GENERAL CATALOGUE

CATALOGUE

NORMALAB

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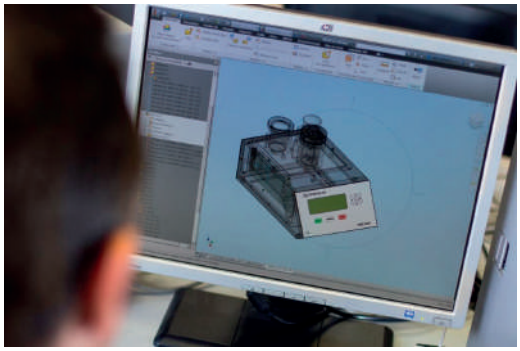
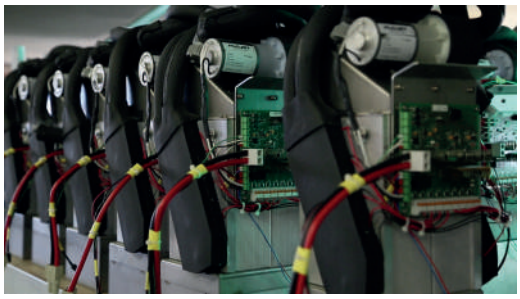
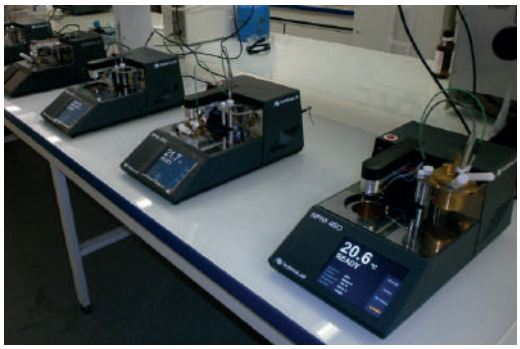
EDITORIAL







For more than 55 years, **NORMALAB** has been designing, developing and manufacturing scientific laboratory instruments for the petroleum sector and related activities: refining, extraction, lubricating plants, chemicals, petrochemicals.

NORMALAB is taking care of its experience and your needs for laboratory analysis. The 5th generation of automatic analysers uses new technologies, as **NORMALAB** also implements some of these ideas to extend its range of instruments.

To adapt ourselves to a constantly changing market, **NORMALAB**'s R & D team has developed the latest generation of analyzers designed to meet the needs of our customers. Finally, the validation of our instruments goes through technicians in charge of product applications, participation in round robin tests and CE regulatory validation.

In order to keep our core business efficient, we participate actively in ASTM, Energy Institute, ISO and AFNOR standards committees. Our teams also follow equivalent standards of national associations like GBT, GOST, JIS and others. Thus, **NORMALAB** offers a complete range: scientific glassware, manual, semi-automatic or fully automated equipment, meeting the needs of the market and the standards in force within laboratories.

In addition to its production, **NORMALAB** is able to offer other test methods through its partnerships with well-known manufacturers. Thanks to the confidence of its customers wishing to centralize their purchasing process from a single source, **NORMALAB** is their one and only partner.

The technical support and the assistance offered to our customers are at the heart of our concerns: from the offer to the commissioning, **NORMALAB** ensures a close follow-up with its customer. Our technical service offers assistance in installation, maintenance of your equipment and training of staff.

The purpose of our actions within the company is the satisfaction of our customers, whether they are in geographical proximity or several thousand kilometers away. The loyalty of our customers over time is proof of their satisfaction and their trust. Collaboration with our network and our partners is the key to our success.

NORMALAB ADOPT THE PROPER SOLUTION

INDEX

CLOSED CUP FLASH POINT TESTER

PENSKY MARTENS FLASH POINT

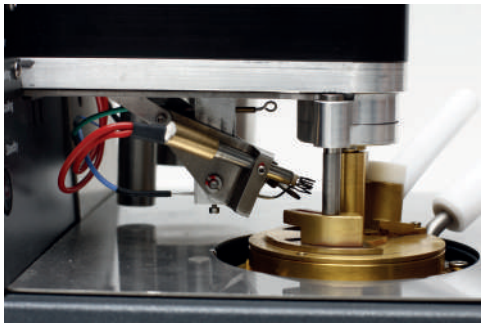
ASTM D 93 - IP 34 - ISO 2719 - GBT 261

NPM 450 – Automated - Ref 60400

Efficient and compact, the NPM 450 is a fully automated Pensky-Martens Closed Cup Flash Point Tester that combines latest technologies.

Due to its unique design, the NPM 450 offers you the best performance thanks to its predictive heating regulation and the air turbine enabling fast sample cooling after the test.

Thought for the user, the NPM 450 includes a revolutionary stirring and dipping arm, with electric and gas ignition. A single combined system is delivered in standard. The user can automatically switch from gas to electric igniter (automatically regulated).



Unique Specifications :

- Test temperature range : ambient to 410°C
- Small foot print
- Electric and gas ignition (unique combined system)
- User programmable methods
- Predictive heating rate

Easy Operation :

An intuitive software, coupled with a high definition screen, offers you a friendly, user interface, able to follow your test in real time.

Delivered in standard with methods A, B & C, the NPM 450 offers you the possibility to create more than 1000 methods with all parameters (pre-heating, stirring, dipping….). Equipped with a capacitive touch screen, the NPM 450 can be used with gloves.

To ensure security, an overheating safety along with fire detection can trigger an automatic N_2 extinguisher system. NPM 450 offers a secured operation of the unit.

Safety option
REF : 60410

Safety :

- Overheating protection
- Fire detection
- Automatic fire extinguisher (option) Ref 60410

NPM 131 – Manual instrument - Ref 942616

The NPM 131 offers electric heating, automatic stirring and easy flame control. NPM 131 performs method A or B.

ABEL FLASH POINT TESTER

IP 170 - ISO 13736

NAB 440 – Automated - Ref 41300

The NAB 440 model, fully automatic tester, is delivered with cup and cover, cup support, Pt 100 probe, detection cable and gas tubing. Automated Abel flash point has 3 preset standard methods, and 1 quick research method. The instrument features a dual detection thermal system and ionization. The user-friendly interface allows to memorize the last 200 test results. NAB 440 can be connected to an external chiller to operate from -30°C to +110°C.

NAB 110 – Manual instrument - Ref 941601

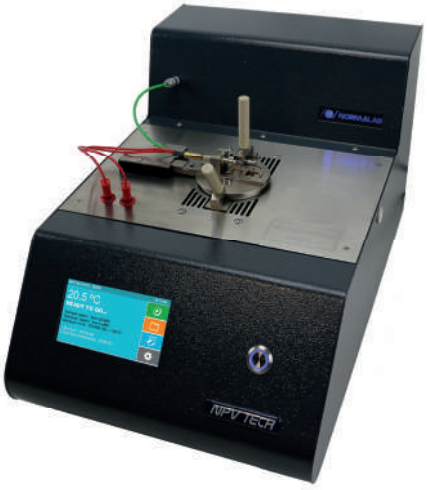
The manual ABEL Flash Point offers the possibility to work as per the traditional standard method with dry ice.

TAG FLASH POINT TESTER

ASTM D 56

NTA 440 – Automated - Ref 40600

Automated Tag flash point features 3 preset standard methods, and 1 quick research method. The NTA 440 model, fully automatic tester, is delivered with cup and cover, cup support, Pt 100 probe, detection cable and gas tubing. This apparatus has a dual detection thermal system and ionization. This test method covers the determination of the flash point by Tag closed cup testers, of liquids with a viscosity below 9,5 CST at 25°C and having a flash point below 93°C.



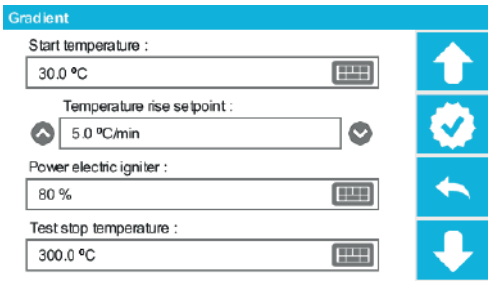
SMALL VOLUME CLOSED CUP FLASH POINT TESTER

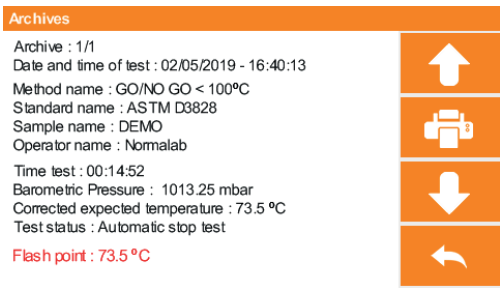
ASTM D 3828 - ISO 3679

NPV Tech - Automated - Ref 42000

The NPV Tech is equipped with an automatic heating slope. To perform a flash point with the NPV Tech, it is possible to work with a small volume of 2 or 4 ml only.

Measurements are possible thanks to an automatic detection by a thermocouple. The unit offers the possibility to run the method manually or to set an automatic heating rate.





Unique Specifications :

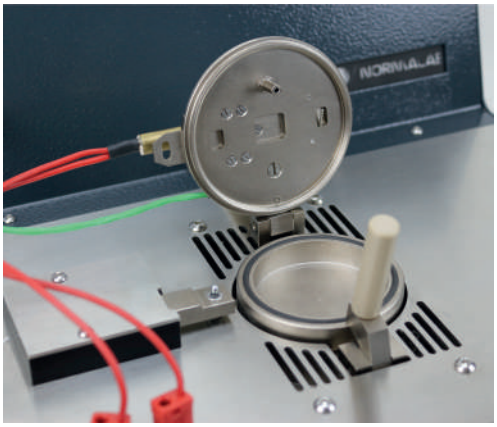
- Temperature range from -30°C to 300°C
- Small sample volume, 2 or 4 mL
- Easy sample introduction
- 2 predefined methods (Go / No Go and Ramp)
- Possibility to maintain temperature of routine tests
- Predefined temperature rate 1°C / 2°C / 5°C
- Electric ignitor, adjustable from 0 to 30 W (no gas)
- Coating against aggressive products
- High efficiency ventilation system

Easy Operation :

Thanks to an intuitive software and a resistive color touch screen, the NPV Tech is easy to calibrate or to set operating parameters. For routine analysis, 2 predefined methods (Go / No Go and Gradient with predefined temperature range) are ready to use.

Reliable, the test results are adjusted thanks to barometric correction with temperature compensation and measured by a certified class A Pt 100 probe. With a memory of 20 results, they can be transferred at the end of the test by printer or PC through RS 232.

To maximize user safety, different protection systems secure with sound alarms and visual indicators in case of defects. Moreover, a removal tray with drain allows fluid disposal if sample overflows or condensates at low temperature.



OPEN CUP FLASH POINT TESTER

CLEVELAND FLASH POINT TESTER

ASTM D 92 - ISO 2592 - IP 36

NCL 440 – Automated - Ref 40400

NCL 440 flash point, combines leading flash and fire point detection with a user friendly interface. Fully automatic, the NCL 440 can boost your laboratory's productivity with the 6-cups autosampler (in option), while improving repeatability and reproducibility of your analysis. Easy to use, simply select a pre-installed program and press the Start button. The evolution of the test is displayed in real time on the screen.

Unique Specifications :

- Test Temperature Range : Ambient to 400°C
- Flash and Fire point detection by ionisation ring
- Automatic flame ignition and extinguishing
- Data storage : 200 results
- Automatic Gas cut-off at the end of the test
- Emergency safety switch

Accessories :

6 cup auto sampler :
NCL 440 can be configurated with an auto sampler that allows to launch 6 analysis at the same time and collect the results at the end of the cycle.
Skimmer
The surface skin from bituminous samples is removed during the test through the skimmer function. This accessory is not compatible with the auto sampler
Gas cartridge
The option minimizes the volume of gas present in the lab.

NCL 120 – Manual instrument - Ref 942611

The NCL 120 allows the determination of flash and fire point. The instrument is fitted with electric heater, power adjustable by energy regulator on the front panel. Pilot and test flame are adjustable by knob.

INFORMATION

The flash point of a flammable liquid is the lowest temperature at which it can form an ignitable mixture in air. At slightly higher temperature, the fire point, is defined as the temperature at which the vapour continues to burn for at least 5 seconds after being ignited. To cover different types of samples and needs, Normalab proposes a full range of analysers; closed cup, or open cup. Your product's properties are also different, so we have a solution according to your volatility, composition and viscosity. Our equipments have a large temperature range, can work without or with adjustable stirring, allow preheating, and are fitted with double detection system. Closed cup testers normally give lower values for the flash point than Open cup.

DISTILLATION OF PETROLEUM PRODUCTS AT ATMOSPHERIC PRESSURE

ASTM D 86 - D 850 - D 1078 - ISO 3405 - IP 123 - IP 195

NDI 450 – Automated - Ref 60502

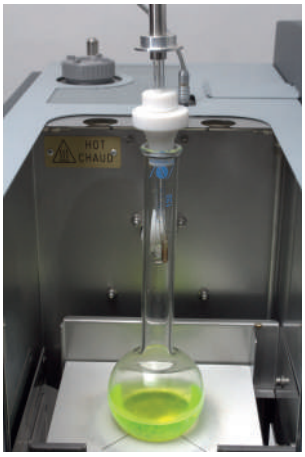
Reliable and robust, the NDI 450 is a fully automated distillation unit at atmospheric pressure with a combination of latest technologies.
Due to our expertise, the NDI 450 offers you the best performance thanks to its low voltage heating element (easily removable) and its built-in Peltier cooling system.
Developed with a windows software preprogrammed with standard methods, the NDI 450 offers the possibility to create your own methods (more than 1000 methods can be stored).
All parameters can be followed during the test :

- flowrate
- temperature
- volume

…

Unique Specifications :

- 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 : 0.1 ml with 0,05 ml resolution
- Receiver compartment temperature : 0 to 60°C
- Quick cooling of heater by fan
- Low voltage heating element offering power and controlled by thermocouple



Easy Operation :

For a complete range of analysis, the NDI 450 is ready to use as per ASTM D86 and related methods (Optional kit for ASTM D850, D1078), also including an automatic cetane index calculation (ISO 4264).
Beside an unique performance, the NDI 450 owns all safety features which make it the most secured distillation.
In addition to an automatic and manual N_2 fire extinguisher (N_2 empty bottle delivered with the unit), the NDI 450 is equipped with 6 sensors that can automatically stop the test in case of failure:

- Receiver position
- Compartment door closed
- Drip deflector in position
- PT 100 probe in position
- Coolant liquid : low level detection

NDI Classic – Half-automated - Ref 942228

NDI Classic includes an analogic condenser bath regulator for a more comfortable operation. The equipment is delivered with glassware and necessary accessories to run ASTM D 86 test.

NDI Basic – Manual instrument- Ref 941228

Distillation apparatus with electric heater. Temperature up to 400°C

Distillation Flask - Accessories - Ref 24019

Round bottom. provided chemical and thermal resistance. Capacity: 125 ml
On request, an Optidist distillation flask is available (ref 25030).
Other capacities available.

REID VAPOUR PRESSURE BATH

ASTM D 323 - ISO 3007 - IP 69 - EN 12

CWB Classic - Ref 941432

Reid vapour pressure bath is designed for 3 vessels. The electronic temperature controller can operate between 10 and 50°C thanks to digital reading. Apparatus is equipped with stirring motor, cooling coil, constant level device and drain valve.

COLD FLOW PROPERTIES

CLOUD & POUR POINT (CPP)

ASTM D 97 - D 2500 - IP 15 - IP 219 - ISO 3015 - ISO 3016

CPP Classic – Half automated - Ref 941592

With internal cooling system. CPP test cabinet is mechanically refrigerated by CFC free Gas. There are 4 compartments (0, -18, -33, -51°C), each with 4 wells. It comes with useful glassware and thermometers.

ASTM D 6371 - IP 309 - EN 116

For Cold Filter Plugging Point, a kit is availaible in option to perform ASTM D 6371, IP 309 and EN 116 standards.

INFORMATION

Volatility is a measure of the tendency of a substance to evaporate. The higher the vapour pressure of a liquid at a given temperature is, the higher the volatility and the lower the normal boiling point of the liquid is.
Distillation is a method of separating mixtures based on differences in their volatilities in a boiling liquid mixture. Distillation is a unit operation, or a physical separation process, and not a chemical reaction.
Cold flow properties could be defined by several tests under prescribed cooling condition. You could look for *Cloud Point* is the temperature at which dissolved solids are no longer completely soluble and *Pour Point* is the lowest temperature at which it will pour or flow.

OXIDATION

OXIDATION CHARACTERISTICS

ASTM D 943 - D 2274 - D 2893 - IP 157 - IP 388 - ISO 12205

TOST Classic – Half automated - Ref 9416260

The oxidation characteristics bath is a 8-place unit. User can select suitable accessories according to its needs and get a custom instrument. Glassware and option list available upon request.

EXISTENT GUM IN JET FUELS BY JET EVAPORATION

ASTM D 381 - IP 131 - IP 540 - ISO 6246 - DIN 51784

NGT Classic - Steam-jet and air-jet version - Ref 941320

The device determines existent gum in fuels by steam-jet and air-jet evaporation. There are double digital controllers for : air temperature (155 +/- 0,5 °C), steam temperature (232 +/-2 °C), and both air & steam flows (1000 mL/s +/- 15 %).

P/N 941309 Steam Generator
P/N 9413080 Air Compressor

INDUCTION PERIOD & POTENTIAL GUMS

ASTM D 525 - D 873 - ISO 7536 - IP 40 - IP 138

NPI 442 - 4 stations — Dry bath - Ref 40925

The NPI 442 offers graphic screen with friendly software. It can record the last 200 results. The temperature range goes from ambient to 120°C. Vessels and glassware to be ordered separately. As a safety measure to fill and unfill the test vessel, use the optional **NPC 210**, a secured oxygen filling and decompression unit with protective screen.

INFORMATION

From crude oil to final product there are several steps. All along this process **NORMALAB** may propose equipments able to qualify the cleanliness of your samples. With crude oil, the NSB (Salt-in-crude analyser) allows to determine the Chloride content which is capital information for refining process. The NMC (Micro carbon residue testers) also automates the characterization carbon content. For final products, we supply solution to qualify the contamination of your samples: amount of naphtha through precipitation number, estimation of hydrocarbon content thanks to aniline point, relative degree of corrosivity due to sulphur compounds, asphaltenes content after extraction and other information for quality control including colour.

FUEL CHARACTERISTICS

AUTOMATIC BLENDING UNIT

ASTM D 613 - D 2699 - D 2700

NABLEND - Automated - Ref 52300

The NABLEND automates the blending procedure for reference and check fuels used for octane and cetane number measurements by CFR engine. It is a unique system for error-free sample preparation. Printing and traceability of results are available according to quality control requirements, thanks to high accuracy in results and time saving.

ANILINE POINT TESTER

ASTM D 611 - IP 2 - NFM 07021 - ISO 2977

NAE 440 – Automated - Ref 40500

The NAE 440 Aniline point tester is the unique twin tester available on the market using the dry bath concept. Instrument allows visual control of the aniline point during test. The NAE operates within a range of -10°C to +150°C. For safety, the heating element is protected in case of tube breakages.

COPPER CORROSION DETECTION

ASTM D 130 - IP 154 - NFM 07015 - ISO 2160 - DIN 51811

NTB Classic - Ref 23007

Thermostatic bath has a temperature range from ambient to +230°C. In order to work under ambient temperature, tap water or external chiller can be connected. Standard is equipped with a bath drain. In option, you have the possibility to increase the capacity from 6 to 9 tests positions.

INFORMATION

Before their final delivery, samples need to be stored. The conductivity measurement helps you to control safety conditions during transfer operation. This storage could engender modifications of your sample. For this reason, we design analysers to check their stability properties like evaluation of gum formation, oxidation stability, and real cleanliness by filter plugging test. Thanks to our blending unit, NABLEND, you will prepare your reference fuels for Octane and Cetane numbers determination with traceability in the quickest way.

COLOUR

SAYBOLT COLOUR DETERMINATION

ASTM D 156

SC Classic - Ref 941520

Saybolt chromometer is used for quality control and product identification of highly refined liquids. It measures colour by comparing a column of sample against colour discs (supplied). Special type of cock to avoid leakage or damage.

ASTM COLOUR SCALE OF PETROLEUM PRODUCTS

ASTM D 1500 - D 6045 - ISO 2049

AF 650 – Manual instrument - Ref 24415

The colorimeter AF 650 model is delivered with a 16-filter colorimetric scale from 0,5 to 8,0 units. It is a 3-field instrument for visually determining the ASTM colour of samples by direct comparison with coloured glass standards. The instrument is delivered with 3 glass sample jars and a calibration certificate for the filters.

CARBON AND SEDIMENT

ASPHALTENES CONTENT IN PETROLEUM PRODUCTS

IP 143 - ASTM D 6560

ASPHAN 02 - Ref 24472

ASPHAN 02 Asphaltenes extractor improves the characteristics of the standard methods, decreases the cost of analysis thanks to manipulation and time reduce to 50%. A better repeatability (5% weight) joins a lower limit of detection (0,2 / 0,3% weight). The ASPHAN 02 is designed to avoid any affluence of toxic solvents.

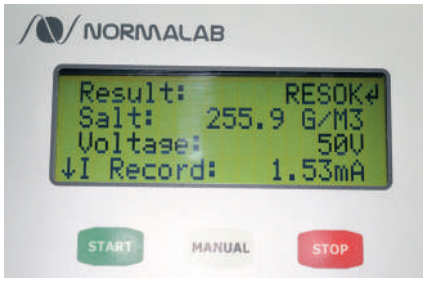
SALT IN CRUDE ANALYSER

ASTM D 3230 - IP 265

NSB Tech - Automated - Ref 942800

Fully automatic, the NSB TECH offers a precise test of salt concentration in crude oil. This test measures conductivity in the crude oil due to the presence of common chlorides, such as sodium, calcium, and magnesium by electronical methods.

Knowledge of the chloride concentration gives information on the efficiency of the desalination process and provides a solid basis for assessing the need for crude oil desalting. The corrosion rates in refining units depend on the chloride concentration.



Unique Specifications :

- Automatic measurement and results
- Security control and alarm
- Voltage between 0 and 300 VAC
- Digital auto ranging meter for reading
- Record blank solution
- Current between 0 and 20 mA

Safety :

A green indicator light warns of good positioning and a red light indicates when the unit is on. An audible alarm warns during the test of the 5 measurements. To maximize user safety, a Hall effect sensor checks contact between the cover and the beaker.

OIL TEST CENTRIFUGE

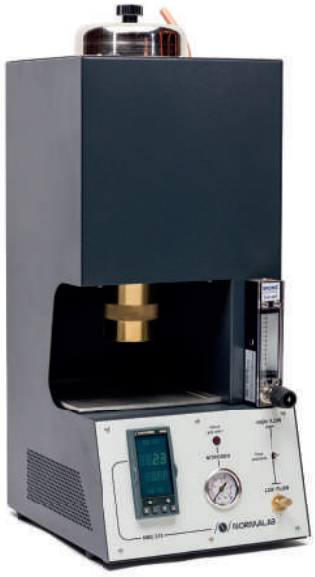
ASTM D 91 - D 893 - D 1796 - D 96 - D 4007 - D 2709 - D 2711 - D 2273

NCP Tech - Ref 29408

NCP Tech centrifuge has been specially designed for the determination of water and sediment in petrol and used oils, as well as precipitation and demulsification features.It has a pre-heating program to set the chamber at the test temperature before spinning the sample.

Unique Specifications :

- Temperature regulation from ambient to 70°C
- Max. speed 3.000 rpm/2.425 RCF
- 4 places for 6 and 8 inches tubes
- Up to 16 programs stored
- Automatic lid latch lock
- Safety system against overheating
- Low noise level <50 dB



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

ASTM D 4530 - D 189 - IP 398 - ISO 10370

NMC 445 – Automated - Ref 41030

Fully automatic and easy to use, the Normalab's NMC 445 provides all safety requirements for a carbon residue measurement of carbon residue formed after evaporation and pyrolysis of petroleum products. Due to our experience, the NMC 445 offers you the best specifications thanks to an automatic calculation of carbon residue % (Required balance).

Including a software with the possibility to create 18 methods in addition to the 2 pre-set methods, the NMC 445 offers the possibility to check the nitrogen flow rate on front panel. For ease of use, it has an automatic nitrogen flow rate switch. Can be used with small, medium or large vials, depending on your needs.

Unique Specifications :

- Automatically controlled atmosphere
- Automatic calculation of % carbon residue
- Quick control of nitrogen flow rate on front panel
- Maximum test temperature : 775°C
- Test reports including initial weight and results

Easy Operation :

Very easy to use, 2 methods are pre-set on the NMC 445 apparatus. 18 additional methods can be programmed with 4 heating segments each. To facilitate the test process, the flow can be checked by a switch on low or high. This device gives the detailed results report and can exports to PDF via a PC connection or prints the select result on local printer

For user flexibility, a balance can be connected to the device. That gives you automatically the carbon residue percentage. Connected to the balance, test reports include initial weight and results.

MICRO CONRADSON TESTER

ASTM D 4530 - IP 398 - ISO 10370

NMC 215 – Half automated - Ref 941690

NMC 215 is a light version of NMC 445 to perform MCRT analysis. Quick start of test, temperature and nitrogen pressure control are automatic and in accordance with the method. Temperature accuracy: 1°C. Max furnace temperature: 550°C.

LUBRICANT

FOAMING CHARACTERISTICS OF LUBRICATING OILS

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

Ref 941643 : Foam 2 Classic
Ref 941640 : Foam 1 Classic
Ref 9416432 : Foam HT Classic

The Foam instruments are used to detect undesirable foaming characteristics in lubricating oils, which could cause inadequate lubrication, overflow and cavitation.

To avoid mechanical failure, the test measures the foaming characteristics of lubricating oils at different temperatures by empirically rating the foaming tendency and the foam stability.

Unique Specifications :

- Temperature bath up to 150°C (24°C- 93,5°C- 150°C)
- The bath is placed in a highly protective cage.
- Two test positions per bath
- Electronic temperature regulation with digital display
- Calibrated built-in flow meter for air flow adjustment and control
- Easy coupling for inlets / outlets (coloured)

Easy Operation :

Foam performs two tests at 24°C and two tests at 93,5°C. The instruments are equipped with 2 heat resistant glass jars (with temperature controller), 2 flowmeters, 2 cylinders (1000 ml), immersion heater, stirring system, air delivery tubing and thermometer. Cold bath has built-in coils for circulating exit air from the high temperature test cylinders. For operator's safety, Foam HT allows to reach 150°C max. and combines sequences I, II, III and IV in one bath. For security, the bath is protected by a safety cage.

DIFFUSER WASHER

NDW Tech – Half automated - Ref 941645

The NDW Tech automates and improves the washing cycles of diffuser stones. According to the ASTM D892 methods, the NDW Tech allows to clean and dry your stone diffusers or your stainless steel diffusers. It also reduces solvent exposure of the users.

AIR RELEASE VALUE (IMPINGER METHOD)

ASTM D 3427 - IP 313 - DIN 51381

ARV Tech – Ref 942900

The ARV Tech is delivered ready to use including a circulating bath capable of maintaining the test cell at required temperatures. Temperature can be set through the interface for sample : 25°C, 50°C, 75°C. The graph show in real time the weight evolution. More than 1000 results can be stored in the software or export through USB, LIMS or e-mails.

This test method measures the time for the entrained air content to fall to the relatively low value of 0.2 % volume under a standardized set of test conditions and hence permits the comparison of the ability of oils to separate entrained air under conditions where a separation time is available.

WATER SEPARABILITY OF PETROLEUM OILS AND SYNTHETIC FLUIDS

ASTM D 1401 - ISO 6614

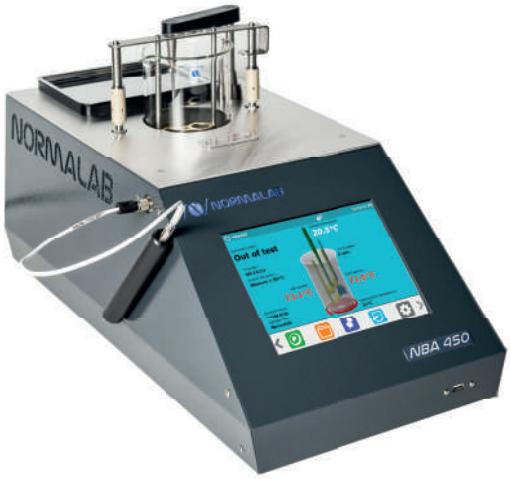
DEM Classic – Half automated - Ref 942545

The DEM Classic has 7 places with 2 of them for sample preheating. Temperature is controlled by electronic temperature controller between ambient and 95°C (+/- 0.1°C), with digital display. Easily movable, the stirring head can regulate stirring speed by electronic controller. With an auto-memorization, the various parameters are recorded.
Illuminated and manually turning base plate (330x330x70 mm) is an option.

INFORMATION

A lubricant is a substance introduced between two moving surfaces to reduce the friction between them, improving efficiency and reducing wear. One of the applications for lubricants, in the form of motor oil, is to protect the internal combustion engines in motor vehicles and powered equipment. Typically lubricants contain 90 % base oil and less than 10 % additives. Additives deliver reduced friction and wear, increased viscosity, improved viscosity index, resistance to corrosion and oxidation, ageing or contamination, etc.
Lubricants are also added to some fuels. Sulphur impurities in fuels also provide some lubrication properties, which have to be taken into account when switching to a low-sulphur diesel; biodiesel is a popular diesel fuel additive providing additional lubricity.

BITUMEN, WAXES & GREASE



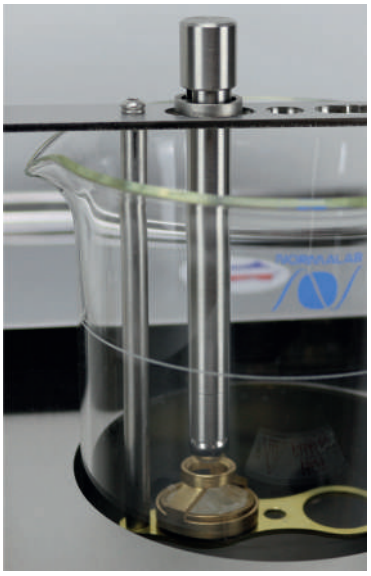
SOFTENING POINT TESTER (RING AND BALL METHOD)

ASTM D 36 - EN ISO 1427 - IP 58 - DIN 52011 - AASHTO T 53

NBA 450 – Automated - Ref 60700

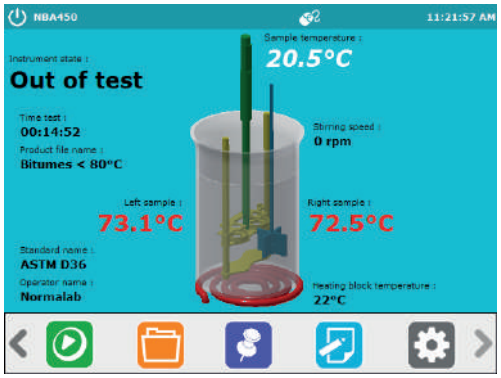
The NBA 450 is equipped with automatic detection of softerning point by optical cells. With the 4 preset methods, it offers the possibility to test bitumen, waxes, resins...

This test defines the temperature at which the sample softens under the effect of temperature and defines the classification of bitumens with the determination of penetrability.



Unique Specifications :

- Test temperature range: up to 200°C
- Automatic detection by optical cell barrier
- 3 preset methods (water, glycerol, silicon oil)
- Adjustable heating rate and stirring speeds
- Capacitive touch screen 8,4''
- User-friendly software
- Stainless steel tray for easy handling of accessories
- Easy positioning of the beaker in the heating block
- Optimized centering system
- Easy handling of the ball with the magnetic ball dropper
- Quick cooling by fan at the end of the test
- Small footprint - Compact instrument



Easy Operation :

Easy to use thanks to a user-friendly and intuitive software, the 3 predefined methods allow to launch a test instantly. In addition, different graphs allow to directly follow the data of the test in progress. These results can be transferred at the end of the test by USB key, emails or stored in the software that can contain more than 10,000 results.

In addition to an audible alarm and a cut-off of the heating element in the event of overheating, safety is maintained with safety sensor on the probe. Finally, in case of breakage of the beaker, a drain is provided for the flow of the fluid and thus prevent damage.

PENETROMETER

ASTM D 5 - D 217 - D 937 - D 1321 - D 1403 - EN 1426

NPN Tech - Automated - Ref 942734

Automatic penetrometer, the NPN Tech is a compact unit. The device is able to measure automatically the penetration value of the sample.

With an auto-electronic detection of depth penetration (optional accessories), the NPN Tech is used for consistency and resistance determination of pasty, creamy, semi-solid or highly viscous samples.

Unique Specifications :

- Step by step motorized vertical displacements
- 4 programmable reference positions for the holder assembly
- Adjustable led lamp and magnifying glass
- Stepper motor for penetration depth as low as 0.01 mm
- Automatic zero-position adjustment of the system
- Penetration time between 0 and 999 min 59 sec
- Optoelectronic detection of depth penetration

Easy Operation :

The software allows programming and calibration. The data acquisition can easily be done with a ticket printer or with PC connection in PDF files. For routine analysis, you can set 4 programmable reference positions. Penetration time can be adjusted between 0 & 999 min.

We can supply you with a wide range of accessories and dedicated tools. The NPN Tech allows to connect different shaped test body for penetration test depending on the sample:

- Cone
- Needle
- Micro-cone
- Other on request.

PENETROMETER

ASTM D 5 - D 217 - D 937 - D 1321 - D 1403 - EN 1426

Penetrometer - Manual instrument - Ref 941731

Manual penetrometer including a large table on levelling feet with spirit level, a manual release mechanism and a dial indicator with 0.01 mm.

MECHANICAL GREASE WORKER

ASTM D 217

GWM Classic – Automated - Ref 9417582

Automatic GWM Classic reduces exhausting procedure required for grease in order to realise the shear stability test. The grease machine achieves 60 (± 10) strokes / min with a displacement of 67 mm. It is equipped with a digital display meter, a dial thermometer calibrated at 25°C. and a perforated brass base with 51 ¼ " (6.35 mm) dia. This apparatus is used for the determination of penetration.

EFFECT OF HEAT AND AIR ON A MOVING FILM OF ASPHALT

ASTM D 2872 (Rolling thin film oven test-RTFOT)

RTFOT Classic - Ref 941877

Double walled convection oven, door with a viewing window, air plenum as described in ASTM D2872, electronic temperature regulator with digital display setting, and factory calibrated flowmeter. Equipped with air jet. Apparatus supplied with 8 glass containers and 1 thermometer ASTM 13C.

INFORMATION

Bitumen is a mixture of organic liquids that are highly viscous, black, sticky, entirely soluble in carbon disulfide, and composed primarily of highly condensed polycyclic aromatic hydrocarbons. Bitumen is used in the Industry for construction, road and paving, roofing and waterproofing. Bitumen is basically a sticky, tar-like form of petroleum, which is so thick and heavy that it must be heated or diluted before it will flow. Its composition is usually modified in a different way for every application. It is thus critical to characterize it in terms of viscosity, hardness, and evaluates its properties through ageing.

Waxes may be natural secretions of plants or animals, artificially produced by purification from natural petroleum or completely synthetic. Some artificial materials such as silicone, wax that exhibit similar properties are also described as wax or waxy.

VISCOSITY

VISCOSITY BATH

ASTM D 445 - D 446 - ISO 3104 & 3105 - IP 71

NVB Classic – Ref 23207

Viscosity bath, conforms ASTM D445, with a temperature range from ambient to 230°C. Temperature stability is ±0.01°C. The bath volume is 40 liters and has an opening of 260 x 240 mm. There are 7 openings for holding viscometers. A cooling coil to work below ambient temperature is integrated. A bath drain is included.

AUTOMATIC VISCOMETER WASHER FOR TUBES ASTM D 446

Standards : ASTM D 446 - ISO 3104 - IP 71

VTW Classic – Automated - Ref 18450

Viscometer washer supplied with 6 nozzle stoppers. This apparatus allows external and internal washing of all current types of viscometer tubes. Viscometer tubes are suspended in solvent vapour at its boiling temperature.

INTELLIGENT CHRONOMETER

Standards : ASTM D 446 - ISO 3104 - IP 71

CHRONOTECH – Automated - Ref 41900

The CHRONOTECH is a software based chronometer. It allows automatic calculation of viscosity by entering tube constants in its internal memory. Mobile and easy to handle, three differents times measures can be done simultaneously with the CHRONOTECH .

INFORMATION

The viscosity of a lubricating oil can be considered as its most important physical property. It must be monitored and controlled carefully because of its impact on the oil and the oil's impact on equipment life and reliability. Basically, the viscosity can be defined as the property of a liquid characterizing its internal friction or resistivity to flow. Physics defines several types of viscosity and separates the two families between Newtonian and non Newtonian fluids. There are mainly two related measures of fluid viscosity:

- dynamic (or absolute) viscosity
- kinematic viscosity.

The knowledge of viscosity is needed to adjust and define the required temperatures for storage, pumping or injection of fluids and is also critical to check if an oil can provide adequate lubrication.

PETROLEUM GLASSBLOWING WORKSHOP

NORMALAB France S.A.S. is specialized in the scientific glass blowing since the beginning of the company in 1963. Thanks to this experience and a team of glassblowers accustomed to work with various techniques, **NORMALAB**'s workshop is the French leader of scientific glass blowing specialized in the oil field.

Our main activities are :

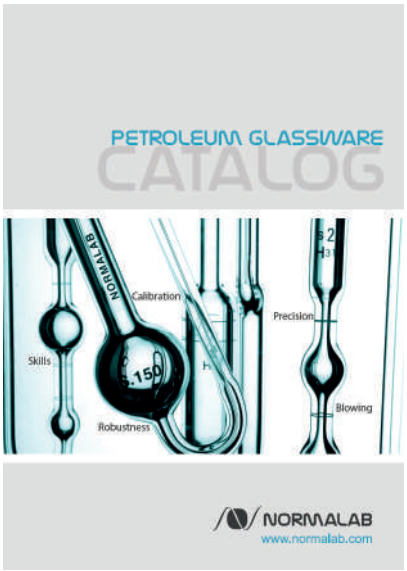
- Standard production
- OEM manufacturing
- Custom-tailored design
- Repair

Also, in order to offer a complete service to its customers, **NORMALAB** proposes calibration of various articles made of glass. With this intention the company is certified according to ISO 9001. Delivered certificates ensure a conformity with the international standards like ASTM, IP, EN, ISO, DIN, JIS, GOST …

Normalab's reputation for distillation flasks and viscosimetric tubes is weel-known in analytical laboratories. Their accuracy and resistance make a world wide reference of them.

Quality, robustness and accuracy of work are the daily objective of this historical workshop.

PETROLEUM GLASSWARE CATALOGUE



From beaker to extractor through cylinder, find the complete list of visco tubes and all the glass instruments and accessories for the petroleum test analysers.

REQUEST OUR GLASSWARE CATALOGUE

APPLICATION

Product Group	Flammability								
STANDARDS	**D 93**			**IP 170**		**D 56**	**D 3828**	**D 92**	
Instrument / **Industry & Application**	**NPM 450**	**NPM 231**	**NPM 131**	**NAB 440**	**NAB 110**	**NTA 440**	**NPV Tech**	**NCL 440**	**NCL 120**
Petroleum Industry									
Asphalt, Bitumen								x	x
Crude Oils									
Fuel Oils	x	x	x						
Liquid Fuels	x	x	x	x	x	x			
Lubricants	x	x	x					x	x
Paraffines, Waxes								x	x
Chemical Industry									
Adhesives, Glues	x	x	x	x	x	x			
Coatings, Paints	x	x	x	x	x	x	x		
Emulsions							x		
Flavors, Fragrances	x	x	x	x	x		x		
Polymers, Elastomers									
Solvents	x	x	x	x	x	x	x		
Cosmetics / Personal Care									
Cosmetics	x	x	x						
Flavors, Fragrances	x	x	x	x	x				
Pharmaceutical Industry / Medicine / Biotechnology									
Biological Samples	x	x	x	x	x	x			
Pharmaceuticals	x	x	x	x	x				
Minerals / Mining / Raw Materials									
Additives, Antifreeze Agents									
Building Materials									
Ceramics									
Power Generation									
Energy, Power Generation	x	x	x						
Environmental / REACH / Transportation / Regulation									
REACH	x	x	x	x	x	x	x		
Sludges									
Soils									
Education / Research / Authorities									
Academic Research	x	x	x					x	x
Customs and Excise Authorities	x	x	x	x	x	x			
Standardization Institutes	x	x	x	x	x	x		x	x

Cleanliness												
Oxidation			Colour		Fuel Character.			Carbon & Sediment				
D 943	D 381	D 525	D 1500	D 156	D 130	D 613	D611	IP 143	D 91	D 3230	D 4530	
TOST Classic	NGT Classic	NPI 442	AF 650	SC Classic	NTB Classic	NABLEND	NAE 440	ASPHAN 02	NCP Tech	NSB Tech	NMC 445	NMC 215
								x				
									x	x	x	x
					x							
x	x			x	x	x	x				x	x
x			x		x				x			
				x	x		x					
	x				x							
x		x			x							
	x				x					x		
	x				x					x		
	x				x					x		

Product Group	Volatility				Cold Flow Properties
STANDARDS	D 86			D 323	D 97
Instrument / Industry & Application	NDI 450	NDI Classic	NDI Basic	CWB Classic	CPP Classic
Petroleum Industry					
Asphalt, Bitumen					
Crude Oils					
Fuel Oils					x
Liquid Fuels	x	x	x	x	x
Lubricants					x
Paraffines, Waxes					
Chemical Industry					
Adhesives, Glues					
Coatings, Paints					
Emulsions					
Flavors, Fragrances					
Polymers, Elastomers					
Solvents	x	x	x		
Cosmetics / Personal Care					
Cosmetics					
Flavors, Fragrances					
Pharmaceutical Industry / Medicine / Biotechnology					
Biological Samples					
Pharmaceuticals					
Minerals / Mining / Raw Materials					
Additives, Antifreeze Agents					
Building Materials					
Ceramics					
Power Generation					
Energy, Power Generation					
Environmental / REACH / Transportation / Regulation					
REACH					x
Sludges					
Soils					
Education / Research / Authorities					
Academic Research	x	x	x		
Customs and Excise Authorities	x	x	x		
Standardization Institutes	x	x	x		

Lubricant						Bitumen & Waxes					Viscosity	
D 892				D 3427	D 1401	D 5		D 36	D 217	D 2872	D445	
FOAM 2	FOAM 1	FOAM HT	NDW Tech	ARV Tech	DEM Classic	NPN Tech	Penetrometer	NBA 450	GWM Classic	RTFOT Classic	NVB Classic	VTW Classic
						x	x	x		x		
										x		
										x		
										x	x	x
x	x	x	x	x	x	x	x		x	x	x	x
						x	x					
						x	x	x			x	x
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					x	x	x		x	x		

LAB CONTAINER

TURNKEY MOBILE LABORATORY

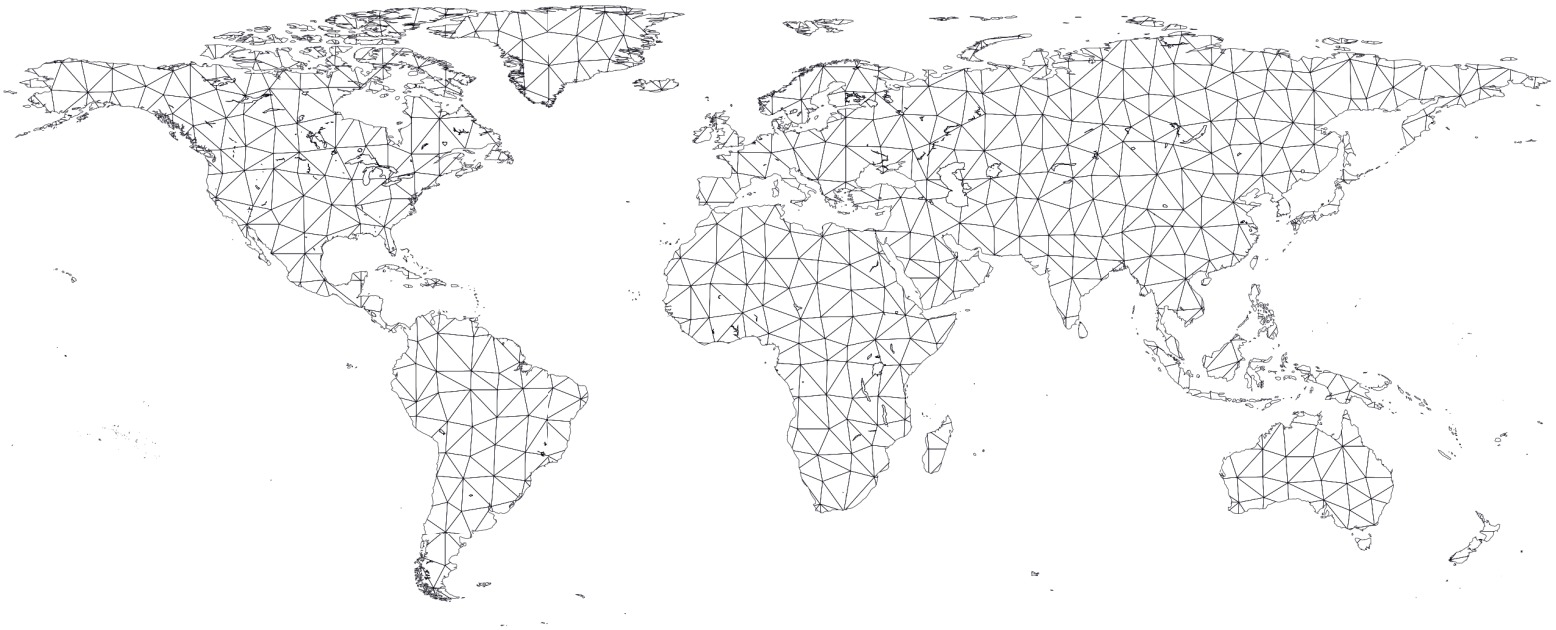
NORMALAB puts its experience at your disposal. From conception to completion, our team guides you and contributes to the success of your project laboratory conforming to international standards.

Moreover, **NORMALAB** has developed a mobile laboratory concept equipped with bench-tops, an electric generator and all laboratory analysers for lubricants, fuel or crude oil analysis in a container or truck. The equipment all in one just needs to be connected with water, gas and electrical supply. The optimize space allows you to perform all required tests on the field.

PROFESSIONAL CUSTOM SOLUTION

- Needs analysis
- Tailored layout
- Specific fittings
- Safety features

LAB CONTAINER LEAFLET



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