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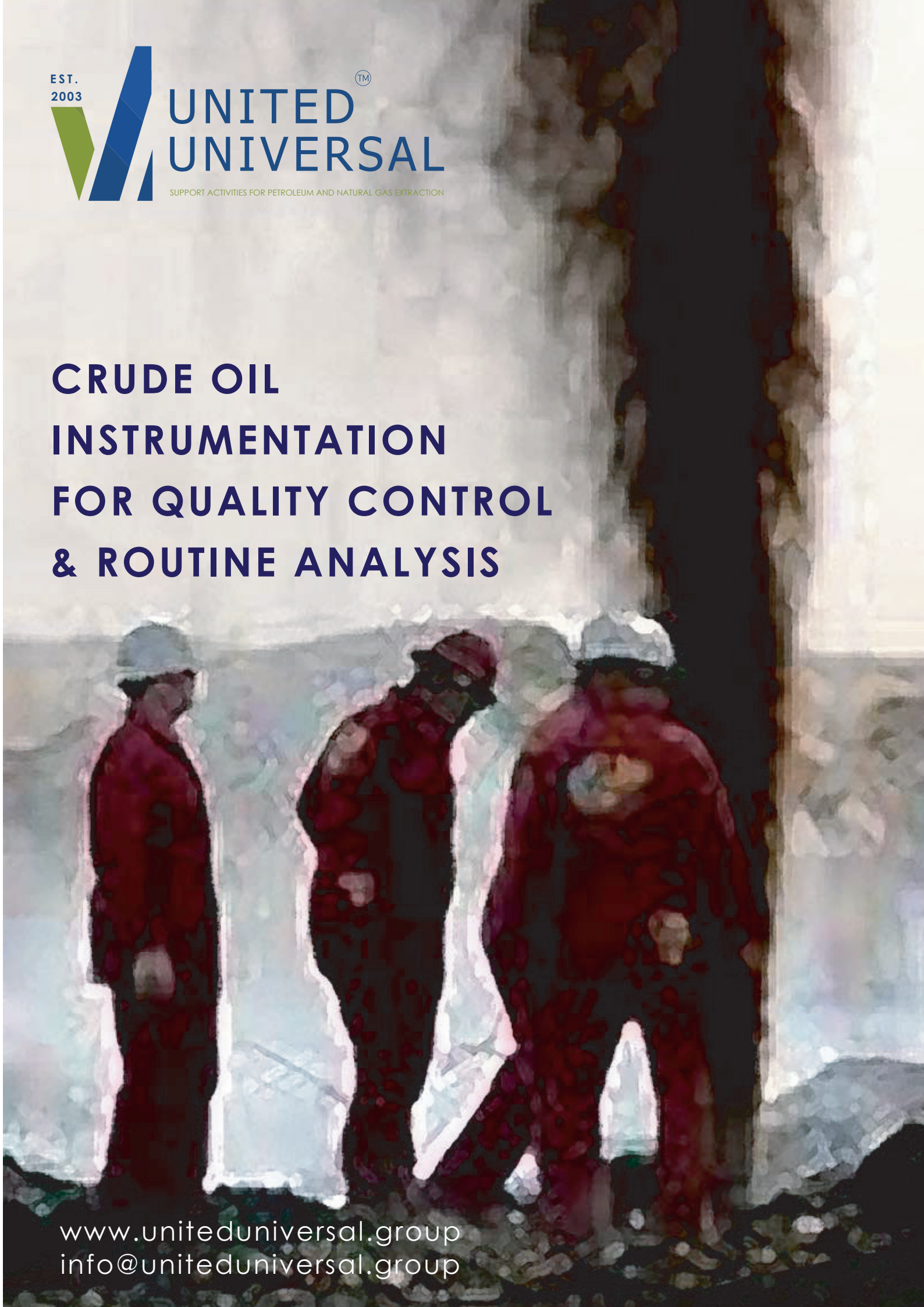
UNITED UNIVERSAL™

SUPPORT ACTIVITIES FOR PETROLEUM AND NATURAL GAS EXTRACTION

CRUDE OIL INSTRUMENTATION FOR QUALITY CONTROL & ROUTINE ANALYSIS



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Flash Point Testing, Miniflash Touch FLPH

One of the petroleum products important specifications. It defines the security conditions to store, transport and use for all petroleum products.

Ramsbottom Carbon Residue

Lower carbon residue is higher price for the petroleum products.

Salts in Crude

Identifies the corrosiveness of petroleum products.

Aniline Point

To estimate the solvency of hydrocarbons.

Smoke Point of Kerosene & Aviation Turbine Fuel

High value of smoke point goes for clean burning of fuels from that crude oil.

5 and 15 kV DC Dielectric Test Sets

Sindie 2622 Bench-Top Sulfur Analyzer

Defines the quality of the petroleum products.

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Q300 Automatic Viscometer

One of the important properties to know how to pump crude oil out along the way.

FAD 86 Fully Automatic Distillation

To get a TBP Distillation is used to identify the TBP and checked if there is a match. Refinery products classification and if full assay is needed or not can be determined with the of TBP.

Crude Oil Distillation System

To get a TBP Distillation is used to identify the TBP and checked if there is a match. Refinery products classification and if full assay is needed or not can be determined with the of TBP.

Cloud and Pour Analyzer

High Pour Point generally means high paraffin content.
Cloud Point use to see the tendency of small orificies to plug in cold operating temperatures.

Minivap VPXpert Vapor Pressure Tester

To determine volatility of liquid hydrocarbons and to predict gasoline performance from the crude oil.

Gum Content

To determine Gum Content in hydrocarbons. High gum can cause induction - system deposits and sticking of intake valves.
Low gum can ensure the absence of induction - system difficulties.

Heat of Combustion

The total temperature obtained from total burning process of a defined petroleum product unit.

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Automatic Refractometers, J457

Helps to identify the distribution of P-N-A molecules in crude oil.

Automatic Density Meter Model SVI

Gravity and density knowledge in crude oil give us a clue about hydrocarbon composition and heat of combustion. It helps the engineers to identify storage and handling.

Model FIDO Benchtop Heated Centrifuge

Water and sediment property gives us a general idea about if we are going to have a problem with refinery process or not.

Freeze Point Analyzer

Is use to define the freeze point of aviation fuels, aviation gasoline, aviation turbine fuels, engine coolants, antifreeze products, brake fluids...

Mercaptan Sulphur

Mercaptan sulphur create a toxicity effect in crude oil.

Ash Determination Model TAMU 11 & 12

To defined the residue of the hydrocarbon products upon complete burning.

Total Acid Number

MINIFLASH TOUCH
Flash Point Tester

Excellent correlation to Pensky Martens Method

ASTM D93, ISO 2719, DIN 51 758, IP 34, JIS K 2265

TAG Closed Cup Method

ASTM D56

Abel Closed Cup

ISO 13736, IP 170

Excellent correlation to Equilibrium and Small Scale Methods

EN ISO 3679 / 3680, ASTM D3828 A / B, IP 523 / IP 524

Features

- Intuitive Menu Navigation on Large Color Touch-Screen
- Runs on Microsoft® Windows®
- Full network, PC and LIMS integration via LAN
- USB printer support
- USB data transfer
- Extended FLPH temperature range (0-400°C with external cooling)
- User Rights Management (GLP)
- Unlimited number of methods and results
- Automatic ignition cleaning program

Applications

- Petrochemistry
- Flavors & Fragrances
- Transportation
- Military
- Waste Disposal
- Heavy Duty Machinery (Mining, Construction...)

Available Methods

- ASTM D6450 & D7094
- Excellent correlation to Pensky Martens Method - ASTM D93, ISO 2719, DIN 51758, IP 34, JIS K 2265 TAG Closed Cup Method - ASTM D56 Abel Closed Cup - ISO 13736, IP 170
- Excellent correlation to Equilibrium and Small Scale Methods EN ISO 3679/3680, ASTM D3828 A/B, IP 523/IP 524
- Fuel Dilution Flashpoint Testing
- Flash / No Flash methods
- Fast screening methods

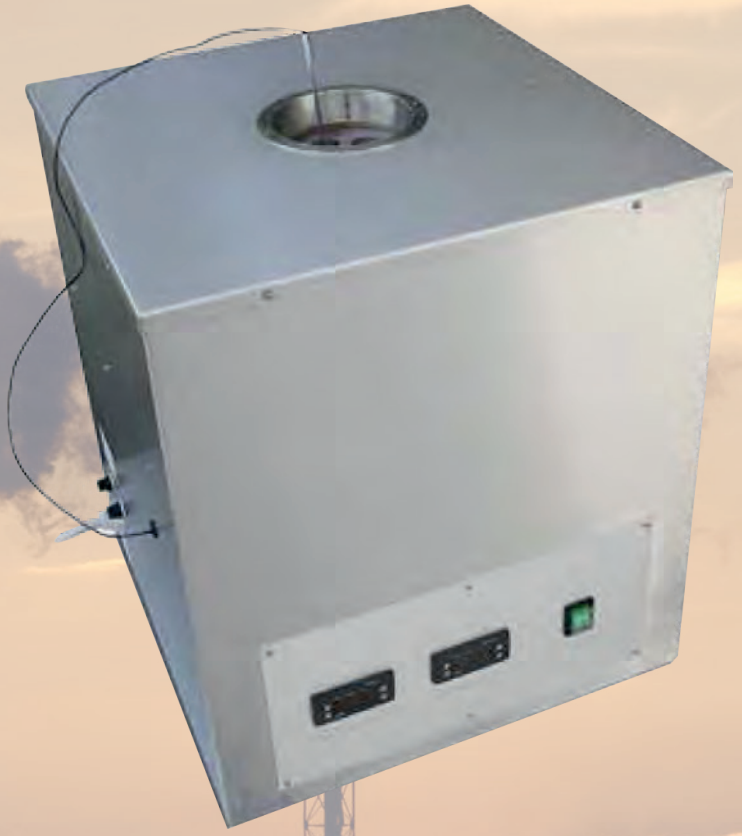
MiniFlash Tester Line

- Maximum Safety, No Open Flame
- 1-2 ml Sample Size
- Automatic Stand-Alone Operation
- Fast and Accurate
- Easy to use, Easy to clean
- Portable for Field Use
- US D.O.T, RCRA, NAVY, NATO approved
- Approved for various ASTM specifications for fuels and oils

Ramsbottom Carbon Residue

ASTM D524 - IP 14 - ISO 4262

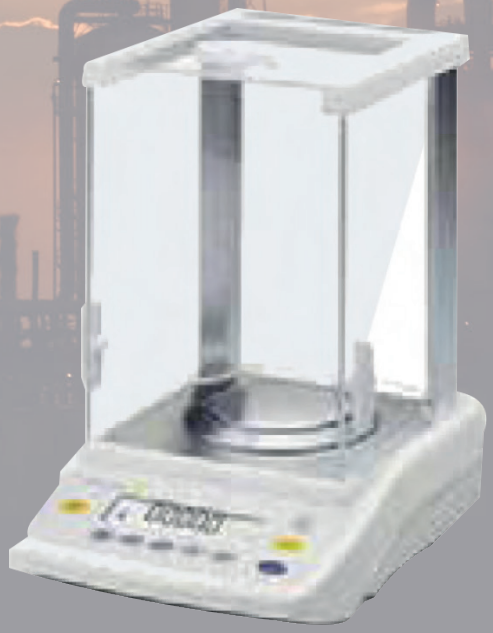
The test method covers the determination of the amount of carbon residue left after evaporation and pyrolysis of an oil, and is intended to provide some indication of relative coke-forming propensity.



- *Heating block equipped with 5 wells*
- *Stainless steel external structure*
- *Heating group controlled by a digital thermoregulator PID with over temperature alarm and thermocouple*
- *Control stainless steel crucible connected to thermocouple*
- *Reading is provided by a digital thermometer*
- *Hollow space between the walls is fitted with a high efficiency insulator*
- *Coke bulb borosilicate glass, pack of 10*
- *Luer-lock syringe 10 ml*
- *Tongs for removing coke bulb from the block bath*
- *Filling rack for 5 coking bulbs*

Recommended Spare Parts

- *Coke bulb borosilicate glass, pack of 10*
- *Control bulb*
- *Thermocouple*
- *Thermocouple for bulb digital*
- *Thermoregulator*
- *Digital thermometer*
- *Static relay*



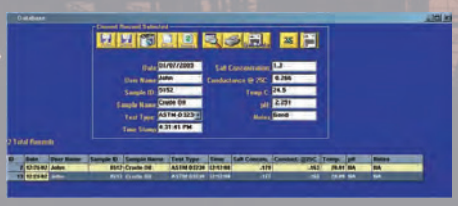
SALTS IN CRUDE

Conforms to ASTM D3230 test specifications

Electrometric Salt Determinator

- Measures salt content, conductance, and temperature of crude oil samples, and pH measurements of aqueous samples
- Measures Salts Concentration in the range of 0 to 150 PTB (lb/1000 bbl)
- Portable for field or laboratory testing with up to 8 hours of continuous operation from internal Ni-Cd rechargeable batteries
- 18-bit analog-to-digital converter for high precision
- 24Kb RAM dedicated for data storage (about 500 test results)
- Data can be uploaded in a comma delimited format to a PC with easy to use Windows® based software via an RS232 serial data port

Determines the salt content, conductance, and temperature of crude oil samples according to ASTM D3230 specifications. Utilizes the latest low-voltage, synchronous detection technology for conductivity measurements and a high-accuracy thermistor array to measure sample temperature. Automatically calculates salt concentration directly from acquired temperature and conductivity values. Measures conductivity over four ranges 0-2, 2-20, 20-200, and 200-1500 mS with automatic range selection. Self-calibration feature allows operator to adjust for any drift without re-entering standard temperature curves. Complete data storage of test results which is limited only by the hard drive capacity of external PC. Easy-to-read alpha-numeric display shows any four of the following parameters at one time as chosen by the operator: salts, conductance, conductance @ 25°C, pH, pH millivolts, temperature (°C or °F), internal and external battery voltages, date, time, logging ID, and ID increment value.



ANILINE POINT

ASTM D611-A-B-C-D, IP 2-A-B-C-D

ASTM D611-A, IP 2-A - Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents

Method A is suitable for transparent samples with an initial boiling point above room temperature and where the aniline point is below the bubble point and above the solidification point of the aniline-sample mixture.

ASTM D611-B - IP 2-B - Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents

Method B, a thin-film method, is suitable for samples too dark for testing by Method A.

ASTM D611-C - IP 2-C - Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents

Methods C is for samples that may vaporize appreciably at the aniline point.

ASTM D611-D - IP 2-D - Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents

Method D is for samples that may vaporize appreciably at the aniline point, particularly suitable where only small quantities of sample are available

Aniline Point "Thin-film" ASTM D611-B

- *Electric heater device*
- *600 ml Pyrex® jar*
- *Adjustable support for pumping motor*
- *Gauged body pump made in Pyrex*
- *Control box with speed variator for pumping and sample stirring also controlling the intensity of a low voltage lamp*
- *Blocking cover*
- *Manual bath stirrer*
- *Pyrex cell*
- *Stainless steel pump*
- *Cooling coil*

Aniline Point ASTM D611-A

- *Electric heater device*
- *Pyrex jacket Ø 40 × 175 mm height*
- *Pyrex test tube Ø 25 × 150 mm height*
- *Manual stirrer*
- *Caps*
- *Support*

Smoke Point of Kerosine & Aviation Turbine Fuel

ASTM D1322
IP 57

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

Smoke Point ASTM D1322

- Brass lamp painted in black
- Millimetric white scale on a black background
- Window with mobile glass
- Brass candle with oil tank and cotton wick 180 mm long
- Micrometric setting

Spare Parts

- Cotton wick, pack of 50
- Candle with oil tank
- Concave glass
- Brass lamp
- Millimetric scale

5 and 15 kV DC Dielectric Test Sets

Continuously Variable Test Voltage
Rugged Field Construction
Compact and Portable

Description

Dielectric test sets measure leakage current while applying a DC voltage at or above the insulation system's operating level. This measurement aids in determining the insulation system's ability to withstand overvoltages such as lightning strikes and switching surges.

Applications

Megger portable DC Dielectric Test Sets check the electrical insulation quality of motors, power cables, switchgear, insulators, transformers and capacitors. Typical applications include acceptance and maintenance testing of critical equipment used by electrical utility substations and industrial plant distribution systems. Power apparatus manufacturers may also use the equipment to perform QA/QC production tests.

The test sets can be used to perform step-voltage and proof tests which, when incorporated into a routine maintenance program, can aid in predicting potential failure before breakdown occurs.

Two models are available; a 5-kV unit for testing equipment rated 2.5 kV and below, and a 15-kV model for use on equipment rated 7.5 kV and below. Both are suitable for testing power cable, switchgear and rotating machinery in accordance with IEEE, ICEA, NEMA and ANSI guidelines. Because Megger DC Dielectric Test Sets act like full-wave rectified units, they also are suitable for applications involving vacuum bottles.

Safety and Reliability

Input and output line circuit breaker
Output current overload relay
Zero-start interlock for high-voltage output
Switch control and indicating lights for high-voltage ON/OFF on the 15-kV model
Full circuit breaker protection

DC vs AC High-Potential Testing

Direct current high-potential testing provides several advantages over alternating current. Direct current test equipment uses far less power, provides fast charging of highly capacitive test samples, can be easily transported to the test site and costs less. Additionally, the DC test can detect incipient breakdown without the possibility of damage to good insulation.

Features and Benefits

Compact and portable
Air insulated, uses no oil
±2% accuracy
Leakage current measurement as low as 0.1 mA
Continuously variable test voltage with zero-start safety interlock
Fast charging of high-capacitance samples
Current guard circuit for highly accurate measurements
Strip chart recorder for hard copies (optionally available)

Sindie 2622
Bench-Top Sulfur Analyzer

Complies with ASTM D2622, D7039 & ISO 20884

Application Areas

- *Total sulfur analysis from ultra low sulfur fuels to crudes.*
- *For use in refinery labs, pipeline terminals, additive plants & inspection laboratories.*
- *Complies with ASTM D2622, D7039 and ISO 20884.*

Features and Benefits

- *LOD: 0.4 ppm at 300 s.*
- *Dynamic Range: 0.4 ppm to 10%*
- *Fits on any bench: (w x d x h) 37 x 50 x 34 cm*
- *Plug-it-in and measure: power is only utility.*
- *Touch Screen user interface.*
- *User programmable measurement time: 30-900 s.*
- *Two calibrations covers both gasoline and diesel matrices over full dynamic range: - 0.4 – 3000 ppm wt - 0.3 – 10% wt*
- *No conversion gases, heating elements, quartz tubes or columns.*
- *75 W air-cooled excitation tube.*
- *Robust polyamide window for easy cleaning.*

Options

- *LIMS data output software capability.*

Precision

Typical repeatability(r) & reproducibility (R) values in diesel fuel, at 95% confidence. 300s measurement time.

Sulfur Analysis with Compliance Flexibility

2622 bench-top sulfur analyzer complies with ASTM D2622, D7039 & ISO 20884 test methods, enabling complete flexibility in sulfur analysis. There're no compromises in detection, performance & reliability, 2622 analyzer is the ideal sulfur analytical solution from ultra low sulfur diesel and gasoline to heavy fuel oil and crudes.
One analyzer with three compliance solutions.

Sulfur Concentration (ppm)	r	R
4	0.4	1.0
8	0.7	1.2
15	0.9	1.7
100	3	6
500	6	12

Q300 Automatic Viscometer

Compliant with requirements for ASTM D445, D7279 and related specifications.

"A fast, accurate, and cost effective instrument for the determination of kinematic viscosity in used oils and other fluids."

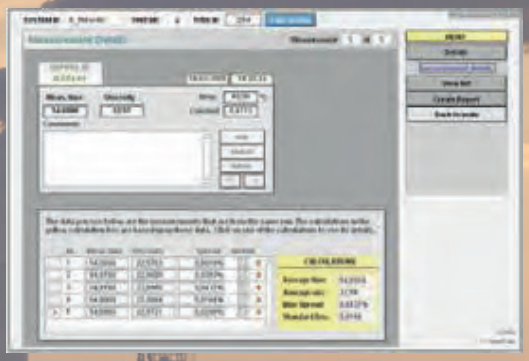
Q300 Automatic Viscometer is a bench-top semi-automatic kinematic temperature bath viscometer optimized for the analysis of used and new lubricants. It conforms to the requirements in ASTM D445, D446, D7279, IP 71 and ISO 3104. It is also the ideal system for used oil analysis laboratories that need to test a wide range of lubricant viscosities. Q300 Automatic Viscometer is a self-contained viscometer system that consists of a thermostatic bath with circular heater and a control column. The bath contains four patented viscometer tubes together with optical sensors to detect the flow of oil through the tubes. All measuring tubes function independently of each other. The control column has an LCD display that provides the user with information about the system's status and an array of LED's indicate the current status of each measuring tube. An optional external computer can also be used to control the system for applications where more extensive data handling requirements are necessary. The user of the Q300 Automatic Viscometer has the option to operate in two modes, standard viscosity determinations or measuring tube calibration. In both modes, the user chooses how many determinations have to be made for an average result. Additional parameters such as tube constants, and cleaning cycle are also controlled by the operator.

Features

- *High throughput – up to 60 samples per hour to ASTM precision.*
- *Small sample volume – 0.3 to 0.6 ml.*
- *Low solvent consumption – 2.5 ml per sample.*
- *Easy to use.*
- *Automatic flow time measurement.*
- *Fully automatic cleaning and drying.*
- *Fast, easy tube replacement, no need to drain bath.*
- *Single or dual solvent injection system.*
- *Ultra-precise meniscus detection.*
- *No PC required for system to operate.*
- *System is chemically resistant.*
- *Optional dual measurement capability.*

System Operation

Q300 Automatic Viscometer system is semi-automatic and easy to operate. The analysis procedure starts with the user injecting less than 1ml of sample into the measuring tube. Before it travels to the capillary, the sample warms up to bath temperature as it travels down the tube and collects in its horizontal arm. The measurement time is initiated when the bottom of the oil column reaches the first optical sensor. The "Busy" LED for the tube will light up denoting that the measurement has started. The oil sample will continue to travel down the capillary and the system will terminate the measuring time as soon as the second optical sensor has been reached. At this time, the kinematic viscosity result for the tube will be shown on the LCD screen or on an optional computer or printer. Immediately upon completion of the measurement, the system automatically starts the cleaning cycle by first draining the tube, performing the user specified number of cleaning solvent injections and finally drying the tube. An optional dual cleaning solvent system is also available for difficult and heavily contaminated samples. The entire cycle time from sample injection to data readout ranges from four to eight minutes per tube when ASTM D445 precision is required. Sample throughput can be increased considerably by reducing cycle times for used oil analysis applications based on trending.



Analytical results can be viewed on the built-in LCD display or with the included data management software on an optional external PC .

Q300 Automatic Viscometer can be operated from the built-in control panel or from an optional external PC.

Standard Methods	ASTM D445, D446, D7279, IP 71, ISO 3104
Measuring Range	0.6 - 3,000 mm^2/s (cSt)
Meniscus Detection	Optical (new and used oils)
Sample Injection	Manual
Solvent Injection	Automatic (optional dual solvent)
Tube Drying	Automatic
Viscometer Tube	4 Glass capillary, modified Zeitfuchs Crossarm
Display	Clear LCD
Temperature Range	20 - 110°C
Temperature Stability	± 0.01°C @ 40°C, ± 0.03°C @ 100°C
Bath Volume	7.5 liters (2 gallons)
PC Software	Included
External PC	Optional
Dimensions	43.5 x 47.5 x 62.0 cm. (17-1/8 x 18-11/16 x 24-7/16 in.)
Weight	33 Kg (72.6 lbs), without tubes and bath oil
Electrical Requirements	System: 110-230 VAC, 50-60 Hz., 170 W. Thermostat: 1.2 kW@110 VAC; 2.3 kW@230 VAC
External Requirements	Compressed air: 5-6 Bar

FAD 86

Fully Automatic Distillation

**ASTM D86, D1078, D850
E123, IP 195, IP 191, IP 123, DIN 51751,
NF M07-002,
EN ISO 3405, JIS K 2254, ISO 918,
BS2000 Parts 123, 191, 195, BS 7392,
10% Residue for Carbon Residue
Measurement
Gasoline E10, E15 & E20 samples**

Benefits

- Extremely precise, reliable & comparable test results
- Fast, easy, fully automatic operation yet with unparalleled customization options
- High end, solid state hardware:

- Volume Scan – accurate detection of the bottom of the meniscus
- Condenser with Peltier elements: reliable with fast cooling interactions
- Low voltage heater with reflection system: 30% more heat & efficiency

- Safety through fire extinguisher with advanced fire and nitrogen detection
- Multiple language support

Intuitive & Easy with iPad

The special DistPad app on the iPad gives you easy, yet complete control over the distillation process. The DistPad app comes with pre-programmed ASTM D86 programs and a set of major ASTM methods. New programs can be easily created from method presets and customized for special products. Standard users will enjoy an intuitive & automatic operating experience, while high-experience users are allowed to explore a lot of distillation parameters, which is great for research purposes and special products. Service level login allows our trained engineers to optimize programs for extremely difficult samples with unparalleled performance levels. Different user types with variable access rights give each user the right protection and freedom in their own working environment. Free software updates are easily downloaded from the Apple Appstore.

Data Handling & Printing

Automatically store, restore and synchronize data with an FTP-server. Send to LIMS, save as PDF, email, print with optional Zebra printer and direct print on A4. FAD 86 offers you a wide variety of flexible data handling, compatible with Windows operated systems and all common modern techniques.

Manual Crude Oil Distillation System 300 M (ASTM D-1160)

Manual Boiling Analyzing System according to ASTM D-1160.

The distillation is performed from the Initial Boiling Point (IBP) to the End Boiling Point (EBP) by the operator. The criteria for a distillation end are:

- *The EBP in AET-temperature is exceeded*
- *The distillate volume is exceeded*
- *The maximum limits of heating bath temperature or flask temperature are exceeded*
- *Product cracking in the flask*
- *Vacuum loss*

The distillate volume has to be measured by the operator in a temperature controlled receiver.

Technical Data

Flask size	*: 500 ml*
Flask charge	*: 200 ml*
Operation temperature	*: Up to 400° C*
Operation pressure	*: Vacuum down to 1 Torr*
Final cut temperature	*: Up to 620° C AET*
Power consumption	*: 3500 W (without options)*
Max. ambient temperature	*: 25° C*
Mains supply	*: 208-250 V, 50 Hz (standard)*
	208-250V, 60 Hz (optional)
Dimensions (w x h x d)	*: 0,65 x 0,98 x 0,65 m*

Fully Automatic Crude Oil Distillation System (ASTM D-1160)

Fully automatic crude oil distillation system, processor controlled according to ASTM D-1160 for the determination of boiling ranges of crude oil products under vacuum.

By adding option 1 the system will be able to do atmospheric distillation, dehydrate water prior to the distillation process and to use biodiesel as charge.

Parameter input, display as well as calculation of distillation and final data and print out of the distillation curve via PC

- *Easy operation due to userfriendly software, operated under WINDOWS*
- *Sophisticated safety system*
- *Individual distillation reports and curves can be re-called any time*
- *Precise distillation data due to automatic calibration of volume measuring system*
- *Anti-foaming by foam breaker and dynamic pressure reduction during evacuation*
- *Precise vacuum control*
- *Automatic washing run*
- *Calculation of charge according to receiver temperature and charge density*
- *Easy installation effort as the system is delivered ready for operation*
- *Automatic controlled termination of distillation process and start of cooling*
- *In addition to the fixed values for evaluation requested by ASTM (5%, 10%, 20% 30%...) – PD300CC can add plus 5 flexible values in between*
- *In addition to the volume point setting PD300CC offers additionally 5 temperature points to be set for volume determination*
- *Atmospheric distillation (by adding option 1)*
- *Water removal (dehydration) process prior to distillation (by adding option 1)*
- *Biodiesel distillation (by adding option 1)*

The distillation runs automatically from the initial boiling point to the pre-selected end boiling point or detected break-off. The criteria for break-off are:

- *The pre-selected final AET (atmospheric equivalent temperature) is reached*
- *The maximum bath temperature is reached*
- *The maximum flask temperature is reached*
- *The pre-selected distillate volume is reached*
- *The flask insert cracks*
- *The distillate pressure drops*
- *Product lack in the flask*

The distillation volume is measured automatically in receivers, temperature controlled by IR-heater. The yield is calculated in percentage to the charge quantity. Distillation report, final data and distillation curve are printed out.

Technical Data

Flask size	*: 500 ml*
Flask charge	*: 200 ml*
Operation temperature	*: Up to 400° C*
Operation pressure	*: Vacuum down to 1 Torr*
Final cut temperature	*: Up to 620° C*
Power consumption	*: 3500 W (without options)*
Max. ambient temperature	*: 25° C*
Mains supply	*: 208-250 V, 50 Hz (standard)*
	208-250V, 60 Hz (optional)
Dimensions (w x h x d)	*: 0,65 x 0,98 x 0,65 m*

Cloud and Pour Analyzer

Confirms to ASTM D97, ASTM D2500 & ASTM D6371

- Bench top dry bath analyzer
- 4 dry test holes with thermometer hole and 4 stand by covers
- Working temperature from ambient down to -70°C
- Digital temperature controllers with 0,1°C resolution
- Class A High Sensitivity PT 100 probes
- CFC free gases

Ready to use unit Complete with the following accessories

Four of each : ASTM graduated glassware test jar,
Cork cover, for centering thermometer,
Cork disk for test jar, insulating gasket,
Four Thermometers (For cloud point testing) and
Four Thermometers (For pour point testing)

Cold Filter Plugging Point (Option)

Cold Filter Plugging Point of diesel and heating fuels. Determination of the Cold Filter Plugging Point (CFPP)Temperature of diesel and domestic heating fuels by measuring the temperature at which the sample ceases to flow through a wire mesh filter.

CFPP Accessory

31 x 125 mm test tube with a set of neoprene gasket, 3 hole with Teflon cap, 20 ml Pyrex pipette , wire filter equipped with filtering disc 325 M, u- shapped glass pressure gauge, 3-way cock junction glass, junction glass tubes, cap bottle, vacuum pump, digital stopwatch, thermometer ASTM 5C IP, thermometer ASTM 6C IP 2C 1C

MINIVAP VPXpert
Vapor Pressure Tester

ASTM D5191, D5188, D6377, D6378, D6897, EN 13016-1+2, IP 394, 409, 481, JIS K2258-2, SHT 0769, GOST 52340
Excellent correlation to
ASTM D323, D1267, D4953, D5482

Complies With

- ASTM D5191
  Dry Vapor Pressure Equivalent
- ASTM D6378
  Vapor Pressure of Gasoline (VP4)
- ASTM D6377
  Vapor Pressure of Crude Oil
- ASTM D6897
  Vapor Pressure of LPG up to 1000 kPa
- ASTM D5188 (V/L-Ratio)
- EN 13016-1
  Air Saturated Vapor Pressure
- EN 13016-2
  Absolute Vapor Pressure
- IP 394 & 409 & 481
- JIS K 2258-2, SHT 0769, GOST 52340
- US EPA approved Grabner test method for highest accuracy

Excellent Correlation to

- ASTM D323 (Wet Reid)
  ASTM D4953 (Dry Reid)
- ASTM D5482
  Mini-Method, atmospheric
  Product | Small | MINIVAP VPXpert
- ASTM D1267 (LPG)

Features

- US EPA approved test method for highest accuracy
- No vacuum pump or sample preparation
- Integrated shaker - ready to use for Crude Oil and ASTM D5188 tests
- Highly precise results for RVPE, DVPE, ASVP, AVP, Ptot, Pabs, Pgas, T(V/L), TVP
- USB printer support and LIMS data transfer
- Smallest sample size (1 ml w/o rinsing)
- 5 minutes measuring time
- Maintenance free, heavy duty measurement cell
- Automatic piston lubrication
- True one button usability
- Enhanced report generation
- Portable and rugged design for field use
- Large, durable display
- User access control
- Audit trailing
- Barcode-Reader functionality

Gum Content

Evaporation Bath

ASTM D381, DIN 51784, IP 131

Gum Content in Fuels by Jet Evaporation 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.

Evaporation Bath Air and Steam Jet ASTM D381

- *Bath equipped with stainless jacket in aluminium block*
- *5 concentric pre-heating coils of 5 wells connected to the central collector with socket for steam measurer (flowmetric manometer for "Steam Jet")*
- *By-pass valve for the exclusion of the air or steam*
- *5 mobile blowing devices*
- *Insulated air gap*
- *Steam over-heater with adjustment and condensate discharge valves*
- *Heating and over-heater are controlled by a digital thermoregulator PID with over-temperature alarm*
- *The bath is fitted with a flowmeter with sheath for "Air Jet" test with connection for flow apparatus*
- *Flowmetric manometer for "Steam Jet" test*

Accessories

Analytical balance
Natural ventilation oven
Pyrex® beaker
Flow apparatus
Steam generator
Thermometer ASTM 3C IP 73C

Evaporation Bath - Air Jet

- *Bath equipped with stainless jacket in aluminium block*
- *5 concentric pre-heating coils of 5 wells connected to the central*
- *5 mobile blowing devices*
- *Insulated air gap*
- *Heating and over-heater are controlled by a digital thermoregulator PID with over-temperature alarm*
- *The bath is fitted with a flowmeter with sheath with connection for flow apparatus*

HEAT OF COMBUSTION

ASTM D240, ASTM D2382 (obs.), ASTM D3286 (obs.), ASM D4809, ASTM D5865 IP 12, ISO 1716

ASTM D240 - IP 12 Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter

This test method covers the determination of the heat of combustion of liquid hydrocarbon fuels ranging in volatility from that of light distillates to that of residual fuels.

ASTM D4809 - ASTM D2382 (obs.) Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter (Precision Method)

This test method covers the determination of the heat of combustion of hydrocarbon fuels. It is designed specifically for use with aviation turbine fuels when the permissible difference between duplicate determinations is of the order of 0.2 %. It can be used for a wide range of volatile and nonvolatile materials where slightly greater differences in precision can be tolerated.

ASTM D5865 - ASTM D3286 (obs.)

Standard Test Method for Gross Calorific Value of Coal and Coke
This test method pertains to the determination of the gross calorific value of coal and coke by either an adiabatic bomb calorimeter.

ISO 1716 Reaction to Fire Test for Building Products

This method covers the determination of the heat of combustion at constant volume in a bomb calorimeter.

J457 Automatic Refractometers

Complies with ASTM D2622, D7039 & ISO 20884

Smart Measure™ Technology Improves Results!

All J457's come with Smart Measure™ Technology that automatically detects when the prism is improperly cleaned, insufficient sample is loaded, or if the instrument is improperly calibrated.

Exclusive Dual Temperature Control System

All J457 models come with Dual Temperature Control System utilizing Peltier Technology. The J457 heats and cools the sample from both prism surface and the sample cover. The insulating cover housing seals against the Prism Well Ring to create a uniform temperature environment providing unmatched temperature control uniformity.

SC Standard Configuration

J457-SC Standard Configuration is most popular configuration and provides an excellent combination of a small footprint and large, easy-to-navigate touchscreen interface.

WC Wall Mount Configuration

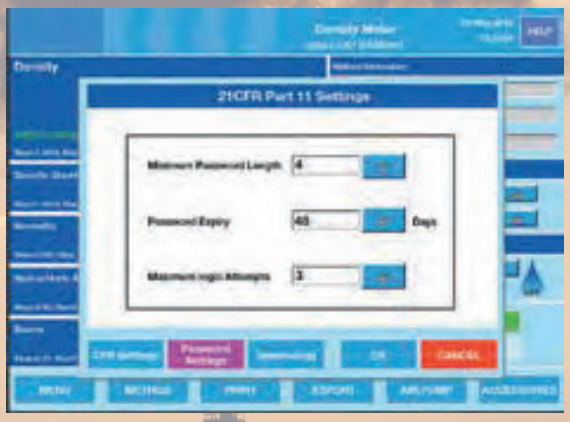
J457-WC Wall Mount Configuration is designed for production environments where water is used for cleaning or there is a lot of sample spillage on the work surface. This configuration is also excellent for situations where there is very little work space available: out on the factory floor or in an over crowded satellite laboratory where there is little to no remaining bench space.

FC Factory Configuration

J457-FC Factory Configuration is recommended when there is a lot of sample spillage on the laboratory's instrumentation. Factories working with sticky resins and syrups that end up being spilled on the instrumentation are great candidates for the J457-FC as the measurement unit can be as much as six feet away from the display unit.

Automatic Density Meter Model SVI

The SVI Density Meter, with high precision Peltier temperature control of sample, has the features to meet the needs of today's industries including Petroleum, Chemical, Pharmaceutical, Beverage and many others.



- *Measure API Values in accordance with ASTM D1250, D4052, D5002 and DIN 51757*
- *QC incoming raw materials*
- *Research new products and additives*
- *Measure in units of Kg/m³, g/cm³, g/mL, pounds/gallon, specific gravity, Baumé and more*
- *Determine concentrations in: %, molarity, normality, mole fraction, ppm, and more*
- *Capable of 2,3,4 or more multiple measurements with standard deviation, mean.*
- *Measure both alcoholic and nonalcoholic beverages with easy bubble detection using VideoView™*
- *Direct and accurate means of °Brix determination, °Plato, °Balling, % Solids.*

Full Feature VideoView™ with Automatic Scanning of Entire U-Tube

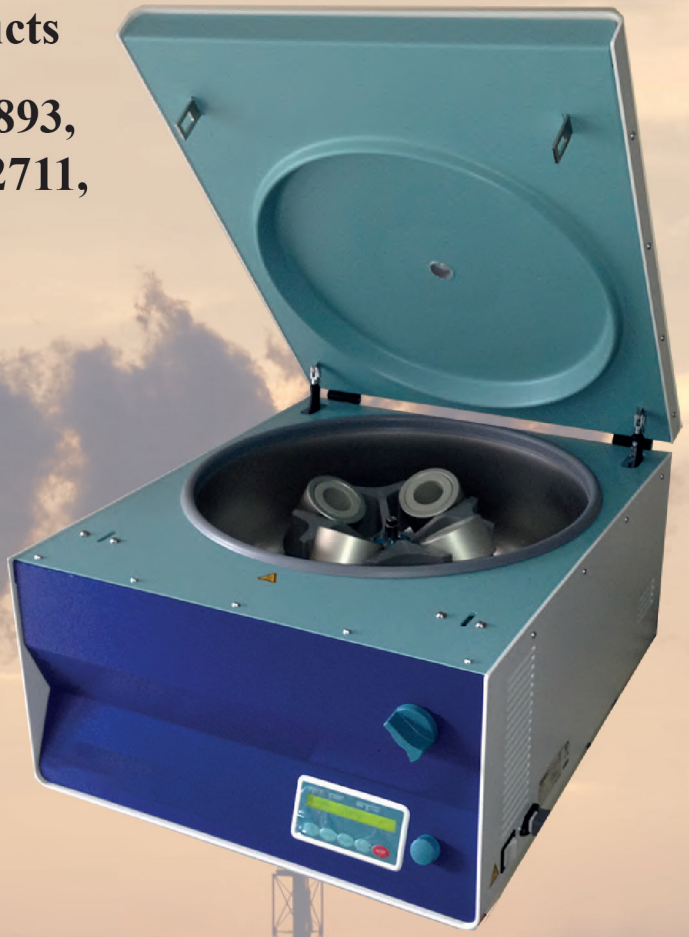
VideoView™ provides superior high resolution visual bubble detection within your samples with live on-screen video viewing. A full view of the entire U-tube is possible without any obstruction and provides a 10X magnification of bubbles if present in the sample. Automatic scanning of the entire length of the U-tube is possible as well as manually controlled viewing positions. The video clarity, magnification, and resolution is the very best available.

Measurement Ranges	*: Density 0 to 3 g/cm³*
	: Pressure 0 to 10 bars
Measurement Modes	*: Continuous, Single, Multiple*
Measurement Technique	*: Mechanical Oscillator Method*
Accuracy Density	*: 0.00005 g/cm³ Temperature: 0.03 °C*
Repeatability Density	*: 0.00001 g/cm³ Temperature: 0.01 °C*
Density	*: 0.00001 g/cm³ Temperature: 0.01 °C*

Model FIDO Benchtop Heated Centrifuge

For Water and Sediment Determination in Crude Oil and Petroleum Related Products

Complies with ASTM D91, D96(obs.), D893, D1290, D1796, D1966, D2273, D2709, D2711, D4007, DIN 51793, IP 75(obs.) & IP 359



An ideal centrifuge for research and industrial laboratories offer a wide range of accessories for routine applications, while also enabling customized solutions for special requirements. Temperature control is often required in addition to the capability of accommodating special tubes. Such as tubes designed to meet the requirements of the American Society for Testing Materials (ASTM). To carry out standardized test methods for crude oil testing, the sample tubes can be centrifuged in the heatable Centrifuge at any pre-specified temperature from ambient +10 to 90°C according to the used method

High Quality Design

Metal housing with metal lid and stainless steel centrifuging chamber with viewing port in the lid

Wide Range Programmable Heating Capabilities

- 10 programmable memories
- Infinitely variable setting from + 10 °C to+ 90 °C, dependent on the ambient temperature
- Pre-run internal sample
- Pre-heating function and sample preparation

User Friendly Instrument

Twist lock for effortless opening and closing of the lid with ergonomic control and information panel with easy rotor changing

Advanced Safety Features

Lid locking and holding, Automatic rotor recognition, Imbalance switch-off, Emergency lid lock release, Lid dropping protection, Motor overheating protection and Chamber overheating protection

Pre-Heating Dry Block Unit (Recommended)

Pre-heating dry block unit with aluminum exchangeable block to accommodate 4x ASTM sample tubes used for sample pre-heating process.

Freeze Point Analyzer

ASTM D1177, D1655, D2386,
D5901, D5972
IP 16, 435, 528, 529
ISO 3013

Subject

Freezing Point of aviation fuels, aviation gasoline, aviation turbine fuels, engine coolants, antifreeze products, brake fluids,…

Measuring Freezing Point Principle

According to the methods, the sample is cooled down and stirred. The solid hydrocarbon crystals formation are detected by means of a light beam reflected thanks to a mirror. As soon as crystals are detected, the sample is warmed up until their complete disappearance.

Measuring Freezing Point Devices

- *Light pulsed emission on I.R spectrum - through a coaxial fibber optic*
- *Coaxial fiber optic equipped with a mirror*

Measuring Temperature Probe

- *Platinum resistance PT100 Class A Stirrer*
- *A micro-motor drives all the mechanical system*

Measuring Parameters

- *Temperatures: in °C*
- *Measuring range: +80°C … -100°C*
- *Resolution: 0.06 °C*
- *Accuracy: ± 0.1 °C*
- *Repeatability / reproducibility as per standards methods or better*

Software Features

The LabLink software is Windows® based and is able to manage up to 10 analytical heads simultaneously

- *User friendly interface*
- *All analytical parameters recorded*
- *Customizable analysis parameters and methods*
- *Customizable results report*
- *Printable graphs and results*
- *Self-identification of the typology of the analyzers connected*

The software includes:

- *Analysis Menu*
- *Diagnostic Menu*
- *Calibration Menu*
- *Data Utilities*

TAN (Total Acid Number)
TBN (Total Base Number)
& Mercaptan Sulphur, in petroleum and petroleum related products,

Conforms to ASTM D664, D2896, D4739, D3227.

Working procedure

- Choose method of analysis from menu.
- Calibrate the system according to chosen method.
- Blank determination solvent.
- Carry out Analysis of sample.
- Obtain direct readout of sample result.
- Post run analysis of data, result storage and printing.

User selectable report formats.
Titration analysis reports, method parameters, data table, titration curves, etc.
Full reprocessing and statistical analysis of run data including first and second derivative graphical report.

- User friendly auto titration system with selectable End Point mode.
- Pre-programmed ASTM methods for easy operation.
- Balance interface for weight data transfer and data download to PC.
- Full printout facility for titration report, analysis graph and derivative calculation.

Principle	Volume determination by equivalence point or end point
Control	Micro controller based
mV range	± 3200
Accuracy	± 0.1 mV
Amplifier Input Impedance	> 10^{12} ohms
Burette Resolution	1/5000 for 5 ml, 1/10000 for 10 ml and 1/5000 for 25 ml.
Filling Time	< 20 seconds
Keyboard	Alphanumeric splash proof polyester soft keys.

Display	40 x 2 backlit LCD
Titration Head	Manual stand with swiveling arm
Stirring System	Micro controller based variable speed, high torque vortex mixer.
Cut-off Criteria	Choice of Volume or End Point
Applications	Pre-programmed ASTM methods.
Report Format	Multi choice including method parameters, titration graph and 1st / 2nd derivatives.
Printer Connection	Paralel port.
Balance Connection	Serial interface & RS232C
Power	90-264 VAC - 47-63Hz.

Ash Determination Model TAMU

ASTM D482, ASTM D874, ASTM D4422
IP 4, IP 163, ISO 3987, ISO 6245

ASTM D482 - IP 4 - ISO 6245
Ash from Petroleum Products

This test method covers the determination of ash in the range of 0.001- 0.180 mass %, from distillate and residual fuels, gas turbine fuels, crude oils, lubricating oils, waxes, and other petroleum products, in which any ash-forming materials present are normally considered to be undesirable impurities or contaminants. The test method is limited to petroleum products which are free from added ash-forming additives, including certain phosphorus compounds.

ASTM D874 - IP 163 - ISO 3987
Sulfated Ash from Lubricating Oils and Additives

This test method covers the determination of the sulfated ash from unused lubricating oils containing additives and from additive concentrates used in compounding. These additives usually contain one or more of the following metals: barium, calcium, magnesium, zinc, potassium, sodium, and tin. The elements sulfur, phosphorus, and chlorine can also be present in combined form. Application of this test method to sulfated ash levels below 0.02 mass% is restricted to oils containing ashless additives. The lower limit of the method is 0.005 mass% sulfated ash.

ASTM D4422 Ash Analysis of Petroleum Coke

This test method covers the determination of the ash content of petroleum coke.

ASTM D482, D874, D4422 Ash Determination

Insulation heat made in ceramics fibre in order to get a speed heating with a limited energetic consumption.

Optional, Different sizes Ashing crucibles

Optional, Different sizes Ashing crucibles

Optional, Different sizes Ashing crucibles

Optional, Different sizes Ashing crucibles

Micro TAN Titrator Total Acid Number Analyzer

Conforms to ASTM D664

Features

- Very easy to use - intuitive keypad and function guide display
- 3 editable pre-programmed TAN methods
- Results expressed in mg KOH/g
- 10 ml high precision syringe – syringe volume dispensed in 40,000 steps.
- External RJI22 (4-4) bidirectional connection port to printer, balance or PC with RS232C
- Data Logger – automatic data storage of last 55 analysis results
- Micro TAN employs automatic MET determination
- Supplied with an optimized small volume titration vessel and a 250 ml capacity vessel for those applications that require larger solvent volumes. The micro combination electrode is suitable for use with either size of titration vessel

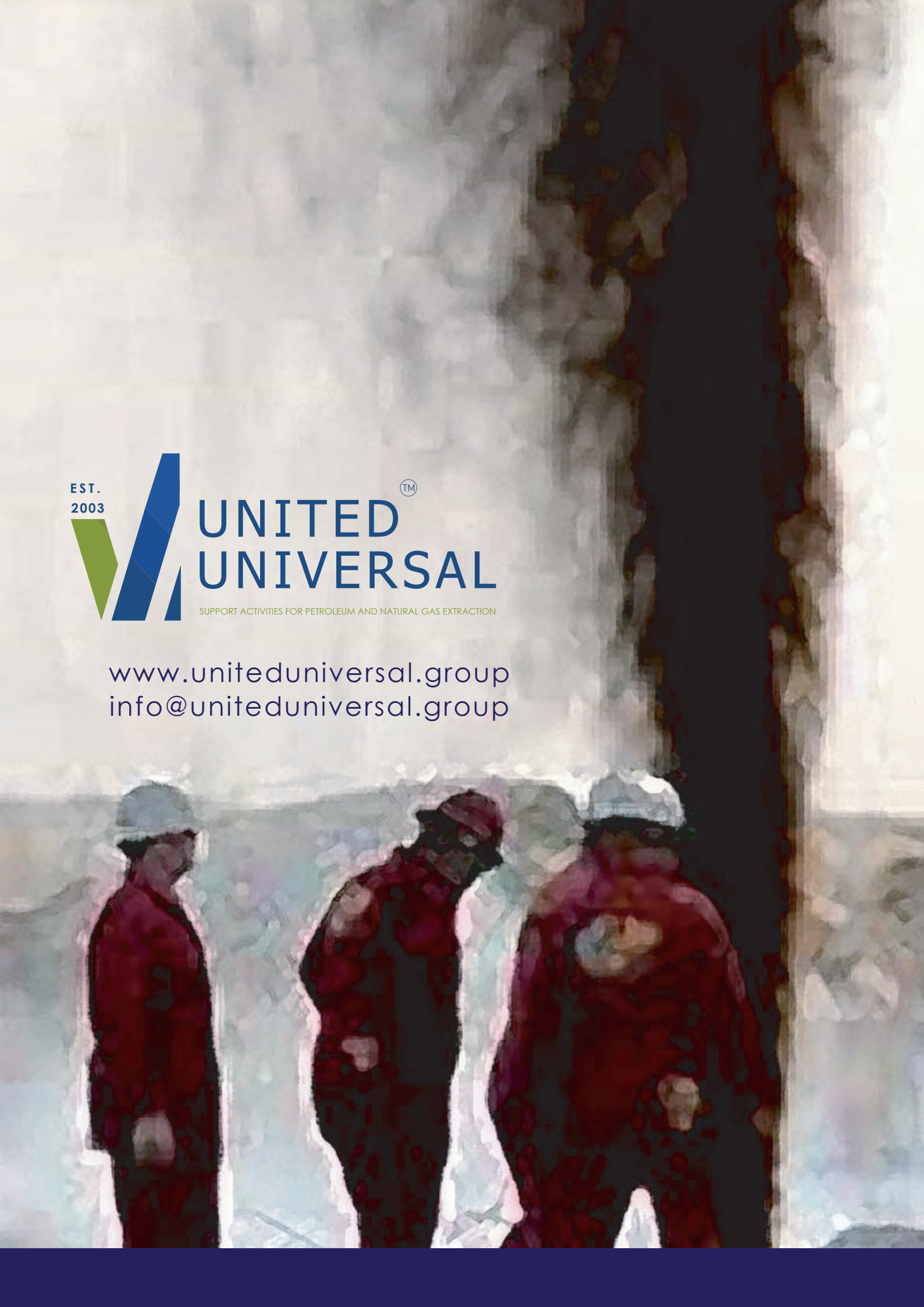
The Micro TAN Total Acid Number titrator has been designed to offer maximum specifications and features whilst being priced at a very competitive level. This titrator conforms to ASTM D664 for determination of acidic constituents in petroleum products, lubricants and transformer insulating oils.

Applications

- Lubricating Oil

Industries

- Inspection
- Aviation
- Automotive
- Lubricants & Greases
- Military
- Transportation
- Marine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