorescent.
- ✓ Vertical moving of the paddles controlled by a stepper motor.
- ✓ Programmable Stirring speed from 1300 to 1600 RPM.
- ✓ All results can be printed out or sent to another PC (LIMS) or stored on PC

SOFTWARE FEATURES

Images grabbed by a CCD color camera (437000 pixels).
Auto white balance for the CCD camera.
Instrument controlled by microprocessor.
RS 232 C video output (Y/C signal)
Driven by a PC Pentium fitted with a frame grabber and a DVD-RW fro data storage.
Software running under Windows Environment
All process parameters set as per ASTM or at choice.
Choice between 4 algorithms
Data, graphics and or Images Report.



SOFTWARE – MAIN MENU

SPARE PARTS

REF 11470 Glass graduated cylinder (100 ml)
REF 941551 Translucent plate for bath bottom
REF 9415450 Stirring paddle
REF 9415459 Heating element (1000 W)
REF 9417904 Pt 100 probe (160 x 5 mm)

SCOPE OF DELIVERY

REF 941550 is delivered complete with bath, glassware and computer as described below:
Computer IBM A50p - P4 2,66 Ghz, 256MRam, HDD40G Windows 2000 PRO EN, Keyboard, Mouse CD-RW 48x Black ungraver, Chart Card MATROX G550 Reception card Matrox meteor II Re distribution key Matrox 6.0 LCD screen 17' Black

For use on AC 230 V - 50 Hz - 16 A - w560xd655xh1335mm (±50 kg) / 115 V on request

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SEMI-AUTOMATIC DEMULSIBILITY TESTER, WATER SEPARABILITY OF PETROLEUM OILS AND SYNTHETIC FLUIDS
- REF 941545 -

MAIN CHARACTERISTICS

- ✓ Three unit model
- ✓ Electronic temperature controller between ambient and 95°C to 0,1°C with digital display and setting.
- ✓ Electronic stirring speed controller between 1200 and 1800 rpm by 1 rpm step
- ✓ Inside illumination
- ✓ Easy movable stirring head with paddle for rapid and correct positioning in each of the sample tubes.
- ✓ 20-Way keyboard with interactive software and audible alarm every 5 minutes to call operator for layers recording as per standard
- ✓ Auto-memorization of the various parameters recorded in non volatile memory
- ✓ Electrical safety: 300 mA circuit breaker
- ✓ Overtemperature protection by separate thermostate adjusted in factory and coupled to circuit breaker
- ✓ Removable paddle for easy cleaning
- ✓ Water bath capacity: 30 liters
- ✓ 230 V, 50/60 Hz, 2200 W

SPARE PARTS

REF 11470 Glass graduated cylinder (100 ml)
REF 9415450 Stirring paddle
REF 9415459 Heating element (1000 W)
REF 9417901 Pt 100 probe (150 x 6 mm)
REF 11489 ASTM thermometer (1 C), range from -20 to +150°C

230 V 50/60 HZ - 10A/ 115V sur demande
DIMENSIONS 530x380x900 mm
WEIGHT ± 43 kg

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ASTM D 2112 & D 2272 - IP 229

SCOPE:
This test method uses an oxygen pressured bomb to evaluate the oxidation stability of new and in service turbine oils having the same composition (base stock and additives) in the presence of water and a copper catalyst coil at 150°C or according to the selected standards.

APPLICATION:
Steam turbine oil and mineral insulating oils.

OXIDATION STABILITY OF STEAM TURBINE OIL & MINERAL INSULATING OILS BY ROTATING TEST CYLINDER -REF 9416298-

MAIN CHARACTERISTICS

Standardized Oil thermostatic bath for 2 test vessels, electronic regulation.

For use on AC 230V, 50Hz, 16A - 700x900x910 mm (±70 kg)

NECESSARY ACCESSORIES

REF 21339 Catalyst copper coil (ready to use)
REF 9416292 Pressure recorder (one per test vessel)
REF 9416291 Oxidation vessel, stainless steel
REF 9416293 Sample container, made of borosilicate glass, without cover
REF 9416295 Teflon cover for glass sample container
REF 9416296 Teflon disc to be placed under sample container
REF 11554 ASTM thermometer (96 C), range from +120 to +150°C in 0.1°C

DIGITAL RECORDER

REF 9416290 Digital pressure recorder (1 per vessel)
REF 9416304 Aquisition software
REF 9416294 SD memory stick
REF 9416299 memory stick reader

Chart Paper recorder

SPARE PARTS

REF 21339 Catalyst copper coil (ready to use)
REF 9416303 Pack of 60 charts for pressure recorder
REF 9416293 Sample container, made of borosilicate glass, with cover
REF 9416297 Pen for recorder
REF 9416300 O-ring for vessel cover

Digital Recorder

OPTIONAL ACCESSORY

REF 9416301 Support rack for 2 vessels

ASTM D 3427 – IP 313 – DIN 1381

SCOPE:
This test method known as "impinger", indicates the ability of an oil to separate from entrained gas. The air bubble separation time is the number of minutes needed for the air in an oil to reduce in volume to 0,2% of the sample volume under the test conditions and at specified temperature.

APPLICATION:
Steam turbine oil and mineral insulating oils.

AIR RELEASE VALUE – IMPINGER METHOD
- REF 941688 -

Complete equipment for determination of the ability of an oil to separate entrained air in hydraulic, turbine and other lubricating oils According to the above mentioned standard methods

The tester is equipped with an electronic temperature controller and digital display and control knob, one pressure gauge, one valve for heated air delivery, a plate for installing the density balance (to be ordered separately), two moving attachments for installing up to two glass vessels (one for bubbling while the density is being recorded in the other), the air preheating vessel is installed behind the front panel, one thermometer ASTM 12C and one stop watch.

MAIN CHARACTERISTICS

- Very compact equipment including all necessary items
- Optional Integrated balance with acquisition software
- 2 glassware positions : one for bubbling while the density is recorded in the other

SCOPE OF DELIVERY

- Impinger testing unit with air heater and special support for density balance
- Thermostatic circulator for jacketed test vessel
- Jacketed sample tube with inlet and outlet air tube
- Glass plunger with platinum wire for density measurement
- Pressure gauge
- ASTM 12 C thermometer
- One electronic temperature controller
- One chronometer

For use on AC 230 V, 50 Hz - 6 A - 590 x 340 x 590 mm (±105 kg) / 115V on request

ACCESSORIES

REF 12628 5 ml plunger
REF 12629 10 ml plunger
REF 9416885 Analytical balance (62 g / 0.1 mg) for density measurements, model Explorer with RS232C. The balance calculates into density units. The printer only retains density values
REF 21375 Electronic stopwatch

SPARE PARTS

REF 9416881 Heating element (250 W)
REF 12627 Complete sample glassware
REF 9417834 Pt100 probe (60 x 3.15 mm)
REF 11499 ASTM thermometer (12 C), range from -20 to +102°C in 0.2°C

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ASTM D 892 - D 6082 - ISO 6247 - IP 146

SCOPE:
This test method describes the procedure for determining the foaming characteristics of lubricating oils (specifically transmission fluid and motor oil) at 150°C.
APPLICATIONS:
Lubricating oils.

HIGH TEMPERATURE FOAMING CHARACTERISTICS OF LUBRICATING OILS –REF 9416432 -

CARACTERISTIQUES

Test bath for 2 tests up to 150°C - Ready to use and delivered with two test cylinders, one thermometer 41 C, two calibrated flowmeters and two stainless steel diffusers.

The bath Complies with sequence I, II, III and IV of ASTM D892.

For use on AC 230 V, 50 Hz - 10 A - 350x350x760 mm (±32 kg)

SAFETY FEATURES

The bath is placed in a highly protective cage

OPTIONAL ACCESSORIES

REF 9416431 Automatic time sequencer to monitor soaking, blowing and settling periods for all four samples.
This sequencer helps the operator to limit his presence nearby the instrument using audible and visual alarm.

For use on AC 230 V, 50 Hz - 2 A - 250x320x150 mm

REF 9416434 Oil polyalphaolefin for bath (can of 25 liters)
REF 9416401 Drying tower for 9416432 - Ready to use -

SPARE PARTS

REF 19371 Graduated cylinder (1000 ml)
REF 941435 Heating element (2000 W)
REF 24803 Stainless steel diffuser
REF 9417905 Pt 100 probe (250 x 5 mm)

REF 9416431Automatic Sequencer

BITUMEN AND WAXES

ASTM D 5 - ISO EN 1426 - IP 49 - DIN 52010 & D 217 - ISO 2137 - IP 50 - DIN 51580 & D 937 - IP 179 - DIN 51579 & D 1321 - ISO 3992 - DIN 51579 & D 1403- ISO 6298 - IP 310

FULLY AUTOMATIC MODEL OF PENETRATION VALUE DETERMINATION
PENETROMETER – MANUAL MODEL

ASTM D 6 -ISO EN 13303 - IP 45

LOSS ON HEATING OF OIL & ASPHALTIC COMPOUNDS

ASTM D 36- IP 58-ISO EN 1427 - ISO 4625 - IP 58 - DIN 52011

AUTOMATIC SOFTENING POINT OF BITUMEN TESTER
MODEL MANUAL RING & BALL -

ASTM D 70 - ISO 3828 - IP 189/IP 190

DENSITY OF SEMI-SOLID BITUMOUS MATERIALS

ASTM D 113 - DIN 52013 -

DUCTILITY OF BITUMOUS MATERIALS

ASTM D 217 –IP 50 – ISO 2137 - DIN 51580

GREASE WORKER

ASTM D 721- ISO 2908- IP 158 - DIN 51571 & D 3235

OIL CONTENT OF PETROLEUM WAXES

ASTM D 1754

EFFECTS OF HEAT AND AIR ON ASPHALTIC MATERIALS (THIN-FILM OVEN TEST)

ASTM D 2872 AND ISO EN 12607

EFFECTS OF HEAT AND AIR ON A MOVING FILM OF ASPHALT

IP 80 - NF T66026 - DIN 52012

BREAKING POINT OF BITUMEN

ISO 1430 – ASTM in Progress

DETERMINATION OF PARTICLE POLARITY OF BITUMEN EMULSIONS

ISO EN 15323

ROTATING CYLINDER AGEING TEST FOR BITUMEN

ASTM D 5 - ISO EN 1426 - IP 49 - DIN 52010 & D 217 - ISO 2137 - IP 50 - DIN 51580 & D 937 - IP 179 - DIN 51579 & D 1321 - ISO 3992 - DIN 51579 & D 1403- ISO 6298 - IP 310

SCOPE:
This test method covers determination of the penetration of semi-solid and solid bituminous materials.

APPLICATIONS:
Semi-solid and solid bituminous materials.

FULLY AUTOMATIC MODEL OF PENETRATION VALUE DETERMINATION - REF 941734 -

MAIN FEATURES

- ✓ Built-in user friendly software
- ✓ 2 separate keyboard : parameters entry / measurement operation
- ✓ Stepper motor for penetration depth as low as 0.01 mm
- ✓ Programmable Penetration time between 0 and 999 minutes
- ✓ Position recall for routine tests can be set
- ✓ Automatic approach for conductive samples
- ✓ Optoelectronic detection of Depth penetration
- ✓ Optional Automatic level detection device for bitumens

ADITIONAL ACCESSORIES AND OPTIONS

REF 27674 Transfer bath, made of glass - to be connected to a water bath
REF 27673 Transfer bath Support with holes diameter 165 x 35 mm for 5 containers
REF 27794 Constant temperature water bath (range: -30 to +150°C) - Model RE 112 -
REF 941732 Calibration kit for automatic penetrometer
REF 9417371 Bitumen automatic level detection device
REF 11504 ASTM thermometer (17 C), range from +19 to +27°C
REF 11532 ASTM thermometer (63 C), range from -8 to +32°C
REF 11533 ASTM thermometer (64 C), range from +25 to +65°C

GREASE MODE

ACCESSORIES AND CONSUMABLES for Bitumen (ASTM D5)

REF 518063 Standard needle 2.5 g (up to 350 units)
REF 941737 Needle holder 47.5 g (1 supplier with main equipment)
REF 941810 Outfit for penetration of bituminous material, comprising: needle, holder, 50 g weight and 2 containers
REF 941812 Additional weight 100 g
REF 941815 Additional weight 50 g
REF 998140 Long needle 2.5 g (up to 500 units)
REF 21712 Pack of 300 Sample containers only one use, 55x35 mm
REF 518066 Aluminium container, 55 X 35 mm,
REF 9418181 Aluminium container, 55x70 mm (>200 units)
REF 9418191 Aluminium container, 55x57 mm (up to 500 units

ACCESSORIES (for lubricating greases - ASTM D 217)

REF 941739 Grease cutter with blade
REF 941736 Outfit for consistency of lubricating grease comprising : cone, holder and container
REF 941737 Cone holder , nickel-plated brass, movable, 47.5 g
REF 941738 Standard cone 102.5 g
REF 9417411 Sample container, 76x63 mm
REF 27322 Spatula 30x200 mm

REF 941736

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ACCESSORIES (for consistency of petroleum - ASTM D 937)

REF 941735 Outfit for consistency of petroleum, comprising : cone, container and holder
REF 941737 Cone holder , nickel-plated brass, movable, 47.5 g
REF 941738 Standard cone 102.5 g
REF 9417412 Sample container 100 x 65 mm with cover

REF 941735

ACCESSORIES (for consistency of petroleum waxes - ASTM D 1321)

REF 941816 Needle with shoulder 2.5 g, stainless steel
REF 941737 Cone holder, nickel-plated brass, movable, 47.5 g
REF 941811 Outfit for consistency of petroleum waxes comprising : shouldered needle, container, weight & holder
REF 941815 Additional weight 50 g
REF 941820 Sample container with base plate
REF 40-881605 : Needle 2,5g with certificate

REF 941811

ACCESSORIES (Penetration tests using one-quarter or one-half scale cone equipment - ASTM D 1403)

REF 941742 1/4 scale cone (9.38 g)
REF 941743 1/2 scale cone (37.5 g)
REF 27322 Spatula 30 x 200 mm

SPARE PARTS

REF 9417341 Light bulb for ref. 941734
REF 9417342 Flexible light for ref.941734
REF 9417343 Magnifying glass for ref. 941734

SCOPE OF DELIVERY

Holder for accessories, magnifying lens and low voltage illuminator, centering guide with screw and nut, power cord, set of 2 fusibles, RS232C output, accessories for automatic level detection for conductive sample comprising probe cable, mini grip & test probe) and instruction manual.

For use on AC 230 V, 50 Hz - 1 A - 260x320x540 mm (± 23 kg).

PENETROMETER – MANUAL MODEL
REF 941731

ALTERNATIVE:

Manual penetrometer including a large table on leveling feet with spirit level, a manual release mechanism and a dial indicator in µ0.01 mm. Outfit comprising needle, holder, sample containers & 50 g weight to be ordered separately.
The manual version is compatible with the accessories listed above.

DIMENSIONS 180x180x560 mm
WEIGHT 5,6 kg

ASTM D 6 -ISO EN 13303 - IP 45

SCOPE:
This test method covers determination of the penetration of semi-solid and solid bituminous materials.

APPLICATIONS:
Semi-solid and solid bituminous materials.

LOSS ON HEATING OF OIL & ASPHALTIC COMPOUNDS –REF 941875 -

CARACTERISTIQUES

The oven is constructed following ASTM E-145 type 1, grade B specifications including stainless steel double walls, glass fibre insulated, with viewing window consisting of two sheets of heat resistant glass separated by an air layer.
Vents at top and openings at the bottom provide the required ventilation
It is equipped with a revolving aluminium shelf, 250 mm diameter, driven by powerful motor at a adjustable speed of 5 to 6 rpm.
Upper panel shows electronic temperature controller with digital display and setting.
The oven is protected with separate overtemperature cuttoff connected to the circuit breaker. The apparatus comes complete with a set of aluminium sample containers and ASTM 13C thermometer.

Double wall illuminated oven with glass window, 9 place revolving shelf, 9 aluminium sample containers.
thermometer and instruction manual
AC 230 V, 50 Hz - 16 A - 640x580x680 mm - (±55 kg)

CONSUMABLES

REF 9418172 Sample container brass nickel plated (several use) 55x35 mm
OR
REF 21712 Pack of 300 sample containers (single use) 55x35 mm
OR
REF 518066 Sample container aluminium 55x35 mm

SPARE PARTS

REF 9418762 Bulb, 230 V / 15 W
REF 11500 ASTM thermometer 13 C (+155 to +170°C / 0.5°C)

SCOPE OF DELIVERY

Delivered with set of 3 moulds with brass plate.

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ASTM D 36- IP 58-ISO EN 1427 - ISO 4625 - IP 58 - DIN 52011

SCOPE:
This test method covers the determination of the softening point of bitumen in the range from 30 to 157°C (86 to 315°F) using the ring-and-ball apparatus immersed in distilled water (30 to 80°C), USP glycerine (above 80 to 157°C), or ethylene glycol (30 to 110°C).

APPLICATION:
Bitumen tester.

AUTOMATIC SOFTENING POINT OF BITUMEN TESTER
- Model NBA 440 –
-REF 40100 -

MAIN CHARACTERISTICS

- ✓ Large display
- ✓ Automatic detection of softening point by optical cells
- ✓ Data Storage : 200 results
- ✓ Quick access to calibration parameters
- ✓ Auto diagnostic
- ✓ 4 preset of programmable methods available
- ✓ Controlled heating rate and stirring speeds
- ✓ preheating cycle
- ✓ Cooling by fan at the end of the test
- ✓ WATERPROOF heating element

SUPERVISOR SOFTWARE

Supervisor software delivered on CD-Rom for real-time data downloading on PC computer running Windows (c) 98 - 2000 - XP / possibility to collect the data for a LIMS.

CONSUMABLES

REF 17487 Calibrated beaker
REF 20764 Pack of 10 straight rings
REF 20765 Pack of 10 shouldered rings
REF 25666 Pack of 10 conical rings
REF 40390 Roll of Seiko DPU 414 printer paper
REF 20766 Pack of 10 balls

SPARE PARTS

REF 40103 Detection lamp
REF 40138 Ring & ball cradle for preconditioning the samples
REF 40139 Pt 100 probe for NBA 430/440
REF 40154 Heating element , 1000 W

SCOPE OF DELIVERY

NBA 440 delivered ready to use with SEIKO ticket printer, 2 standardized beakers, 10 shouldered Rings, 10 balls, craddle, Pt 100 probe, detection cable, Stirrer and RS232C output.

Supervisor Software included
For use on AC 230V - 50Hz - 4A - (W) 260x (D) 535x (H) 500 mm (±20 kg) / 115 V on request.

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MODEL MANUAL RING & BALL -

MAIN CHARACTERISTICS

Manual Ring & Ball apparatus two-test unit including:

- head frame for 2 rings with centring device
- 1 pack of 10 shouldered rings
- 1 pack of 10 balls
- 1 beaker
- and 1 ASTM 16 C thermometer

ACCESSORIES

REF 26302 Electric stirrer with heater type E

CONSUMABLES

REF 20764 Pack of 10 straight rings
REF 20765 Pack of 10 shouldered rings
REF 25666 Pack of 10 conical rings
REF 20766 Pack of 10 steel balls

SPARE PARTS

REF 11502 ASTM thermometer (15 C), range from -2 to +80°C
REF 11503 ASTM thermometer (16 C), range from +30 to +200°C
REF 11565 ASTM thermometer (113 C), range from -1 to +175°C

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ASTM D 70 - ISO 3828 - IP 189/IP 190

SCOPE: This test method covers the determination of the specific gravity and density of semi-solid bituminous materials, asphalt cements, and soft tar pitches by use of a pycnometer.

APPLICATIONS:
Semi-solid Bituminous materials.

DENSITY OF SEMI-SOLID BITUMOUS MATERIALS (PYCNOMETER METHOD) - REF 24615 -

MAIN CHARACTERISTICS

Thermostatic bath T1000E:

- ✓ Temperature range 5°C above ambiant temperature to +250°C
- ✓ Capacity: 16L
- ✓ Electronic regulation
- ✓ Stability: +/- 0,03°C
- ✓ Cooling coil
- ✓ Heating: 1500 W
- ✓ Pump capacity: 7,5 L/min
- ✓ Opening 180x210 mm
- ✓ Depth: 200 mm
- ✓ Power: 1600 W
- ✓ 230 V-50/60 Hz

NECESSARY ACCESSORY

REF 11532 ASTM thermometer (63 C), range from -8 to +32°C

STANDARDIZED GLASSWARE

REF 20847 Pycnometer A (24/30 ml)
REF 23229 Pycnometer C (24/30 ml)
REF 23230 Pycnometer D (24/30 ml)
REF 24624 Pycnometer B (24/30 ml)

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ASTM D 113, NFT 66006 & DIN 52013

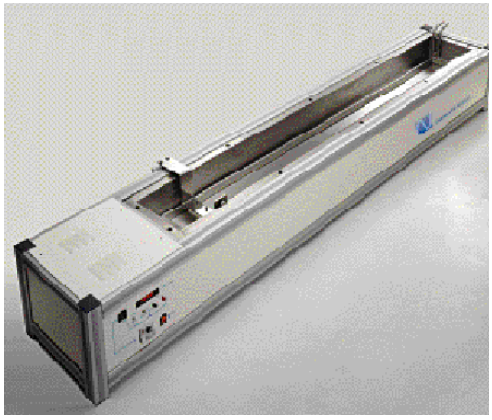
SCOPE:
The ductility of bituminous material is measured by the distance at which it will elongate before breaking when ends of a sample specimen are pulled apart at a specified speed and temperature.

APPLICATION:
Bitum tester.

DUCTILITY OF BITUMOUS MATERIALS – REF 9418642 -

MAIN CHARACTERISTICS

Ductility machine with electronic regulation and digital display measurement for three simultaneous tests at variable speed of 1 to 99 mm/min by steps of 0.1 mm. Maximum pull length: **150 cm**.
For use on AC 230 V - 50 Hz - 3 A - 2200x330x310 mm (± 85 kg)



ACCESSORIES

REF 23203 Cryostat TLC 30 - 5 liters capacity (-30 to +60°C / ±.1)
REF 9418671 Transparent cover for ductility meter (1m50)

SPARE PARTS

REF 941868 Mould without brass plate
REF 941869 Brass plate
REF 941865 Opal glass for ductility meter 150 cm
REF 11532 ASTM thermometer (63C), range from -8 to +32°C in 0.1°C

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ASTM D 217 –IP 50 – ISO 2137 - DIN 51580

SCOPE: This test method covers four procedures for measuring the consistency of lubricating greases by the penetration of a cone of specified dimension, mass and finish. The penetration is measured in 1/10 of a millimetre. The sample requires a special preparation by grease worker.

APPLICATION:
Lubricating greases

GREASE WORKER - HALF AUTOMATED MODEL - - REF 9417582 -

SEE D5 for penetrometer and accessories according to ASTM D217

AUTOMATIC GREASE WORKER

REF 9417582 Compact twin-unit automatic grease worker using electronic counter to control the strokes number.

ACCESSORIES

REF 941751 Worker cup only
REF 941759 Plunger plate ASTM (51 holes)
REF 941760 Plunger plate Fed. Spec. (270 holes)
REF 9410759 Thermometer for grease worker

ALTERNATIVE MODEL - MANUAL

REF 941750 Hand grease worker with cup and thermometer

CONDITIONS DE LIVRAISON

Delivered with 2 cups & 2 thermometers. And 51 holes
AC **400 V, three-phase,** 50 Hz, 16 A,
DIMENSIONS 400x260x500 mm
WEIGHT ±29 kg

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ASTM D 721- ISO 2908- IP 158 - DIN 51571 & D 3235

SCOPE:
This test method covers the determination of oil in petroleum waxes having a congealing point of 30°C or higher as determined in accordance with test method D938, and containing not more than 15% of oil.

APPLICATIONS:
Petroleum waxes.

OIL CONTENT OF PETROLEUM WAXES
- REF 941795 -

MAIN CHARACTERISTICS

Complete apparatus with cooling bath, 3 filter sticks, air pressure regulator and evaporation assembly, 4 weighing bottles and thermometer.

AC 230 V - 50 Hz - 0.3 A - 600x300x450 mm (± 15 kg)

SPARE PARTS

REF 23240 Weighing bottle (15 ml)
REF 517564 Cooling sample tube
REF 517565 Filter stick B24
REF 9417902 Pt 100 probe (60x5 mm)

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ASTM D 1754

SCOPE:
This test method covers the determination of the effects of heat and air on a film of semisolid asphaltic materials. The effects of this treatment are determined from measurements of selected asphalt properties before and after the test.

APPLICATIONS:
Asphaltic materials.

EFFECTS OF HEAT AND AIR ON ASPHALTIC MATERIALS (THIN-FILM OVEN TEST) -REF 941876-

MAIN CHARACTERISTICS

- ✓ The oven is constructed following ASTM E-145 type 1, grade B specifications including stainless steel double walls, glass fibre insulated, with viewing window consisting of two sheets of heat resistant glass separated by an air layer.
- ✓ Vents at top and openings at the bottom provide the required ventilation
- ✓ It is equipped with a revolving aluminium shelf, 250 mm diameter, driven by powerful motor at a adjustable speed of 5 to 6 rpm.
- ✓ Upper panel shows electronic temperature controller with digital display and setting.
- ✓ The whoenis protected with separate overtemperature cuttoff connected to the circuit breaker. The apparatus comes complete with a set of aluminium sample containers and ASTM 13C thermometer.
- ✓ Max temperature 180°C
- ✓ Double wall illuminated oven with glass window, 4 place revolving shelf, 4 aluminium containers and thermometer.
- ✓ Strictly conform to ASTM requirements.

For use on AC 230 V, 50 Hz - 16 A 670x600x700 mm (±60 kg).

CONSUMABLES

REF 9418761 Aluminium sample container, 140 x 10 mm

SPARE PARTS

REF 941876 Bulb, 230 V, 15 W
REF 11500 ASTM thermometer (13 C), range from +155 to +170°C

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ASTM D 2872 AND ISO EN 12607

SCOPE:
This test method is intended to measure the effect of heat and air on a moving film of semi-solid asphaltic materials.
The effects of this treatment are determined from measurements of the selected properties of the asphalt before and after the test.

APPLICATIONS:
Semi-solid Asphaltic materials.

EFFECTS OF HEAT AND AIR ON A MOVING FILM OF ASPHALT - REF 941877 -

MAIN CHARACTERISTICS

- ✓ Double wall convection oven with following inner dimensions: 381 mm high, 483 mm wide, 450mm deep, excluding plenum.
- ✓ The door contains a viewing window made of two sheets of resistant glass separated by an air layer.
- ✓ The oven is vented at top and bottom. Symmetric bottom vents have 15cm² open area symmetric top vents have 9.5cm² open area.
- ✓ This oven has an air plenum as described in ASTM D2872 specification. It is also provided with squirrel type fan for better uniformity.
- ✓ The control board includes electronic temperature regulator with digital display and setting at 163°C +/- 0.5°C and a factory calibrated flowmeter for adjusting air flow at 4000 mL/min.
- ✓ The oven has built in 305mm diameter vertical circular carriage to hold 8 glass sample containers rotating at 15+/- 0.2 rpm.
- ✓ It is equipped with air jet for blowing heated air into each bottle at its lowest point of travel.
- ✓ Outlet orifice having 1mm diameter is connected to 7.6 m length copper tubing to heat up air. The apparatus is supplied with 8 glass containers and one thermometer ASTM 13C.

AC 230 V, 50Hz -16A- 750 x 650 x 820mm (± 50 kg).

SPARE PARTS

REF 9418762 Bulb, 230 V, 15 W
REF 23680 Standardised glass container
REF 9418779 Heating element (500 W)
REF 11500 ASTM thermometer (13C), range from +155 to +170°C in 0.5°C

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IP 80 - NF T66026 - DIN 52012

SCOPE :
This test method determines the temperature below which bitumen tends to break rather than flow when stressed.

BREAKING POINT OF BITUMEN (FRASS METHOD) - REF 29250 –

MAIN CHARACTERISTICS

Breaking point apparatus
The apparatus consists of bending apparatus, plate made of springy stainless 41x20x0,15mm, cooling apparatus, IP 42C thermometer, plate and stand.

ACCESSORIES

REF 28754 Hot plate SB 160

SPARE PARTS

REF 29251 Set of glass tubes
REF 27555 Stainless steel plate (pack of 10)

DIMENSIONS 41X20 mm

ISO 1430 – ASTM in Progress

DETERMINATION OF PARTICLE POLARITY OF BITUMEN EMULSIONS MODEL NEB 110 – REF 941890 -

REF 941890 :
NEB 110 allows the determination of the sign of the electric charge carried by particles in ionic emulsions.
A direct or rectified current is passed through a bitumen emulsion between 2 parallel electrodes

ISO EN 15323

SCOPE:
This test method is intended to measure the ageing effect of heat and air on a moving film of semi solid asphaltic material in the environment conditions.

APPLICATIONS:
Semi solid asphaltic material.

ROTATING CYLINDER AGEING TEST FOR BITUMEN (RCAT METHOD) - MODEL NRC 210 – - REF 941878 –

MAIN CHARACTERISTICS

✓ The standard test conditions adopted are : 500 g of binder, oven heated up to 85 °C, oxygen flow rate of 4.5 L per h, and a rotation speed of 1 rev./min. At predetermined intervals, 25 to 30g of binder is sampled for characterization tests.

✓ The control board includes electronic temperature controller with digital display and setting at 85 °C ± 0.1° for RCAT or 163 °C± 0.5 °C for RTFOT, two factory calibrated flow meters for adjusting oxygen flow at 4500 ml/min ± 500 ml for RCAT and 4000 ml/min ± 200 ml air flow for RTFOT. An electronic safety valve prevent from blowing oxygen into the cylinder while operating above 100 °C. The oven has built in horizontal carriage to hold one stainless steel sample cylinder rotating at 1 rpm for RCAT or 5 rpm for RTFOT. It is equipped with air and oxygen jets for blowing into the cylinder. A stainless steel roller is inserted in the sampling cylinder through the front opening to distribute the binder into an even film on the inner wall during rotation.

SPARE PARTS

REF 941881 Solenoid valve
REF 941882 Rotating cylinder belt
REF 941883 Fan belt
REF 941884 Thermocouple sensor
REF 941885 Conical stopper
REF 941886 Straight stopper
REF 9418779 Heating element (500W)

ACCESSORIES

FUEL ANALYSIS

ASTM D 130 – ISO 2160 - IP 154 – DIN 51811
DETECTION OF COPPER CORROSION FROM PETROLEUM PRODUCTS

ASTM D 287 - ISO 3675 & D 941- IP 160 & D 1217 & D1298 - ISO 3675 & D 1480
API GRAVITY OF CRUDE PETROLEUM & PETROLEUM PRODUCTS

ASTM D611 - ISO 2977 - IP 2 - DIN 51775
ANILINE POINT AND MIXED ANILINE POINT OF PETROLEUM PRODUCTS AND HYDROCARBON SOLVENTS

ASTM D 613 - IP 41 & D 2699 -ISO EN 25164 - ISO 5163 - IP 237 - DIN 51756 & D 2700 -ISO EN 25163 - ISO 5164 - IP 236
REFERENCE & CHECK FUEL BLENDING FOR OCTANE & CETANE MEASUREMENT

ASTM D 1319 - ISO 3837 - IP 156 - DIN 51791
HYDROCARBON TYPE IN LIQUID PETROLEUM PRODUCTS BY FLUORESCENT INDICATOR ADSORPTION METHOD

ASTM D 2624 - ISO 6297 - IP 274
ELECTRICAL CONDUCTIVITY OF AVIATION AND DISTILLATE FUELS

ASTM D 2784 - ISO 4260 - IP 243 - DIN 51408 & D2785 - ISO NF EN 24260
SULPHUR IN CONTENT BY THE WICKBOLD COMBUSTION METHOD

IP 143- NFT 60115 - DIN 51595
ASPHALTENES IN CRUDE PETROLEUM AND PETROLEUM PRODUCTS

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ASTM D 130 – ISO 2160 - IP 154 – DIN 51811

SCOPE:
This test method covers the detection of the corrosiveness to copper of aviation gasoline, aviation turbine fuel, automotive gasoline, natural gasoline or other hydrocarbons having a Reid vapour pressure no greater than 18 psi.

APPLICATIONS:
Aviation gasoline, aviation turbine fuel, automotive gasoline, natural gasoline.

DETECTION OF COPPER CORROSION FROM PETROLEUM PRODUCTS - REF 941220 –

MAIN CHARACTERISTICS

Constant temperature test bath with plain cover and drain cock, controlled by electronic thermostat, Pt 100 sensor and led heating control (max 100°C).
230 V, 0.3 A, 50 Hz, 15kg, Lxlxp: 375x260x417 mm

NECESSARY ACCESSORIES FOR ASTM D 130

REF 12780 Test tube 25x150 mm
REF 24541 Single strip polishing vise
REF 15114 Copper strip corrosion test standard
REF 15115 Copper strip (pack of 10)
REF 19008 Flat glass test tube
REF 941492 Test cylinder
REF 12067 Silicon carbide paper 240 grits
REF 9413109 Support to hold 12 stainless steel vessel
REF 9413125 Support to hold 40 test tubes
REF 22505 Silicon carbide powder 150 mesh (1kg)

SPARE PARTS

REF 12780 Test tube 25x150 mm
REF 19008 Flat glass test tube
REF 941492 Test cylinder
REF 9412209 Heating element(1500 W)
REF 941920 "O" ring seals (pack of 10)
REF 9417900 Pt 100 probe (30x6 mm)
REF 22505 Silicon carbide powder 150 mesh (1kg)

NECESSARY ACCESSORIES FOR IP 227

REF 24541 Single strip polishing vise
REF 941224 Cover including 3 test tubes (amber)
REF 9414851 Silver strip assaying at 99.9%
REF 12067 Silicon carbide paper 240 grits
REF 9414931 Silver strip corrosion standard
REF 12007 Kit condenser complete (amber glass)
REF 11499 ASTM thermometer 12C
REF 22505 Silicon carbide powder 150 mesh (1kg)

SPARE PARTS

REF 9414851 Silver strip assaying at 99.9%
REF 9412209 Heating element(1500 W)
REF 12008 Craddle (amber glass)
REF 12376 Test tube (amber glass)
REF 12377 Cold-finger condenser (amber glass)
REF 9417900 Pt 100 probe (30x6 mm)
REF 22505 Silicon carbide powder 150 mesh (1kg)

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ASTM D 287 - ISO 3675 & D 941- IP 160 & D 1217 & D1298 - ISO 3675 & D 1480

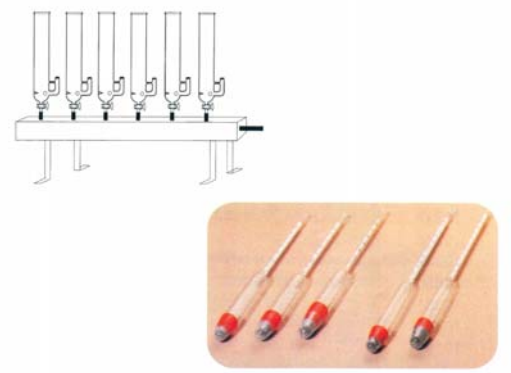
SCOPE:
This test method covers the determination by means of a glass hydrometer of the API gravity of crude petroleum and petroleum products normally handled as liquids and having a Reid vapor pressure (Test Method D 323) of 26 psi (180 kPa) or less. Gravities are determined at 60°F (15.56°C), or converted to values at 60°F, by means of standard tables. These tables are not applicable to non hydrocarbons or essentially pure hydrocarbons such as the aromatics.

APPLICATIONS:
Crude petroleum and petroleum products.

API GRAVITY OF CRUDE PETROLEUM & PETROLEUM PRODUCTS (HYDROMETER METHOD) - REF 14854 -

MAIN CHARACTERISTICS

6-Unit ramp made of stainless steel delivered with 6 complete glassware + 6 outlets with cock and flow outlet, but without hydrometer nor thermometer.



ACCESSORIES (FOR ALL STANDARDS)

REF 10013 Spare glassware with cock
REF V10741 Density cylinder 500 ml
REF 15287 AFNOR thermometer, range from -15 to +45°C in 1/5°C
REF 15288 AFNOR thermometer, range from +35 to +85°C in 1/5°C

HYDROMETERS (FOLLOWING ASTM D 287)

REF 20800 Hydrometer API 1H, -1 to 11
REF 20801 Hydrometer API 2H, 9 to 21
REF 20802 Hydrometer API 3H, 19 to 31
REF 20803 Hydrometer API 4H, 29 to 41
REF 20804 Hydrometer API 5H, 39 to 51
REF 20805 Hydrometer API 6H, 49 to 61
REF 20806 Hydrometer API 7H, 59 to 71
REF 20807 Hydrometer API 8H, 69 to 81
REF 20808 Hydrometer API 9H, 79 to 81
REF 20809 Hydrometer API 10H, 89 to 101

ACCESSORY (ASTM D941)

REF 19386 Lipkin density bottle

ACCESSORY (ASTM D1217)

REF 19393 25 mL Bingham density bottle

HYDROMETERS (FOLLOWING ASTM D 1298)

REF 11499 ASTM thermometer (12C), range from -20 to +102°C
REF 20810 Densimeter at 20°C, L50, 0.600 - 0.650
REF 20811 Densimeter at 20°C, L50, 0.650 - 0.700
REF 20812 Densimeter at 20°C, L50, 0.700 - 0.750
REF 20813 Densimeter at 20°C, L50, 0.750 - 0.800
REF 20814 Densimeter at 20°C, L50, 0.800 - 0.850
REF 20815 Densimeter at 20°C, L50, 0.850 - 0.900
REF 20816 Densimeter at 20°C, L50, 0.900 - 0.950
REF 20817 Densimeter at 20°C, L50, 0.950 - 0.1000
REF 20818 Densimeter at 20°C, L50, 0.1000 - 0.1050
REF 20819 Densimeter at 20°C, L50, 0.1050 - 0.1100
REF 20820 Thermohydrometer API 51H / -1 to 11
REF 20821 Thermohydrometer API 52H / 9 to 21
REF 20822 Thermohydrometer API 53H / 19 to 31
REF 20823 Thermohydrometer API 54H / 29 to 41
REF 20824 Thermohydrometer API 55H / 39 to 51
REF 20825 Thermohydrometer API 56H / 49 to 61
REF 20826 Thermohydrometer API 57H / 59 to 71
REF 20827 Thermohydrometer API 58H / 69to 81

OPTIONAL

REF 941123 Water bath for hydrometer

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ASTM D611 - ISO 2977 - IP 2 - DIN 51775

SCOPE:
These test methods cover the determination of the aniline point of petroleum products and hydrocarbon solvents.

APPLICATIONS:
Petroleum products and hydrocarbon solvents.

ANILINE POINT AND MIXED ANILINE POINT OF PETROLEUM PRODUCTS AND HYDROCARBON SOLVENTS
- MODEL NAE 440 -
- REF 40500

MAIN FEATURES

- ✓ 2 independant stations
- ✓ Test Temperature Range :
  Ambient to 150°C (optional cryostat for lower temperatures)
- ✓ Detection of clear, colored and dark products
- ✓ Heating system by metallic bath
- ✓ Possibility to visualise of the test (detection by operator) for double check
- ✓ Data Storage : 200 results
- ✓ Quick access to calibration parameters
- ✓ Autodiagnostic

SUPERVISOR SOFTWARE

Supervisor software delivered on CD-Rom for real-time data downloading on PC computer running Windows (c) 98 - 2000-XP / possibility to collect the data for a LIMS

CONSUMABLES

REF 40390 Paper roll for Seyko DPU 414 printer
REF 40546 20 ml U-Tube for NAE 440

SPARE PARTS

REF 41121 Heating cartridge 100 W
REF 40536 PT100 Probe for NAE 440

SCOPE OF DELIVERY

NAE 440 ready to use with 2 glasswares, 2 probes, SEIKO Ticket printer and RS232 output.
For use on AC 230 V - 50 Hz - 1.5 A - 520x490x540 mm (± 30 kg) /
REF 40500/115V: Same as above – 115 V 50/60 Hz

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ASTM D 613 - IP 41 & D 2699 -ISO EN 25164 - ISO 5163 - IP 237 - DIN 51756 & D 2700 -ISO EN 25163 - ISO 5164 - IP 236

SCOPE:
This test method determines the rating of diesel fuel oil in terms of an arbitrary scale of cetane numbers using a standard single cylinder, four-stroke cycle, variable compression ratio, indirect injected diesel engine.

APPLICATIONS:
Diesel fuel oil.

REFERENCE & CHECK FUEL BLENDING FOR OCTANE & CETANE MEASUREMENT - Model NABLEND 88XX -

NABLEND series of automatic blending units have been designed to automate the blending procedure o f reference and check fuels for octane and cetane number measurement. The instrument can be used for other hydrocarbon blending purposes where the accuracy and the speed of the procedure are critical.

MAIN CHARACTERISTICS

- **Ease of use and accuracy**

Using the built-in touch screen the operator will only type the target octane/cetane number and the sample volume and the blending unit will automatically prepare and certify the reference fuel with an accuracy of 0.01 ON or CN.

- **Quick blending**

From 2 to 4 minutes depending on the samples sizes.

- **Results traceability**

The results are also stored in a n internal database and certificates can be printed out for all blend.

SOFTWARE CHARACTERISTICS

- **Compatible LIMS**

XML based internet user interface:
An unlimitted number of units can be remotely accessed and controlled from any authorized PC from the network.

- **BLENDING CONTROL**

The strokes of the dosing pumps will be decreased below 10mg/stroke at the end of a dosing cycle, in order to reach nearly perfect accuracy at the highest speed.

- **Access to maintenance and calibration of tanks and pumps.**
- **Complete database**

The database will not only store the blending parameters, but the whole history of logins, operation, remote database access, remote service access and internal technological events.

Final PRF is mixed in solvent proof dedicated bottles of maximum capacity 1litre.

NABLEND is used in conjunction with octane, research and cetane engines

- Reference and check fuel blending
- Built-in touch screen computer and printer
- Complete and automatic documentation of prepared reference fuels
- Excellent accuracy and speed
- Full remote management and service over the internet or direct phone or GSM/GPRS connection
- Clean and comfortable use

REFERENCE 52000
Model NABLEND 8875, automatic stand alone unit with 2 fluid channels, for blending cetane reference fuels according ASTM D613 composed of two blending components: nCetane, AMN or HMN, or U and T components.

REFERENCE 52100
Model NABLEND 8873, automatic stand alone unit with 3 fluid channels, for blending octane reference and check fuels according ASTM D2699 and D2700 composed of two blending components: iso-octane, normal heptane and toluene.

REFERENCE 52200
Model NABLEND 8877 automatic stand alone unit with 5 fluid channels, for blending octane and cetane reference and check fuels according ASTM D613, ASTM D2699 and ASTM D2700 composed of three blending components: iso-octane, normal heptane and toluene for octane and two blending components: nCetane, AMN or HMN, or U and T components for cetane.

REFERENCE 52300
Model NABLEND 8879 automatic stand alone unit with 6 fluid channels, for blending octane and cetane reference and check fuels according ASTM D613, ASTM D2699 and ASTM D2700 composed of four blending components: iso-octane, normal heptane, 80/20 blend and toluene for octane and two blending components: nCetane, AMN or HMN, or U and T components for cetane.

REFERENCE 52400
Model NABLEND 8878 – 8 fluid channels

REFERENCE 52500
Model NABLEND 8810 – 10 fluid channels

90-264 V, 0.8A, 47-440 Hz (610x820x1850mm) ±270kg / 115V on request.

OPTIONAL ACCESSORY

REF 53001 Explosion-proof drum pump

MAIN CONSUMABLE

REF 52001 Bottle, solvent resistant with cock (1L)

SPARE PARTS

REF 52002 Dosing pump
REF 52003 Printer paper (roll)
REF 52004 Fuel filter
REF 52005 Solenoid valve
REF 52006 Injection head O-ring

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ASTM D 1319 - ISO 3837 - IP 156 - DIN 51791

SCOPE:
This test method covers the determination of hydrocarbon types over the concentration range from 5 to 99 volume % aromatics, 0.3 to 55 volume % olefins, and 1 to 95 volume % saturates in petroleum fractions that distill below 315°C.
This test method may apply to concentrations outside these ranges, but the precision has not been determined. Samples containing dark-colored components that interfere in reading the chromatographic bands cannot be analyzed.

APPLICATIONS:
Liquid petroleum products.

HYDROCARBON TYPE IN LIQUID PETROLEUM PRODUCTS BY FLUORESCENT INDICATOR ADSORPTION METHOD
- REF 941600 -

MAIN FEATURES

Adsorption assembly, four-test unit, new designed model, delivered with 4 pressure jauges, 4 needle valves and 1 electric vibrator for packing silicagel, one set of basic accessories comprising: end for true bore column (S12/2), clamps for upper & lower joints and spherical connector for air input. UV lamps are included in the assembly.

Delivered without column - 4 to be chosen below - AC 230V, 50 Hz - 1 A - 700x160x1900 mm (± 35 kg).

NECESSARY ACCESSORIES

REF 19761 Pack of 2 kg of Silicagel 100 to 200 mesh
REF 76239 Certified silica gel with colored indicator (40 g)
REF 19325 True bore adsorption column
REF 21700 Standard adsorption column (upper part)
REF 19023 Standard wall tubing (lower part)
REF 21701 Standard wall tubing (lower part) - pack of 24
REF 19585 Hypodermic syringe 1 ml
REF 19586 Hypodermic needle 102 mm (set of 5)
REF 9415068 Hypodermic cleaning tube (2 m)

SPARE PARTS

REF 11089 Clamp for lower joint
REF 11091 Clamp for upper joint
REF 9415057 UV Bulb (36 W) 120 cm
REF 19022 Spherical connector for air input (S28/12)
REF 19582 Outlet for true bore column (S12/2)
REF 9415059 Electric vibrator for packing silicagel

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ASTM D 2624 - ISO 6297 - IP 274

SCOPE:
These test methods cover the determination of the electrical conductivity of aviation and distillate fuels with and without a static dissipator additive. The test methods normally give a measurement of the conductivity when the fuel is uncharged, that is, electrically at rest (known as the rest conductivity).

APPLICATIONS:
Aviation and distillate fuels.

ELECTRICAL CONDUCTIVITY OF AVIATION AND DISTILLATE FUELS
CONDUCTIVITY METER MLA 900
- REF 23628 -

MAIN FEATURES

Portable conductivity meter, fully transistorized instrument, measuring range:
0 to 500 c.u. and 0 to 1000 c.u.
Dimensions : 400 x 210 x 150 mm (± 5 kg).

MEASURING THE CONDUCTIVITY OF AVIATION FUELS

Conductivity and temperature can both be measured simultaneously in a liquid. The values are immediately shown on the large display. The instrument is compact, portable and approved for use in explosion-hazardous areas. The MLA900 provides a determination of the actual conductivity anytime and anywhere, quickly and safety.

APPLICATIONS

The MLA900 is suitable for conductivity measurement of aviation fuel, light oil products and other industrial liquids which can be electrostatically charged.

SPARE PARTS

REF 23629 Carbon/zinc spare battery, 9 V

ASTM D 2784 - ISO 4260 - IP 243 - DIN 51408 & D2785 - ISO NF EN 24260

SCOPE:
This test method covers the determination of total sulphur in liquefied petroleum gases containing more than 1 µg/g.
Specimens should not contain more than 100 µg/g of halogens.

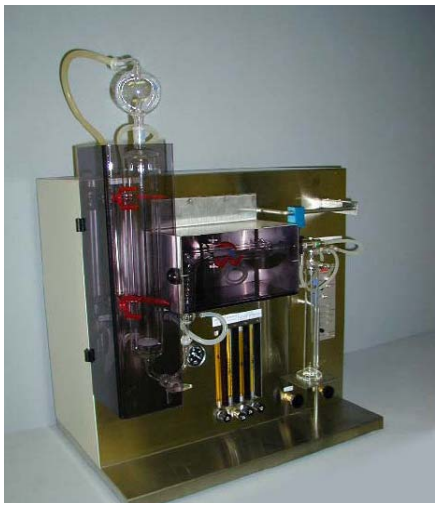
APPLICATIONS:
Liquefield petroleum gazes.

SULPHUR IN CONTENT BY THE WICKBOLD COMBUSTION METHOD - REF 24516 -

SAFETY FEATURES

- ✓ Passive: using a stainless burner / Flame shutoff frit (F) / Glasses protected by caps.
- ✓ active: «Security» functions shutting off Oxygen automatically by locking electrovalves (EV) in case of :

a/ decrease of cooling water pressure
b/ decrease of oxygen pressure
c/ decrease of depression
d/ protection cap opening.



NECESSARY ACCESSORIES (FOR ASTM D 2784 USE)

REF 21343 Set of glassware for Wickbold tester

SPARE PARTS

REF 20928 Quartz combustion chamber
REF 20983 Absorber with fritted plate
REF 20984 Trap
REF 10688 Stainless steel burner oxygen / hydrogen

SCOPE OF DELIVERY

Reference including metallic structure, stainless steel (not quartz) oxihydrogen burner, quartz combustion chamber cooled by water, gas supply system with flowmeters and adjustment valves, gas safeties, dry vacuum pump and protective screen, delivered without glassware.

For use on AC 230 V, 50 Hz - 2 A - 700x500x650 mm (±50 kg) /115 V on request.

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IP 143- NFT 60115 - DIN 51595

SCOPE:
The titration of asphaltenes content of petroleum products is generally determined in accordance with IP143 or NFT 60115 standards by precipitation with n-heptane. These methods are very time consuming and difficult to handle for samples from hydrotreatment or visbreaking processes.

APPLICATIONS:
Crude petroleum and petroleum products.

ASPHALTENES IN CRUDE PETROLEUM AND PETROLEUM PRODUCTS (HEPTANE INSOLUBLES) -REF 24472-

MAIN CHARACTERISTICS

ASPHAN 02 semi-automatic extractor for stand-alone precipitation, filtration, washing, recycling, re-dissolution and evaporation processes of asphaltenes and malten.

- ✓ Improvement of asphaltenes extraction
- ✓ Time saving
- ✓ Lower analysis cost

SPARE PARTS

REF 21364 500 ml lower boiler
REF 21365 1000 ml upper boiler with stopper
REF 21368 Condenser of the collector
REF 21369 500 ml solvent collecting flask
REF 21372 Pack of 50 filters "Mitex"
REF 21366 Double surface condenser
REF 21367 Cooler

SCOPE OF DELIVERY

The complete tester includes boilers, double effect condenser, metallic extractor, valves, Filter, obturator, 2 heating mantles, heating regulator.
Mounted on a metallic stand.

AC 230 V, 50 Hz - 16 A - 320x580x1250 mm - Weight ± 32 kg.

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LPG ANALYSIS & SAMPLING

ASTM D 1657 - ISO 3993 - IP 235

ADENSITY OR RELATIVE DENSITY OF LIGHT HYDROCARBONS BY PRESSURE THERMO-HYDROMETER

ASTM D 1265 - ISO 4257 & DIN 51610

SAMPLING LIQUEFIED PETROLEUM (LP) GASES (MANUAL METHOD)

ASTM D 4057

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ASTM D 1657 - ISO 3993 - IP 235

SCOPE:
This test method covers the determination of the density or relative density of light hydrocarbons including liquefied petroleum gases (LPG) having Reid vapor pressures exceeding 101.325 kPa (14.696 psi).

APPLICATIONS:
Light hydrocarbons.

DENSITY OR RELATIVE DENSITY OF LIGHT HYDROCARBONS BY PRESSURE THERMO-HYDROMETER
-REF 941911-

MAIN CHARACTERISTICS

Complete apparatus, mounted on a heavy base and suitable for immersion in a constant temperature water bath.

ALTERNATIVES

Complete apparatus with burst disc, mounted on a heavy base and suitable for immersion in a constant temperature water bath. (Ref 9419110)

NECESSARY ACCESSORIES

REF 941432 Electronic constant thermostatic bath, 3 vessels capacity, with thermometer and digital display.
Equipped with adjustable stirring device, low water cut-off, cooling coil for external cryostat and drain cock.

For use on AC 230 V, 50 Hz - 16 A - 470x470x860 mm (± 30 kg)
REF 23448 Hydrometer, range from 0.500 to 0.550 (-30°C)
REF 23449 Hydrometer, range from 0.550 to 0.600 (-30°C)
REF 9419124 ISO 653 Thermometer, range from -15 to +45°C in 0.2°C

SPARE PARTS

REF 941435 Heating element for bath (2000 W)
REF 9419121 Thermo-hydrometer, range from 0,500 to 0,650 and 0 to 30°C: 1°C
REF 9419132 Lucite transparent cylinder
REF 9417905 Pt 100 probe (250 x 5 mm)
REF 9419133 Neoprene gasket
REF 11499 ASTM thermometer (12 C), range from -20 to +102°C in 0.2°C

OPTIONAL ACCESSORY

REF 23204 Cryostat TLC 40 -11 litres (-45 to +20°C ± 0.5°C)

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ASTM D 1265 - ISO 4257 & DIN 51610

SCOPE : This test covers the procedures for obtaining representative samples of Liquefied petroleum gases such as propane, butane, or mixtures in containers other than those used in laboratory testing equipments. These bottles are not intended for obtaining samples to be used for compositional analysis. They are also not dedicated to sampling of methane, ethane and liquid ethylene.

SAMPLING LIQUEFIED PETROLEUM (LP) GASES (MANUAL METHOD)

REF 9414541 Whitey stainless steel sampling vessel (1 gallon) complete assembly
REF 9412251 Whitey stainless steel sampling vessel (2250 cc) complete assembly
REF 9411001 Whitey stainless steel sampling vessel (1000 cc) complete assembly
REF 941501 Whitey stainless steel sampling vessel (500 cc) complete assembly

SPARE PARTS

REF 9414546 Stainless steel sampling vessel (1 gallon)
REF 9412250 Stainless steel sampling vessel (2250 cc)
REF 9411000 Stainless steel sampling vessel (1000 cc)
REF 941500 Stainless steel sampling vessel (500 cc)
REF 941031 Valve D with tube 031 for ref. 9411001
REF 941034 Valve D with tube 034 for ref. 941501
REF 941046 Valve D with tube 046 for ref. 9412251
REF 941068 Valve D with tube 068 for ref. 9414541
REF 941400 Quick coupling (QQ-QF4-B-400)
REF 9414401 m flexible cable (SS-TH4TA4PF-40)
REF 941464 Inlet valve C for vessel (SS-16DKM4-F4)
REF 9411613 Quick coupling male (SS-QF4-S-4PM)
REF 9411819 Connection M/F TE (SS-4-ST)
REF 9412213 Set of 2 valves A and B (SS-1 VM4)

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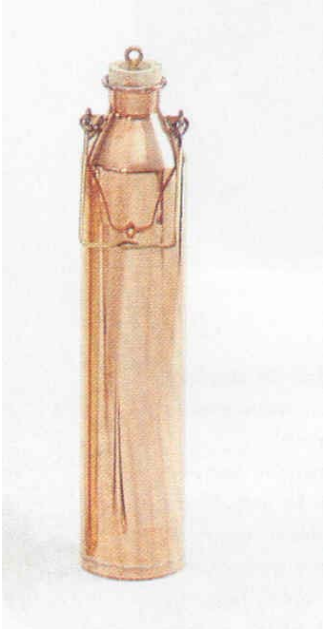
ASTM D 4057

SCOPE:
This standard is related to a sampling method for petroleum products. The method includes procedures to obtain representative samples from stocks, or shipments.

APPLICATIONS:
Petroleum products except insulating oils, butane, propane liquid gases having a reid vapor pressure above 26 Psi.



REF 22213 Brass weighted bottle, neck 19 mm
REF 22214 Brass weighted bottle, neck 38 mm
REF 519032 Sampling thief, bomb type (1 liter) diameter 80 mm

NECESSARY ACCESSORIES

REF 519037 Chain nickel-plated brass 25 m length
REF 519039 Nylon cable 50 m length

CRUDE OIL ANALYSIS

ASTM D 91 & D 893 & D 1796 - ISO NF 3734/ISO NF 9030 - DIN 51793 & D 2273 & D 2709 & D 2711

PRECIPITATION NUMBER OF OIL - WATER & SEDIMENTS - CENTRIFUGE METHOD

ASTM D95 – ISO 3733 – IP 74

WATER IN PETROLEUM PRODUCTS & BITUMOUS MATERIALS BY DISTILLATION

ASTM D 3230 - IP 265

SALTS IN CRUDE OIL (ELECTRONIC METHOD)

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ASTM D 91 & D 893 & D 1796 - ISO NF 3734/ISO NF 9030 - DIN 51793 & D 2273 & D 2709 & D 2711

SCOPE:
This test method covers the determination of the precipitation number of steam cylinder stocks and black oils, and can be used for other lubricating oils.

APPLICATIONS:
Lubricating oils, crude oil..

PRECIPITATION NUMBER OF OIL - WATER & SEDIMENTS - CENTRIFUGE METHOD

MAIN CHARACTERISTICS

REF 29038 (ASTM D 91, D893, D 1796, D 2273, D 2709, D 2711)
Oil testing centrifuge, bench top Rotanta 460 model, without cooling/heating
Equipped with brushless motor and controlled by microprocessor-
Apparatus delivered without rotor
Automatic lid locking, Frequency-controlled drive, N control panel

- ✓ Imbalance switch-off
- ✓ Automatic rotor recognition
- ✓ Centrifuging chamber made of stainless steel
- ✓ Metal housing
- ✓ Lid locking and holding during rotor run
- ✓ Lid dropping protection
- ✓ Motor overheating protection
- ✓ Maximum speed : 15000 rpm
- ✓ Maximum capacity : 4 x 750 ml, swing-out rotor
- ✓ Maximum G force : 24400 G
- ✓ Timer up to 99 min + hold position
- ✓ AC 230 V, 50 Hz - 1.5 kVA - 453 x 554 x 707 mm (±105 kg).

REF 29038

REF 29039 (POUR LES NORMES ASTM D 96, D4007)
Same as above + cooling/heating capabilities (-20°C to +60°C)

Reference 29039
(Suitable for All above mentioned standards + ASTM D96 and 4007)

NECESSARY ACCESSORIES

REF 29040 4-place rotor for cone-shaped or pear tube
REF 29041 Groove suspension (3936 g) for cone-shaped or pear tube
REF 29042 Reducing adapter with bushing for cone-shaped tube
REF 19319 8" cone-shaped centrifuge tubes, 203 mm (100 ml)

SPARE PARTS

REF 19319 8" cone-shaped centrifuge tubes (100 ml)

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ASTM D95 – ISO 3733 – IP 74

SCOPE:
This test method covers the determination of water in petroleum products, tars and other bituminous materials by the distillation method.

APPLICATIONS:
Petroleum products & bitumous materials

WATER IN PETROLEUM PRODUCTS & BITUMOUS MATERIALS BY DISTILLATION -REF 21454-

MAIN CHARACTERISTICS

REF 21454
Complete assembly with:
- Electric mantle and energy regulator
- 500 ml capacity borosilicate glass flask short necked with standard ground joint
- Liebig condenser, straight tube type with standard ground joint and 400 mm jacket
- 5 ml Dean stark graduation 1/10

ALTERNATIVE

REF 21453
Complete assembly with:
- Gas burner
- 500 ml capacity borosilicate glass flask short necked with standard ground joint
- Liebig condenser, straight tube type with standard ground joint and 400 mm jacket
- 5 ml Dean stark graduation 1/10

SPARE PARTS

REF 12852 Round bottom flask CN 24/29 (500 ml)
REF 13142 Liebig condenser CN 24/29 (400 mm)
REF 14571 Heating mantle 500 ml (230 V / 225 W)
REF 16252 Clamp
REF 16324 Stand with rod 12 x 800 mm
REF 16329 Universal boss for assembly
REF 19357 Dean Stark trap (10 ml : 1/10)
REF 21003 Pulse regulator (2200 W)
REF 21455 5ml : 1/10 Dean Stark with round bottom
REF 21456 25 ml : 1/5 Dean Stark with conical bottom

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ASTM D 3230 - IP 265

SCOPE:
This test method covers the determination of the approximate chloride (salts) concentration in crude oil. The range of concentration covered is 0 to 500 mg/kg or 0 to 150 lb/1000 bbl as chloride concentration/volume of crude oil.

APPLICATIONS:
Crude oils.

SALTS IN CRUDE OIL (ELECTRONIC METHOD)
-MODELE NSB 210-
-REF 942287-

MAIN CHARACTERISTICS

New designed Salt-in-Crude analyzer - Semi automatic Model NSB 210 – with test cell, electrode assembly and test leads, digital auto ranging meter for reading the voltage and current.

For use on AC 230 V - 50 Hz - 2.5 A - w360xd300xh150 mm (± 8 kg).

SPARE PARTS

REF 412871 Electrode with cover
REF 19035 Test cell

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COLOR

ASTM D 156 - DIN 51411

SAYBOLT COLOR OF PETROLEUM PRODUCTS .

ASTM D 1500 - ISO 2049 - IP 196 - DIN 51578

ASTM COLOR OF PETROLEUM PRODUCTS (ASTM COLOR SCALE)

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ASTM D 156 - DIN 51411

SCOPE:
This test method covers the determination of the color of refined oils such as undyed motor and aviation gasoline, jet propulsion fuels, naphthas and kerosine, and, in addition, petroleum waxes and pharmaceutical white oils.

APPLICATIONS:
Petroleum products.

SAYBOLT COLOR OF PETROLEUM PRODUCTS
-MODELE NSC 220-
-REF 941520-

MAIN CHARACTERISTICS

NEW NSC 220 Normalab Analis Saybolt Chromometer with daylight source built-in the base arranged to project a diffused light up through the tubes, 3-position turret assembly (1/2, 1 and 2) with certified Saybolt filters reducing the time required to make a determination and eliminating the handling of the standard filters and the possibility of loss and damage.

For use on AC 230V - 50Hz - 0.3 A - 180x180x760 mm - (± 8 kg).

ALTERNATIVE FOR WAVES

REF 941521
Same as above but with specific heating tube for petroleum waxes up to 100°C.

SPARE PARTS

REF 941524 Prismatic eyepiece
REF 941522 Pack of 12 gaskets for graduated tube
REF 941525 Matched pair of tubes
REF 941526 Matched pair of tubes for waxes
REF 9415203 Artificial daylight filter with certificate
REF 9415206 Spare bulb
REF 9415221 Pack of 10 O'rings for graduated tube
REF 9415222 Pack of 10 seals for glass disk
REF 9415240 Filter wheel with certificate

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ASTM D 1500 - ISO 2049 - IP 196 - DIN 51578

SCOPE:
The ASTM Butadiene Measurement Tables are for use in the calculation of quantities of butadiene.
The accompanying Tables 1-4 cover the normal operating ranges for the reduction of observed specific gravity and volume to 15.6/ 15.6°C/(60/60°F) and for the calculation of weight-volume relationships of butadiene.

APPLICATIONS:
Petroleum products.

ASTM COLOR OF PETROLEUM PRODUCTS (ASTM COLOR SCALE)
-MODELE AF 650-
-REF 24415-

MAIN CHARACTERISTICS

Manual colorimeter, model AF650, with a 16 filters colorimetric scale from 0.5 to 8.0 units.
3-field instrument for visually determination of the ASTM.

colour of samples by direct comparison with coloured glass standards. The instrument is delivered with 3 glass sample jar and a calibration certificate for the filters.

AC 115/230 V, 50 Hz - 0.3 A (255x250x170 mm) ± 5 kg.

SPARE PARTS

REF 19353 Glass sample tube
REF 22279 Halogen lamp 12 V / 20 W

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FUEL CLEANLINESS

ASTM D 189 - ISO 6615 - IP 13 - DIN 51551 & D 4530 - ISO 10370 - IP 398

CONRADSON CARBON RESIDUE OF PETROLEUM PRODUCTS

ASTM D 381 - ISO 6246 - IP 131 - DIN 51784

EXISTENT GUM IN FUELS BY JET EVAPORATION

ASTM D 473 - ISO 3735 - IP 53 - DIN 51789

SEDIMENT IN CRUDE AND FUEL OILS BY EXTRACTION METHOD

ASTM D 525 – ISO EN 7536 – IP 40 – DIN 51780 & D873 - IP 138 - DIN 51799

FULLY AUTOMATED INDUCTION PERIOD AND OXIDATION STABILITY TESTER

OXIDATION STABILITY OF GASOLINE (INDUCTION PERIOD METHOD)

ASTM D 2068 - IP 387

AUTOMATIC FILTER BLOCKING TENDENCY OF DISTILLATE FUEL OILS

ASTM D 2619

HYDROLYTIC STABILITY OF HYDRAULIC FLUIDS (BEVERAGE BOTTLE METHOD)

ASTM D 4530 - ISO 10370 - IP 398 - DIN 51551

DETERMINATION OF CARBON RESIDUE (MICRO METHOD)
DETERMINATION OF CARBON RESIDUE (MICRO CONRADSON METHOD)

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ASTM D 189 - ISO 6615 - IP 13 - DIN 51551 & D 4530 - ISO 10370 - IP 398

SCOPE:
This test method covers the determination of the amount of carbon residue left after evaporation and pyrolisis of an oil.
It is intended to provide some indication of relative cokeforming propensities.
The method is generally applicable to relatively non volatile petroleum products which partially decompose on distillation at atmospheric pressure.

APPLICATIONS:
Petroleum products.

CONRADSON CARBON RESIDUE OF PETROLEUM PRODUCTS - REF 513842 -

MAIN CHARACTERISTICS

Single unit model, complete, is intended to be used manually.
It includes:
Porcelain crucible, skidmore crucible with cover, steel outer crucible with lid, support triangle, holder, chimney stand and gas burner.

(W) 250 x (D) 250 x (H) 500 mm (± 8 kg)/.

CONSUMABLES

REF 10702 Pack of 1 kg of glass balls, diameter 2 mm
REF 15150 Pack of 12 porcelain Conradson crucibles

SPARE PARTS

REF 10702 Glass ball diam. 2mm (1kg)
REF 941661 Skidmore crucible with brass lid
REF 941664 Steel outer crucible
REF 941665 Metallic hollow ring
REF 941666 Chimney with guide
REF 15150 Porcelain Conradson crucible (pack of 12)
REF 27083 Meker gas burner (butane/propane)

ASTM D 381 - ISO 6246 - IP 131 - DIN 51784

SCOPE:
This test method covers the determination of the existent gum content of aviation fuels, and the gum content of motor gasolines or other volatile distillates in their finished form, (including those containing alcohol and ether type oxygenates and deposit control additives) at the time of test.

APPLICATIONS:
Fuels by jet evaporation.

EXISTENT GUM IN FUELS BY JET EVAPORATION
- REF 941303 -

MAIN CHARACTERISTICS

Air and steam jet evaporation, with 5 wells, including electronic temperature control with digital display and flowmeter, built-in steam superheater, thermometer 3C, beakers and conical outlets (5 pieces).

AC 230 V - 50 Hz - 16 A - (770x380x570mm) ±60 kg.

CONSUMABLES

REF 12875 Filter funnel, sintered glass, 125 ml capacity
REF 16138 Test cell
REF 941306 Conical air outlet, stainless steel
REF 11491 ASTM thermometer (3C), range from -5 to +400°C

OPTIONAL ACCESSORIES

REF 9413080 Air compressor 2 stages suitable to deliver correct flow of air, 300 l capacity, for ref. 941302 and 941303.
For use on AC 400 V - 3 ph - 7 A - (1670x600x760mm) ± 125 kg
REF 941308 Steam generator (400 V - 3 phases) for use with ref. 941303 apparatus, equipped with sensitive constant level device to maintain vapor output at requested quantity, supplied with flexible connecting pipe, output capacity : 2 to 12 kg, pressure 0-100 psi, with automatic security control, loading 12 Kw
For use on AC **400 V** - 3 ph - 20 A –
(750x530x920mm ±75 kg)
REF 941307 Overpressure pump for steam generator (230 V) for ref. 941308

REF 941308

SPARE PARTS

REF 9413023 Heating element for metallic bath
REF 9413031 Superheater for 941303 apparatus
REF 9417834 Pt 100 probe (60x3.15 mm) for aluminium block
REF 9417904 Pt 100 probe (160x5 mm) for superheater for ref. 941303 only

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ALTERNATIVE
(Ref 941302)

Air-jet only evaporation apparatus, with 5 wells, including electronic temperature control with digital display and flowmeter, thermometer 3C , beakers and conical outlets (5 pieces).

AC 230 V - 50 Hz - 16 A - (770x380x570mm) ±45 kg.

CONSUMABLES

REF 12875 Filter funnel, sintered glass, 125 ml capacity
REF 16138 Test cell
REF 941306 Conical air outlet, stainless steel
REF 11491 ASTM thermometer (3C), range from -5 to +400°C

OPTIONAL ACCESSORY

REF 9413080 Air compressor 2 stages suitable to deliver correct flow of air, 300 l capacity, for ref. 941302 and 941303.
For use on AC 400 V - 3 ph - 7 A - (1670x600x760mm) ± 125 kg

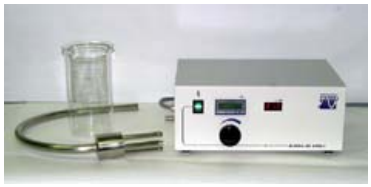
REF 9413080

SPARE PARTS

REF 9413023 Heating element for metallic bath
REF 9417834 Pt 100 probe (60x3.15 mm) for aluminium block

CALIBRATION EQUIPEMENTS

REF 941301 Air calibration kit for 941302 and 941303
AC 230 V - 0.3A - 50 Hz (680x340x180mm) ±5 kg
REF 941304 Vapour calibration kit for ref. 941303 only



REF 941301

SPARE PARTS

REF 9417900 Pt 100 probe (30x6 mm) for calibration kit
REF 11491 ASTM thermometer (3C), range from -5 to +400°C

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ASTM D 473 - ISO 3735 - IP 53 - DIN 51789

SCOPE:
This test method covers the determination of sediment in crude oils and fuel oils by extraction with toluene.
The precision applies to a range of sediment levels from 0.01 to 0.40 % mass, although higher levels may be determined.

APPLICATIONS:
Crude oils Fuels oils.

SEDIMENT IN CRUDE AND FUEL OILS BY EXTRACTION METHOD - REF 941281 -

MAIN CHARACTERISTICS

Extraction apparatus consisting of erlenmeyer extraction flask, 1000 ml capacity, block-tin coil condenser and extraction thimble suspended by means of a corrosion resistant wire.

ACCESSORY

REF 28754 Hot plate SB 160

SPARE PARTS

REF 10763 Extraction thimble, alundum
REF 941284 Extraction basket
REF 941282 Condenser
REF 941614 Heating element (600 W)
REF 10739 Water cup with glass hook
REF 19012 Extraction flask (1 litre)

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ASTM D 525 – ISO EN 7536 – IP 40 – DIN 51780 & D873 - IP 138 - DIN 51799

SCOPE:
This test method covers the determination of the stability of gasolines under accelerated oxidation conditions.
The break point or the induction period may be used as an indication of the tendency of motor gasoline to for gum during storage.

APPLICATIONS:
Gasolines in finished form.

FULLY AUTOMATED INDUCTION PERIOD AND OXIDATION STABILITY TESTER - Model NPI 440 & NPI 442-

REF 40925

4-unit Induction period & Potential gums tester- model NPI 442 -
Dry bath version: 4 positions with a perfect technical correlation to the above standards. Low maintenance and easy cleaning.

ALTERNATIVE

REF 40900

2-unit automatic Potential gums & Induction period tester- model NPI 440 -
Liquid Bath version: 2 positions strictly in accordance with above mentioned methods and with cooling coil to reduce evaporation

MAIN CHARACTERISTICS (FOR THE 2 MODELS)

- ✓ Test Temperature Range : Ambient to 120°C
- ✓ Computerized and fully automated test
- ✓ tracking of pressure, pressure drop and break-point on printer or PC
- ✓ Direct pressure measurement in the vessel
- ✓ Data Storage : 200 results
- ✓ Quick access to calibration parameters
- ✓ Auto diagnostic
- ✓ Quick coupling
- ✓ Safety thermostat to prevent from overheating Overpressure safety by burst disc

SUPERVISOR SOFTWARE

Supervisor software delivered on CD-Rom for real-time data downloading on PC computer running Windows (c) 98 - 2000 - XP / possibility to collect the data for a LIMS

- ✓ Pressure and time tracking during the test
- ✓ 2 or 4 Analysis can be launched independently
- ✓ Data Storage: 200 results
- ✓ Sample identification
- ✓ Operator's name
- ✓ Quick access to calibration parameters
- ✓ Auto diagnostic

SCOPE OF DELIVERY

NPI 440 & NPI 442 delivered ready to use with SEIKO ticket printer, and RS232C output.
Supervisor Software included Vessels, filling accessory and glassware to be ordered separately
AC 230 V, 50Hz, 10A (570x630x640mm) ±40kg - 115 V on request

REF 40930
NPC 210 - Automatic oxygen filling and decompression unit ±30 kg (500x365x800mm)

NECESSARY ACCESSORIES

REF 409031 Stainless steel test vessel with safety burst disc
REF 40909 Manual filling and decompression unit
REF 40911 Support de bombe 2 places
REF 40933 Pack of 10 gaskets viton for vessel
REF 21688 Glass test container without cover
REF 513513 Glass test container with cover
REF 513514 Cover for container

SPART PART

REF 40390 Printer paper Seyko DPU 414 (roll)
REF 40913 Pt 100 probe for liquid bath
REF 40916 Heating element for liquid bath (1800 W) Serial N° is required
REF 40919 Solid state relay for heating element
REF 40933 Pack of 10 gaskets viton for vessel
REF 40934 Pt 100 probe for dry bath
REF 40935 Heating element for liquid bath (1800 W) Serial N° is required

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OXIDATION STABILITY OF GASOLINE (INDUCTION PERIOD METHOD) - REF 941372 -

MAIN CHARACTERISTICS

Oxidation water bath for 4 vessels, without thermometer
For use on AC 230 V, 50 Hz, 16 A (720 x 400 x 650 mm) ± 60 kg

NECESSARY ACCESSORIES

REF 409031 Stainless steel vessel with pressure rupture disk
REF 40909 Filling and decompression (manual)
REF 941362 Recording pressure gauge, 2-pen type, with tubings (1 for 2 vessels)
REF 941365 Pack of 100 charts for recording pressure gauge
REF 11509 ASTM thermometer (22 C), range from +95 to +103°C in 0.1°C
REF 513513 Glass test container with cover

SPARE PARTS

REF 21688 Glass test container without cover
REF 513514 Cover for container
REF 19007 Glass condenser
REF 9412209 Heating element, 230 V, 1500 W
REF 9413621 Pack of 5 red pens for recorder
REF 9413622 Pack of 5 green pens for recorder
REF 9417902 Pt 100 probe (60 x 5 mm)
REF 11509 ASTM thermometer (22 C), range from +95 to +103°C in 0.1°C

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ASTM D 2068 - IP 387

SCOPE:
This test method covers a procedure for determining the filter plugging tendency (FPT) of distillate fuel oils where the end use demands an exceptional degree of cleanliness. This test method is applicable to fuels within the viscosity range of 1.50 to 6.00 mm2/s (cSt) at 40°C.

APPLICATIONS:
Distillate fuel oils.

AUTOMATIC FILTER BLOCKING TENDENCY OF DISTILLATE FUEL OILS (FBT) DETERMINATION

MAIN CHARACTERISTICS

REF 41800
Automatic portable model NBF 241 with 80 columns printer for filter blocking tendency of distillate fuel oils. The pressure /flow curve is printed at the end of the test as well as the calculation type and results.

The assembly consists in 2 parts:
One basement with constant flow pump (20 ml/min ±1 ml), pressure sensor mounted behind the filter (range 0-2 Bar), level follower for filtered volumes (±10 ml) and One electronic console base with LCD
AC 230 V, 50 Hz - 5 A - 320 x 580 x 360 mm (±20 kg)

ALTERNATIVE

REF 41801
Complete automatic bench top model NBF 440 with 80 columns printer. The pressure/flow curve is printed out at the end of the test as well as the calculation type and results.
AC 230 V, 50 Hz - 5 A - 260 x 535 x 500 mm (±20 kg)

CONSUMABLES

REF 12450 Beaker, tall form, 400 ml
REF 27773 Pack of 100 filters GF/A type, dia. 13 mm - 1.6µm
REF 40390 Roll of printer paper for DPU 414 printer
REF 41811 Roll of 15 m of Tygon tube hydrocarbons 6401, 0.8 mm diameter

SPARE PARTS

REF 41803 Pt 100 probe
REF 41805 Filter holder stainless steel
REF 41810 Teflon gasket and grating (kit)

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ASTM D 2619

SCOPE:
This test method covers the determination of the hydrolytic stability petroleum or synthetic base hydraulic fluids.

APPICATIONS:
Petroleum or synthetic base hydraulic fluids.

HYDROLYTIC STABILITY OF HYDRAULIC FLUIDS (BEVERAGE BOTTLE METHOD) - REF 941995 -

MAIN CHARACTERISTICS

Complete oven including filtration assembly, 12 bottles, coups, copper strips and protections.

For use on AC 230 V, 50 HZ, 10A - 800 x 650 x 900 mm (±80kg)

SPARE PARTS

REF 9417444 Pair of gloves
REF 27532 Pack of 100 membrane filters
REF 941952 Pack of 100 caps with inert seals
REF 941953 Bottle (200 ml capacity)
REF 9419954 Pack of 20 copper strips
REF 9419955 Set of 8 heating elements for over

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ASTM D 4530 - ISO 10370 - IP 398 - DIN 51551

SCOPE:
This test method covers the determination of the amount of carbon residue formed after evaporation and pyrolysis of petroleum materials under certain conditions and is intended to provide some indication of the relative coke forming tendency of such materials.

APPLICATIONS:
Petroleum materials.

DETERMINATION OF CARBON RESIDUE (MICRO METHOD)
FULLY AUTOMATIC MICRO CONRADSON TESTER MCRT
NMC 440
- REF 41023 -

MAIN CHARACTERISTICS

- ✓ Maximum Test Temperature : 800°C
- ✓ 3 pre-set methods plus 17 additional ones with 4 heating segments each
- ✓ Data Storage : 200 results
- ✓ Quick access to calibration parameters Auto diagnostic
- ✓ Automatically controlled atmosphere

SUPERVISOR SOFTWARE

Supervisor software delivered on CD-Rom for real-time data downloading on PC computer running Windows (c) 98 - 2000 - XP / possibility to collect the data for a LIMS

MAIN CONSUMABLES- TO BE CHOSEN

REF 41046 Pack of 144 vials (16 ml) for single use
REF 41047 Pack of 144 vials (2 ml) for single use
REF 41001 2 ml borosilicate glass sample vial (single use) for ASTM D4530 (Outside dia.: 12 mm / Height: 35 mm)
REF 41002 16 ml borosilicate glass sample (single use) for ASTM D 4530
Outside dia.: 20 mm / Height: 70 mm
REF 41003 2 ml quartz sample vial (re-usable)
REF 41004 16 ml quartz sample vial (re-usable)
REF 41026 4 ml borosilicate glass sample tube (ISO 10370 and IP 398)
Outside dia.: 12 mm / Height: 72 mm

SPARE PARTS

REF 40390 Roll of Seiko DPU 414 printer paper

OPTIONAL ACCESSORIES

REF 41025 Gas connection kit - 2 gas outputs
REF 41027 Holder for 25-50-100 g porcelain crucibles
REF 10510 Pack of 6 porcelain crucibles, 120 ml tall form
REF 10508 Pack of 6 porcelain crucibles, 40 ml, tall form
REF 10515 Pack of 6 porcelain crucibles, 80 ml, low form

SCOPE OF DELIVERY

NMC 440

- ✓ 3 vial holders : large, small and mixed
- ✓ Cleaning cable
- ✓ Hook for safe hot lid manipulation
- ✓ Pipes for gas connection
- ✓ Supervisor software and serial cable
- ✓ Extension pipe for exhaust chimney
- ✓ SEIKO ticket printer
- ✓ Vials to be ordered separately

AC 230 V - 50 Hz - 16 A - (W) 430x(D)630x(H)480 mm (± 35 kg) / 115V on request

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DETERMINATION OF CARBON RESIDUE (MICRO CONRADSON METHOD)
NEW Micro Carbon residue tester
- NMC 210 model -
- 941670 -

MAIN CHARACTERISTICS

- ✓ Maximum Test Temperature : 550°C
- ✓ Temperature measurement resolution : 1°C
- ✓ Furnace cooling : by compressed air injection
- ✓ Automatically controlled atmosphere
- ✓ Maximum load of samples : 12 small vials / 6 large vials

SCOPE OF DELIVERY

- ✓ NMC 210
- ✓ small vials holder,
- ✓ 12x 2 ml borosilicate vials,
- ✓ cleaning cable
- ✓ basket handle

AC 230 V, 50 Hz -60Hz - 1500 W - 250 x 300 x 600 mm (±15 kg) / 115V on request

MAIN CONSUMABLES- TO BE CHOSEN

REF 41006 Holder for 16 ml vial (6 places)
REF 41007 Holder for both 16 ml and 2 ml vials (7 places)

SPARE PARTS

REF 41001 2 ml borosilicate glass sample vial for micro conradson test
REF 41002 16 ml borosilicate glass sample for micro conradson test
REF 41003 2 ml quartz sample vial (re-usable) for ash content test
REF 41004 16 ml quartz sample vial (re-usable) for ash content test
REF 41046 16 ml vials (pack of 144) for single use
REF 41047 2 ml vials (pack of 144) for single use
REF 41026 4 ml borosilicate glass sample tube (ISO 10370 and IP 398)
Outside dia.: 12 mm / Height: 72 mm

OPTIONAL ACCESSORIES

REF 41005 Holder for 2 ml vial (12 places)
REF 941667 Solenoïd valve for nitrogen
REF 941668 Solenoïd valve for air
REF 941669 Regulation thermocouple
REF 92-094930 Spare static relay
REF 40-867021 Condensate Trap - made of Glass
REF 40-867030 Condensate Trap - made of Brass

PETROLEUM GLASSWARE

ASTM D 20 - D 402 - AFNOR T66003 - IP 27

REF 19378 500 ml Flask
REF 11174 Receiver 100 ml

ASTM D 36 - AFNOR T66008

REF 17487 Standardized Beaker for manual or automatic softening point apparatus

ASTM D 70 - AFNOR T66007 - IP 190

REF 20847 Density Bottle A - 24/30 ml
REF 24624 Density Bottle B - 24/30 ml
REF 23229 Density Bottle C - 24/30 ml
REF 23230 Density Bottle D - 24/30 ml

ASTM D 86 - D 1078 - E 133 - AFNOR M07002 - IP 123 - IP 191 - DIN 51751

REF 19420 100 ml distillation flask
REF 24019 125 ml distillation flask
REF 19422 200 ml distillation flask
REF 19423 250 ml distillation flask
REF 19425 Distillation receiver 100 ml
REF 19426 Distillation receiver 200 ml
REF 19429 Complete receiver 100 ml with metal foot for automatic distillation
REF 12919 Spare graduated glass tube
REF 40052 125 ml distillation flask black bottom
REF 40043 200 ml distillation flask black bottom
REF 23375 125 ml distillation flask with shank and holed cork for probe
REF 23376 200 ml distillation flask with shank and holed cork for probe
REF 23378 Male/Female shank for condenser tube entry

ASTM D 87 - AFNOR T60114 - IP 55 - DIN 51570

REF 19361 Test tube

ASTM D 88 - D 224 - E 102

REF 11438 Saybolt flask 60 ml
REF 11175 Graduated cylinder 20-25-75 ml

ASTM D 91 - D 96 - D 893 - D 1796 - D 4007 - AFNOR M07020 - T 60156 - IP 75 - DIN 51793

REF 19319 Cone-shaped tube 100 ml (203 mm)
REF 19437 3 ml pear-shaped centrifuge tube 100 ml
REF 19438 1,5 ml pear-shaped centrifuge tube 100 ml

ASTM D 95 - AFNOR T60113 - IP 74

REF 12852 500 ml flask - B 24
REF 13142 Condenser 400 mm - B 24
REF 19357 Graduated trap 10 ml x 0,1 ml

ASTM D 97 - D 2500 AFNOR T60105 - IP 15 - DIN 51597

REF 19439 Test jar for manual apparatus
REF 21146 Pour test tube for automatic apparatus
REF 21147 Cloud test tube for automatic apparatus

ASTM D 322 - IP 23 - DIN 51565

REF 12855 1000 ml flask - B 24/29
REF 13142 Liebig condenser 400 mm - B 24/29
REF 17966 Graduated trap - B 24/29

ASTM D 381 - ISO 6246 - IP 131 - DIN 51784

REF 16138 100 ml Beaker

ASTM D 473 - ISO 3735 - IP 53 - DIN 51789

REF 14187 1 L Erlenmeyer flask
REF 10763 Extraction thimble
REF 10739 Water cup

ASTM D 524- AFNOR T60117 - IP 14

REF 19365 Heat resistant glass coking bulb

ASTM D 525 - AFNOR M07012 - M07013

REF 513513 Glass sample container with cover
REF 513514 Cover for container

ASTM D 566 - D 2265 - AFNOR T60102

REF 19381 Test tube

ASTM D 611 - D 3603 - AFNOR M07021 Methode II

REF 12780 Test tube
REF 19322 Jacket tube
REF 10142 5 ml pipet
REF 10143 10 ml pipet
REF 513113 Manual stirrer

ASTM D 665 - D 3603 - AFNOR T60151- IP 135 - DIN 51585

REF 19382 400 ml beaker

ASTM D 721 - D 3235 - AFNOR T60120 - IP 158 - DIN 51571-2

REF 19367 Filtration assembly - B 24
REF 517564 Sample container B-24
REF 517565 Sintered glass filter stick - B 24
REF 21001 Filtration assembly - S35

ASTM D 892 - AFNOR T60129 - IP 146 - DIN 51566

REF 20740 Borosilicate glass jar
REF 19369 1 L graduated cylinder for foam test
REF 14818 Calibrated gas diffusing sphere

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ASTM D 941 - IP 142 - DIN 51808

REF 19386 Lipkin pycnometer (density bottle)

ASTM D 943 - D 2274 - D 4310 - AFNOR M07047 - DIN 51587

REF 19348 Glass condenser
REF 19349 Oxygen inlet tube
REF 19347 Oil test tube
REF 21011 Iron/copper catalyst packed in glass tube

ASTM D 1160 - ISO 6616

REF 41612 Column with condenser
REF 41609 Flask with thermowell
REF 41611 Jacketed receiver
REF 41613 Cold trap

ASTM D 1217

REF 19393 25 ml Bingham pycnometer

ASTM D 1266 - AFNOR M07031 - IP 107

REF 19334 25 ml flask (non aromatic produtcs)
REF 19336 25 ml flask (aromatic produtcs)
REF 19332 Burner (non aromatic products)
REF 19335 Burner (aromatic products)
REF 19331 Chimney
REF 19330 Absorber
REF 19333 Spray trap

ASTM D 1319 - AFNOR M07024 - IP 156 - DIN 51791

REF 19325 FIA true bore column - 1/100 mm precison
REF 19572 Upper S28/12 ground joint for accuracy column
REF 19582 Low S12/2 ground joint for accuracy column
REF 21700 Upper part of standard column
REF 21701 Analyser part of standard column (pack of 25)

ASTM D 1481 - DIN 51757

REF 19386 Lipkin Pycnometer

ASTM D 1500 - AFNOR T60104 - IP 196 -DIN 51578

REF 19353 Standard glass sample tube

ASTM D 1837 - D 2158 - AFNOR M41012

REF 19350 100 ml weathering receiver

ASTM D 2001

REF 19398 Depentanization apparatus

ASTM D 2002

REF 19399 Complete absorptin column (low olefinic petroleum naphtas)

ASTM D 2003

REF 19400 High efficiency column
REF 13603 Spherical groun joint with nipple for gas supply

ASTM D 22 72 - IP 229

REF 21338 Borosilicate glass sample container
REF 21339 Copper catalyst packed in a plastic container with drying stopper

ASTM D 2273

REF 19435 100 ml trace sediment tube

ASTM D 2384 - D 2784 - NF EN 24260 - ISO 4260

REF 20928 Quartz combustion chamber
REF 20983 Borosilicate glass absorber
REF 20984 Spray trap

ASTM D 2699 - D 2700 - ISO 5163 - ISO 5164 - ISO EN 25163 -ISO EN 25164

Burettes for reference fluids
REF 19358 100 ml Buret without bulb nor stopcock
REF 19336 200 ml Buret without bulb nor stopcock
REF 19332 200 ml Buret with bulb without stopcock
REF 19335 400 ml Buret with bulb without stopcock
REF 19331 400 ml buret with automatic filing and stopcock, graduated in 0,5% and 2 ml (double graduation)
REF 19330 3 ml buret for measuring dilute tetraethyllead
REF 19333 4 ml buret for measuring dilute tetraethyllead

ASTM D 2872

REF 23680 Borosilicate glass sample container for RTFOT test

ASTM D 3427 - AFNOR E48614 - T60149

REF 19379 Complete "Impinger" test vessel
REF 12627 Complete "Impinger" test vessel with spherical ground joints, tongs, clips and nipples

ASTM D 4006

REF 21183 Drying tube
REF 21182 Liebig condenser 400 mm - B24
REF 21184 5 ml trap in 0,05 scale - B24
REF 21185 1000 ml flask - B24

ASTM D 4530

REF 41001 2 ml Borosilicate glass crucible
REF 41002 16 ml borosilicate glass crucible
REF 41003 2 ml quartz crucible
REF 41004 16 ml quartz crucible

ASTM D 123 - NFT 60113

REF 191485 ml trap - B24/40
REF 19149 10 ml trap - B24/40
REF 19357 10 ml cone - shaped trap - B24/40

AFNOR M07016 - ISO 3840 - IP 145

REF 19315 10 ml standard sulfonation flask
REF 19316 10 ml precision sulfonation flask

REF 19317 5 ml precicion sulfonation flask
REF 19318 AFNOR flask, method II M07016

AFNOR M07032 - IP 188

REF 21224 Glassware set including : flaks, vacuum jacket, condenser, cylinder
REF 19338 200 ml round bottom flask with 24/29 ground joint
REF 19339 Vacuum jacket
REF 19340 Condenser
REF 12622 100 ml glass stoppered graduated cylinder

AFNOR M07039 - ISO EN 13 - ISO EN 41 - IP 96

REF 19312 Complete glassware with ground joints
REF 19313 Complete glassware with B29 ground joints
REF 12923 Borosilicate glass protecting tube
REF 513312 500 ml flask with electric heating element and ground joints
REF 513314 Hopkins reflux condenser
REF 513315 Separating funnel with ground joints

AFNOR T60115 - IP 143 - DIN 51595

REF 23883 Erlenmeyer flask - B 24
REF 23884 Extractor B 24 - B 34
REF 19364 Condenser B 34

IP 227

REF 12007 Complete Amber glassware
REF 12377 Amber glass condenser
REF 12376 Amber glass test tube
REF 12008 Strip vice
REF 20523 Complete clear glassware
REF 20525 Clear glass condenser
REF 20524 Clear glass test tube

IP 309 - AFNOR M07042 - ISO EN116

REF 23231 Manual pipet without spherical joint
REF 20881 Manual pipet with spherical joint
REF 17881 Pipet with brasss ring for automatic apparatus
REF 21916 Pipet without brasss ring for automatic apparatus
REF 20942 Supply connection with S joit
REF 17885 CFPP
REF SFPPSP5B5 SFPP pipet without brass ring
REF SFPPSP4B5 SFPP pipet with brass ring

ACCESSORIES

CRYOSTAT TLC2
CRYOSTAT TLC15-5litres
CRYOSTAT TLC30-5litres
CRYOSTAT TLC40-14 litres
CRYOSTAT TLC80-14 litres
GAS CARTRIDGE OPTION

CRYOSTAT TLC2
- REF 23207 –

Completely stainless steel

- **Compact, small footprint**
- **Autotuning, high precision**
- **Easy to operate**
- **Low noise**
- **Bath opening 150x100mm**

Item	Unit	TLC2
Power	[Watt]	1050 max.
Used materials Inside bath		Stainless steel PTFE
Range	[°]	-10 .. 60 °C 14 .. 140°F
Reading	Standard °C, °F on request	
Setting ±	[°]	0.1
Stability ±	[°K]	Better than 0.1
Heating	[W]	1000 (1 heater)
Bath volume	[L]	5.5
Pump pressure	[mBar]	300 max
Opening	[mm]	100x150(round edge)
Depth bath	[mm]	150
Weight	[Kg]	18

CRYOSTAT TLC15-5litres
- REF 23206 –

Stainless steel

- **Drain to empty bath**
- **Compact, small foot print**
- **Very quiet**
- **Autotune, high precision**
- **Fluid level detection**

Item	Unit	TLC15-5
Power	[Watt]	1400
Used materials Inside bath		Stainless steel Chrome plated coil
Range	[°]	-15..+60 °C -5..+140°F
Reading	Standard °C, °F on request	
Setting ±	[°]	0.1
Stability ±	[°K]	Better than 0.05
Heating	[W]	1100 (1 heater)
Bath volume	[L]	5
Pump pressure	[mm H2O]	300 max
Opening bath	[mm]	85 x 150 (Effective use)
Depth bath	[mm]	150
Weight	[Kg]	30

CRYOSTAT TLC30-5litres
- REF 23203 -

Stainless steel

- **Drain to empty bath**
- **Compact, small foot print**
- **Very quiet**
- **Autotune, high precision**
- **Fluid level detection**

Item	Unit	TLC30-5
Power	[Watt]	1400
Used materials Inside bath		Stainless steel Chrome plated coil
Range	[°]	-30..+60 °C -22..+140°F
Reading	Standard °C, °F on request	
Setting ±	[°]	0.1
Stability ±	[°K]	Better than 0.05
Heating	[W]	1100 (1 heater)
Bath volume	[L]	5
Pump pressure	[mBar]]	300 max
Opening bath	[mm]	85 x 140 (Effective use)
Depth bath	[mm]	150
Weight	[Kg]	30

CRYOSTAT TLC40-14 litres
- REF 23204 -

Completely stainless steel

- **Drain to empty bath**
- **Wheels fitted for easy transport**
- **Compact, fits under workbench**
- **Low noise**
- **Autotune, high precision**
- **Fluid level detection**

Item	Unit	TLC40-11
Power	[Watt]	1600
Used materials Inside bath		Stainless steel Chrome plated coil
Range	[C°]	-40.. +20
	[F°]	-40.. +68
Reading	Standard °C, °F on request	
Setting ±	[°]	0.1
Stability ±	[°K]	Better than 0.05
Heating	[W]	1100 (1 heater)
Bath volume	[L]	14..15
Pump pressure*	[mBar]	300 max
Opening bath	[mm]	240 x 170 (240 x 160 effective)
Depth bath	[mm]	150
Weight	[Kg]	65

CRYOSTAT TLC80-14 litres
- REF 23205 -

Completely stainless steel

Drain to empty bath

Wheels fitted for easy transport

Compact, fits under workbench

Low noise

Autotune, high precision

Fluid level detection

Item	Unit	TLC80
Power	[Watt]	2500 max.
Used materials Inside bath		Stainless steel Chrome plated coil
Range	[°]	-80..ambient °C -112..ambient°F
Reading	Standard °C, °F on request	
Setting ±	[°]	0,1
Stability ±	[°K]	Better than 0,05
Heating	[W]	1100 (1 heater)
Bath volume	[L]	14..15
Pump pressure*	[mBar]	300 max
Opening	[mm]	240 x 170 (240 x 160 effective)
Depth bath	[mm]	150
Weight	[Kg]	80

GAS CARTRIDGE OPTION

For Flash point applications (Abel, Cleveland Open cup, Pensky Martens, TAG and NPV series)

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CALIBRATION AND CRM

Products	Test name	Value	Order code Number	Method	Bottle Volume
GASOLINE					
Ref. 60018	Density at 15°C	738Kg/m3	DE-GA-617	ASTM D 4052	250 ml
Ref. 60020	Automatic Distillation	34°C – 180°C	DI-GA-617	ASTM D 86	250 ml
Ref. 60019	Reid Vapor Pressure	56,4 kPa	VP-GA-617	ASTM D 323	250ml
Ref. 60021	Motor Octane Number	85,3	OM-GA-617	ASTM D 2700	1000 ml
Ref. 60022	Research Octane Number	96,4	OR-GA-617	ASTM D 2699	1000 ml
KEROSENE					
Ref. 60024	Density at 15°C	799Kg/m3	DE-KR-415	ASTM D 4052	250 ml
Ref. 60025	Freezing Point	-48,9°C	FR-KR-415	ASTM D 2386	250 ml
Ref. 60030	Automatic Distillation	161°C – 257°C	DI-KR-415	ASTM D 86	250 ml
Ref. 60026	Cinematic Viscosity at - 20°C	3,5 cSt	VI-415-20	ASTM D 445	250 ml
Ref. 60031	Abel flash point	40,9°C	AB-KR-415	IP 170	250 ml
Ref. 60028	Anline Point	56,44°C	AP-KR-415	ASYM D 611	250 ml
DIESEL					
Ref. 60001	Density at 15°C	836Kg/m3	DE-GO-414	ASTM D 4052	50 ml
Ref. 60010	Density at 15°C	832Kg/m3	DE-GO-419	ASTM D 4052	250 ml
Ref. 60002	Cloud Point	-17°C	CP-GO-419	ASTM D 2500	250 ml
Ref. 60003	Pour Point	-22°C	PP-GO-419	ASTM D 97	250 ml
Ref. 60004	Cold Filter Plugging Point	-20°C	CF-GO-419	EN116/IP309	250 ml
Ref. 60011	Cetane Number	52,2	CN-GO-419	ASTM D 613	1000 ml
Ref. 60005	Automatic Distillation	193°C to 320°C	DI-GO-419	ASTM D 86	250 ml
Ref. 60006	Pensky-Martens Flash Point	74,5°C	PM-GO-419	ASTM D 93	250 ml
Ref. 60014	Sulphur Content	296 mg/kg	SU-GO-414	All methods	50 ml
Ref. 60015	Sulphur Content	48,5 mg/Kg	SU-GO-419	ASTM D 5453	50 ml
Ref. 60017	Sulphur Content	4,7 mg/Kg	SU-GO-255	ASTM D 5453	50 ml
LUBRICANT					
Ref. 60007	Density at 15°C	882 Kg/m3	DE-LU-482	ASTM D 4052	250 ml
Ref. 60008	Cleveland Flash Point	243°C	FC-LU-482	ASTM D 92	250 ml
Ref. 60009	Pensky-Martens Flash Point	213°C	PM-LU-146	ASTM D 93	250 ml

THERMOMETERS

ASTM N°	REF. Cat.	RANGE in °C	SUBDIVISION in C°	IMMERSION in mm
1 C	11489	-20 à +150	1	76
2 C	11490	-5 à +300	1	76
3 C	11491	-5 à +400	1	76
5 C	11492	-38 à +50	1	108
6 C	11493	-80 à +20	1	76
7 C	11494	-2 à +300	1	Total
8 C	11495	-2 à +400	1	Total
9 C	11496	-5 à +110	0.5	57
10 C	11497	+90 à +370	2	57
11 C	11498	-6 à +400	2	25
12 C	11499	-20 à +102	0.2	Total
13 C	11500	+155 à +170	0.5	Total
14 C	11501	+38 à +82	0.1	79
15 C	11502	-2 à +80	0.2	Total
16 C	11503	+30 à +200	0.5	Total
17 C	11504	+19 à +27	0.1	Total
18 C	11505	+34 à +42	0.1	Total
19 C	11506	+49 à +57	0.1	Total
20 C	11507	+57 à +65	0.1	Total
21 C	11508	+79 à +87	0.1	total
22 C	11509	+95 à +103	0.1	total
23 C	11510	+18 à +28	0.2	90
24 C	11511	+39 à +54	0.2	90
25 C	11512	+95 à +105	0.2	90
26 C	11513	+130 à +140	0.1	total
27 C	11514	+147 à +182	0.5	76
33 C	11515	-38 à +42	0.2	50
34 C	11516	+25 à +105	0.2	50
35 C	11517	+90 à +170	0.2	51
36 C	11518	-2 à +68	0.2	45
37 C	11519	-2 à +52	0.2	100
38 C	11520	+24 à +78	0.2	100
39 C	11521	+48 à +102	0.2	100
40 C	11522	+72 à +126	0.2	100
41 C	11523	+98 à +152	0.2	100
42 C	11524	+95 à +255	0.5	100
44 C	11529	+18.5 à +21.5	0.05	total
45 C	11530	+23.6 à +26.4	0.05	total
46 C	11531	+48.6 à +51.4	0.05	total
47 C	11532	+58.6 à +61.5	0.05	total
49 C	11525	+20 à +70	0.2	65
52 C	11526	-10 à +5	0.1	total
54 C	20218	+20 à +100.6	0.2	total
56 C	11528	+19 à +35	0.02	total
57 C	11529	-20 à +50	0.5	57
61 C	11530	+32 à +127	0.2	79
62 C	11531	-38 à +2	0.1	total
63 C	11532	-8 à +32	0.1	total
64 C	11533	+25 à +55	0.1	total
65 C	11534	+50 à +80	0.1	total
66 C	11535	+75 à +105	0.1	total
67 C	11536	+95 à +155	0.2	total
68 C	11537	+145 à +205	0.2	total
69 C	11538	+196 à +305	0.5	total
70 C	11539	+295 à +405	0.5	total
71 C	20219	-37 à +21	0.5	76
73 C	11554	-41.4 à +38.6	0.05°C	total
82 C	11540	-15 à +105	1	30
83 C	11541	+15 à +70	1	40
84 C	11542	+25 à +80	1	249
85 C	11543	+40 à +150	1	181
86 C	11544	+95 à +175	1	35
87 C	11545	+150 à +205	1	40
88 C	11546	+10 à +200	1	57
89 C	11547	-20 à +10	0.1	76
90 C	11548	0 à +30	0.1	76
91 C	11549	+20 à +50	0.1	76
92 C	11550	+40 à +70	0.1	76
93 C	11551	+60 à +90	0.1	76
94 C	11552	+80 à +110	0.1	76
95 C	11553	+100 à +130	0.1	76
96 C	11554	+120 à +150	0.1	76
99 C	15164	-48 à +4	0.2	35
100 C	11555	+145 à +205	0.2	76
101 C	11556	+195 à +305	0.5	76
102 C	11557	+123 à +177	0.2	100
103 C	11558	+148 à +202	0.2	100
104 C	11559	+173 à +227	0.2	100
105 C	11560	+198 à +252	0.2	100
106 C	11561	+223 à +277	0.2	100
107 C	11562	+248 à +302	0.2	100
110 C	15634	+133.6 à +136.4	0.05	total
111 C	11563	+170 à +250	0.2	100
112 C	11564	+4 à +6	0.02	total
113 C	11565	-1 à +175	0.5	total
114 C	11566	-80 à +20	0.5	total
116 C	20220	+18.9 à +25.1	0.01	total
117 C	20221	+23.9 à +30.1	0.01	total
118 C	15635	+28.6 à +31.4	0.05	total
119 C	20222	-38.3 à +30	0.1	100
120 C	10025	+38.5 à +41.5	0.05	total
121 C	10026	+98.5 à +101.5	0.05	total
122 C	29020	-45 à -35	0.1	total
123 C	29021	-35 à -25	0.1	total
124 C	29022	-25 à -15	0.1	total
125 C	29023	-15 à -5	0.1	total
126 C		-27.4 à -24.6	0.05°C	total
127 C	22082	-21.4 à -18.6	0.05	total
128 C		-1.4 à +1.4	0.05°C	total
129 C		+91.6 à +94.4	0.05°C	total

ASTM N°	REF. Cat.	RANGE in °C	SUBDIVISION in C°	IMMERSION in mm
IP 1 C		-38 à +50	1	108
IP 2 C	21229	-80 à +20	1	76
IP 3 C	21049	-1 à +105	0.5	total
IP 4 C		-4 à +360	1	total
IP 5 C		-2 à +300	1	total
IP 6 C		-2 à +400	0.2	total
IP 8 C	521367	0 à +45	0.2	65
IP 9 C	521369	+40 à +85	0.2	65
IP 10 C		+75 à +122		
IP 14 C		-80 à +20	0.5	total
IP 15 C	25960	-5 à +110	0.5	57
IP 16 C		+90 à +370	2	57
IP 17 C		+38 à +82	0.1	79
IP 18 C	21826	+20 à +100.6	0.2	total
IP 20 C		-38 à +42	0.2	50
IP 21 C		+25 à +105	0.2	50
IP 22 C	25961	+195 à +205	0.1	100
IP 23 C		+34 à +42	0.1	total
IP 24 C		+95 à +103	0.1	total
IP 28 C		-6 à +400	2	25
IP 29 C		+18.6 à +21.4	0.05	total
IP 30 C	21651	+23.6 à +26.4	0.05	total
IP 31 C		+36.6 à +39.4	0.05	total
IP 32 C		+98.6 à +101.4	0.05	total
IP 33 C		-1.4 à +1.4	0.05	total
IP 34 C		+52.6 à +55.4	0.05	total
IP 35 C		+58.5 à +61.4	0.05	total
IP 36 C		+91.6 à +94.4	0.05	total
IP 37 C		+144 à +156	0.2	100
IP 38 C		+23 à +27	0.1	total
IP 39 C	21675	-1 à +38	0.1	total
IP 40 C		+20 à +120	1	total
IP 41 C		+100 à +230	1	total
IP 42 C	11337	-38 à +30	0.5	250
IP 43 C		+10 à +110	0.5	-
IP 44 C	21915	+15 à +121	0.5	-
IP 45 C		+15 à +30	0.2	22
IP 46 C		+14.5 à +21	0.1	total
IP 47 C		+155 à +170	0.5	total
IP 48 C		-38 à +30	0.5	total
IP 49 C		-15 à +40	0.5	total
IP 50 C		+10 à +65	0.5	total
IP 51 C		+35 à +120	0.5	total
IP 52 C		+90 à +260	1	total
IP 53 C		0 à +80	0.5	total
IP 59 C		+90 à +170	0.2	50
IP 60 C		-2 à +80	0.2	total
IP 61 C		+30 à +200	0.5	total
IP 62 C		-5 à +300	1	76
IP 63 C		+32 à +127	0.2	79
IP 64 C		-20 à +102	0.2	total
IP 65 C		-51.6 à -34	0.1	total
IP 66 C		+48.6 à +51.4	0.05	total
IP 67 C		-19.4 à -16.6	0.05	total
IP 68 C		-41.4 à -38.6	0.05	total
IP 69 C		-55.4 à -52.6	0.05	total
IP 71 C	21650	-27.4 à -24.6	0.05	total
IP 72 C		-37 à +21	0.5	76
IP 73 C		-5 à +400	1	76
IP 74 C		-35 à +70	0.5	61
IP 75 C		-30 à +80	0.5	89
IP 76 C		+10 à +55	0.5	93
IP 77 C		-2 à +52	0.2	100
IP 78 C		+24 à +78	0.2	100
IP 79 C		+48 à +102	0.2	100
IP 80 C		+72 à +126	0.2	100
IP 81 C	25959	+98 à +152	0.2	100
IP 82 C		+95 à +255	0.5	100
IP 83 C		+123 à +177	0.2	100
IP 84 C		+148 à +202	0.2	100
IP 85 C		+173 à +227	0.2	100
IP 86 C		+198 à +252	0.2	100
IP 87 C		+223 à +277	0.2	100
IP 88 C		+248 à +302	0.2	100
IP 89 C		-1 à +175	0.5	total
IP 90 C		+80.6 à +83.4	0.05	total
IP 91 C	23184	0 à +110	1	44
IP 92 C		+38.6 à +41.4	0.05	total
IP 93 C		+133.6 à +136.4	0.05	total
IP 94 C		-45 à -35	0.1	total
IP 95 C		-35 à -25	0.1	total
IP 96 C		-25 à -15	0.1	total
IP 97 C		-15 à -5	0.1	total
IP 98 C	23185	+100 à +300	2	44
IP 99 C		-21.4 à -18.6	0.05	total
IP 101 C		+20 à +150	1	58
IP 606 C		+10 à +65		
IP 607 C		+30 à +90		
Spécial avec bague				
IP 74 C	21227	-35 à +70	0.5	61
IP 75 C	21228	-30 à +80	0.5	89

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ASTM Test Methods	Analyzes	ASTM	Pages
Diesel Fuel	Acid & Base Number	D 974	On request
	Carbon Residue	D 189	
		D 524	
		D 4530	
	Cloud Point	D 2500	
		D 5771	
		D 5772	
		D 5773	
	Cold Filter Plugging Point	D 6371	
	Color	D 1500	
	Copper Corrosion	D 130	
	Density	D 1298	
		D 4052	
	Distillation	D 86	
	Flash Point	D 93	
	Heat Content	D 240	On request
	Hydrocarbon Type	D 1319	
		D 5136	
	Pour Point	D 97	
		D 5949	
		D 5950	On request
	Sulfur Content	D 129	
		D 2622	
		D 4294	
		D 5453	
	Viscosity, Kinematic	D 445	
	Water & Sediment	D 1796	
		D 2709	
Fuel Oil	API Gravity	D 287	
	Ash	D 482	
	Carbon Residue	D 189	
		D 4530	
		D 524	
	Density	D 1298	
	Flash Point	D 93	
	Heat Content	D 240	On request
	Pour Point	D 97	
	Sediment	D 473	
		D 4870	
	Sulfur Content	D 1552	
		D 2622	
		D 4294	On request
	Viscosity, Kinematic	D 445	
	Water & Sediment	D 1796	
	Water Content by Distillation	D 95	

Automatic Transmission Fluid	Acid Number	D 664	
	Acidity	D 974	On request
	API Gravity	D 287	
	Base Number	D 2896	
		D 4739	
		D 664	On request
	Color	D 1500	
	Copper Corrosion	D 130	
	Density	D 1298	
		D 4052	
	Flash Point	D 93	
	Rust Prevention	D 665	
	Sulfur Content	D 1552	On request
	Viscosity, Kinematic	D 445	
	Viscosity, Low Temperature	D 2983	On request
Automotive Lubricants Additives	Acid Number	D 664	
	Ash	D 482	
	Ash Sulfated	D 874	
	Base Number	D 2896	
		D 4739	On request
	Density	D 1298	
		D 4052	
	Flash Point	D 92	
		D 93	
	Sulfur Content	D 1552	On request
	Viscosity, Kinematic	D 445	
	Water Content	D 1744	On request
Aviation Turbine (Jet A)	Bocle Lubricity	D 5001	On request
	Color	D 156	
		D 6045	
	Copper Corrosion	D 130	
	Density	D 1238	
		D 4052	
	Distillation	D 86	
	Flash Point	D 56	
		D 3828	
	Freeze Point	D 2386	
		D 5972	
		D 7153	
		D 7154	
	Gum	D 381	
	Hydrocarbon Type	D 1319	
	Smoke Point	D 1322	
	Sulfur Content	D 1266	
		D 2622	
		D 4294	
		D 5453	On request
	Thermal Stability	D 3241	
		D 1275	

	Viscosity, Kinematic	D 445	
	Water Separation	D 3948	On request
Base Oil	Color	D 1500	
		D 6045	
	Density	D 1298	
		D 4052	
	Evaporation Loss	D 5800	On request
	Flash Point	D 92	
		D 93	
	Pour Point	D 97	
		D 5950	
		D 5949	
		D 5985	
	Sulfur Content	D 2622	
		D 3120	
		D 4294	On request
	Volatility	D 6417	
	Viscosity, Cold Crank Simulator	D 5293	On request
	Viscosity, Kinematic	D 445	
	Water	D 6304	
		D 1401	
Crude Oil	Acid Number	D 664	
	API Gravity	D 1298	
		D 287	
		D 5002	
	Micro Carbon Residue	D 4530	
	Pour Point	D 97	
		D 5853	
	Reid Vapor Pressure	D 323	
		D 5191	
	Salt	D 6470	
		D 3230	
	Sediment	D 473	
		D 4807	
	Sulfur	D 2622	
		D 4294	On request
	Viscosity, Kinematic	D 445	
	Water	D 4006	
		D 4928	
Engine Oil Lubricants	Acid Number	D 664	
	Ash	D 482	
	Ash Sulfated	D 874	
	Color	D 1500	
	Density	D 1298	
		D 4052	
	Evaporation Loss	D 5800	On request
	Flash Point	D 92	
		D 93	

	Pour Point	D 97	
		D 5949	
		D 5950	
		D 5985	
		D 6892	
	Saponification No.	D 94	On request
	Sulfur Content	D 129	
		D 1552	
		D 5453	On request
	Viscosity, Kinematic	D 445	
	Viscosity, Low Temperature	D 4684	
		D 5133	
		D 5293	On request
	Water Content	D 1744	On request
Gear Oil	API Gravity	D 287	
	Ash Sulfated	D 874	
	Copper Corrosion	D 130	
	Flash Point	D 92	
		D 93	
	Pentane, Toluene	D 893	
	Pour Point	D 97	
		D 5950	
	Sulfur Content	D 4294	On request
	Viscosity, Kinematic	D 445	
	Viscosity, Low Temperature	D 2983	On request
General Gas Oils	Acid Number	D 664	
	Aniline Point	D 611	
	Ash	D 482	
	Carbon Residue	D 4530	
		D 189	
	Color	D 1500	
		D 6045	
	Density/API	D 1298	
		D 4052	
		D 287	
	Distillation	D 1160	
		D 6352	
	Flash Point	D 93b	
	Pour	D 97	
		D 5950	
	Sulfur	D 2622	
		D 4294	On request
	Viscosity, Kinematic @ 100°C	D 445	
	Viscosity, Saybolt	D 88	
Industrial Gear Oil	Copper Corrosion	D 130	
	Demulsibility	D 2711	On request
	Flash Point	D 92	
		D 93	
	4-Ball EP	D 2783	On request
	4-Ball Wear	D 4172	On request

	Pour Point	D 97	
	Rust Prevention	D 665b	
	Timken EP	D 2782	On request
	Viscosity, Kinematic	D 445	
	Water Separability	D 1401	
In-Service Oil Monitoring	Acid Number	D 664	
		D 974	
		Other Methods	
	Base Number	D 974	
		D 2896	
		D 4739	On request
		Other Methods	
	Flash Point	D 92	
		D 93	
		D 3828	
		Other Methods	
	Viscosity Kinematic	D 445	
		Other Methods	
	Water Content	D 95	
		D 1744	
		D 6304	
Lubricating Grease	Cone Penetration (1/4 & 1/2 Scale)	D 217	
		D 1403	
	Copper Corrosion	D 4058	On request
	Corrosion Preventative Properties	D 1743	On request
	Dropping Point (Wide Temp. Range)	D 566	
		D 2265	On request
	Evaporation Loss	D 972	On request
	Extreme Pressure Prop. (Timken, 4-Ball)	D 2596	On request
	Leakage Tendencies	D 1263	On request
	Oil Separation	D 1742	
		D 6184	On request
	Oxidation Stability By Oxygen Bomb Method	D 942	On request
	Roll Stability	D 1831	On request
	Water Washout	D 1264	
	Wear, 4-Ball	D 2266	On request
Motor Gasoline	Copper Corrosion	D 130	
	Density	D 1298	
		D 4052	
	Distillation	D 86	
		D 3710	
	Gum	D 381	
	Hydrocarbon Type	D 1319	
		D 6839	
	Oxidation Stability	D 525	
	Sulfur Content	D 1266	
		D 2622	
		D 3120	
		D 4294	On request
	Vapor Pressure	D 5191	On request

Reformulated Gasoline	API Gravity	D 287	
	Density	D 1298	
		D 4052	
	Distillation	D 86	
	Gum	D 381	
	Hydrocarbon Type	D 1319	
	Sulfur Content	D 2622	
		D 4294	
		D 5453	
		D 3120	On request
	Vapor Pressure	D 5191	On request
Turbine Oil	Acidity	D 974	On request
	Air Release	D 3427	
	Copper Corrosion	D 130	
	Flash Point	D 92	
		D 93	
	Foam	D 892	
	4-Ball Wear	D 4172	On request
	Pour Point	D 97	
		D 5949	
		D 5950	
		D 5985	
	RBOT	D 2272	
	Rust Prevention	D 665b	
	Viscosity, Kinematic	D 445	
	Water Separability	D 1401	
Ultra-Low Sulfur Diesel	Sulfur	D 2622	
		D 3120	
		D 5453	
		D 6920	
	Other Methods	Any Test of choice	
Wax	Color	D 156	
		D 1500	
		D 6045	
	Congealing Point	D 938	On request
	Density, Relative or API Gravity	D 1238	
		D 4052	
	Flash Point	D 92	
		D 93	
	Needle Penetration	D 1321	
	Oil Content of Petroleum Waxes	D 721	
	Viscosity, Kinematic	D 445	

Biodiesel	Acidity	D 664	
		D 974	On request
	Ash	D 482	
		D 874	
	Carbon Residue	D 4530	
		D 189	
		D 521	
	Cloud Point	D 2500	
		D 3117	
		D 5771	
		D 5772	
		D 5773	
	Cold Filter Plugging Point	D 6371	
	Copper Corrosion	D 130	
	Distillation	D 1160	
	Flash Point	D 93	
		D 6450	
		D 3828	
	Oxidation Stability	EN 14112 FAME	On request
	Sediment Sulfur	D 5453	
		D 1266	
		D 6428	On request
	Viscosity, Kinematic	D 445	
	Water by KF	D 6304	On request
Hydraulic Fluids/Oils	Acid Number	D 664	
		D 974	On request
	Base Number	D 974	
		D 2896	
	Air Release	D 3427	
	Copper Corrosion	D 130	
	Flash Point	D 92	
	Foaming Characteristics	D 892	
	Pour Point	D 97	
	Rust Prevention	D 665	
	Stability, Hydrolytic	D 2619	
	Stability, Oxidation RPV	D 2272	
	Viscosity, Kinematic	D 445	
	Water Separability	D 1401	