

Kaycan instrument Co., Ltd.

K Kaycan
INSTRUMENT COMPANY. INC.

ISO9001:2008 Certification Quality Management System
ASTM membership



Kaycan Instrument Co., Ltd. was established in 1996. With 25 years of manufacturing experience, we are a Hi-tech corporation, that specializes in the design and manufacture of petroleum laboratory test instruments for quality control applications. Based in Dalian, we export innovative instruments worldwide with installations in over 60 countries. Our unique range of advanced instruments provide solutions for quality control applications across a diverse range of products from jet fuel to lubricating oils.

Accreditation

We are accredited to ISO 9001 for the design, manufacture, supply and service of quality control instruments. We achieve this accreditation with numerous hard working teams that make sure our products are designed, built, inspected, delivered and serviced to the highest of standards.

We deliver what you need

When you order an instrument from us, we make sure you have everything you require to run a test as soon as it arrives.

On-site training

If required, we will set up your instrument on-site and provide you with all the necessary training. We do online training for end user 24 hours, 365 days!

Servicing

Depending on the instrument, we provide either in-house or on-site servicing of your instrument. Our goal is to be the best and most dependable instrument company in the market place. We invite your comments and input so that we may continue to serve you.

Awards

We are proud to have received ASTM,SGS certificates, our clients spread all over the world, and we provide for some of the most famous companies, like CNPC, SINOPEC, Intertek, SGS and Etc.



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KN-92 Manual Cleveland Open Cup Flash Point Tester

Overview

KN-92 Manual Cleveland Open Cup Flash Point Tester conforms to the **ASTM D92 Test Standard method for Flash and Fire Points by Cleveland open Cup Tester**. It uses Cleveland open-cup method to test the flash point & fire point of lubricating oil and fuscous petroleum products (excluding fuel oil and petroleum products with open flash point lower than 79°C).

Features

1. Upper cover comprises standard fireball comparer, easy to operate.
2. Heating with stepless voltage regulator, heating-rate is evenness.

Technical parameters

1. Rated voltage: AC220V±10%, 50Hz
2. Heating power: 0~1000W (Continuously adjustable)
3. Temperature measurement range: 90~400°C
4. Ignition gas: Pipeline coal gas, Liquid gas, and gas pressure less than 10Kpa
5. Ignition way: Manually
6. Ambient requirement: Temperature: 10~40°C, Humidity≤85%

Package Information

1. Dimension: 400*320*360mm
2. Volume: 0.05m³
3. Weight: 12.5kg



KN-92Z Automatic Cleveland Open Cup Flash Point Tester

Overview

KN-92Z Automatic Cleveland Open Cup Flash Point Tester conforms to the **ASTM D92 Test Standard method for Flash and Fire Points by Cleveland open Cup Tester**. It uses Cleveland open-cup method to test the flash point & fire point of lubricating oil and fuscous petroleum products (excluding fuel oil and petroleum products with open flash point lower than 79°C).

Features

1. True color GUI touch screen interface design, intuitive display and easy operation
2. Reasonable instrument structure, wide test range, good repeatability and authenticity
3. Only need to preset the expected flash point or starting temperature of the substance to be tested, the instrument can heat up at the specified rate, sweep, detect the flash point, upgrade the detection device, air cooling, and print out the results
4. Both automatic detection of atmospheric pressure and manual input function, manual input is invalid when the automatic detection status is valid, and vice versa.
5. The instrument will automatically correct the test results according to atmospheric pressure changes.
6. The instrument has powerful data processing functions: it can memorize the previous 100 analysis results
7. The preset parameters before each shutdown can be memorized.
8. The instrument comes with a hundred-year calendar, which can display year, month, day, hour, minute, and second.
9. Optional 232 computer management interface

Technical parameters

1. Temperature detection: PT100
2. Ignition mode: Electronic Ignition
3. Temperature range: 79°C---400°C, 0.1°C
4. Repeatability : $\leq 150^{\circ}\text{C}$: $\pm 2^{\circ}\text{C}$, $> 150^{\circ}\text{C}$, $\pm 3^{\circ}\text{C}$
5. Heating rate: before the pre-flash point 56°C is 14°C - $17^{\circ}\text{C}/\text{min}$
6. Before the pre-flash point 23°C is 5°C - $6^{\circ}\text{C}/\text{min}$.
7. Display mode: LCD touch screen
8. Ambient temperature: $15\sim 35^{\circ}\text{C}$, RH < 85%
9. Power: AC20V $\pm$ 10%, 50Hz
10. Power consumption: $\leq 600\text{W}$



KN-92E Automatic Cleveland Open Cup Flash Point Tester

Overview

KN-92E Automatic Cleveland Open Cup Flash Point Tester conforms to the **ASTM D92 Test Standard method for Flash and Fire Points by Cleveland open Cup Tester**. It uses Cleveland open-cup method to test the flash point & fire point of lubricating oil and fuscous petroleum products (excluding fuel oil and petroleum products with open flash point lower than 79°C).

Features

1. Single chip control, big LCD touch screen, programmed heating
2. Automatic ignition and judge the flash point
3. Equipped with automatic ignition wire, it can ignite the gas automatically
4. Automatic lift, weep and detect the test results.
5. Adopts fast detect function, be able to set the heating rate as exact demands and judge the flash point of unknown sample quickly
6. Equipped with printer, be able to display the test result and print it
7. Built-in barometric pressure sensor, be able to calibrate the test results as per the actual barometric pressure
8. Adopts temperature correct & barometric pressure correct function
9. Be able to set the highest detection temperature, ignition times, when it reaches the set value, tester will stop heating automatically

Technical parameters

1. Measuring range: 70 ~ 370°C
2. Applicable standard: ASTM D92
3. Temperature detection: Pt100
4. Flash Point Detection: Ionization ring detection
5. Heating rate: As per ASTM D92 requirements
6. Igniter: 220V, 1.0kW
7. Ignite mode: Automatic electronic ignition
8. Rated voltage: AC220V±10%, 50Hz

Package Information

1. Dimension: 350*400*350mm
2. Volume: 0.05m³
3. Weight: 20kg



KN-93 Manual Pensky-Martens Closed Cup Flash Point Tester

Overview

KN-93 Manual Pensky-Martens Closed Cup Flash Point Tester conforms to **ASTM D93 Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester**. It is used to test for those liquids which have a kinematic viscosity of 5.8mm²/s (cSt) or more at 37.8°C or 9.5mm²/s (cSt) or more at 25°C (77°F), or that contain suspended solids, or have a tendency to form a surface film while under test. These departments for liquids using these test methods have established other classification flash points.

Features

1. Upper cover with a standard fireball comparer, easy to operate.
2. Heating with stepless voltage regulator, heating-rate equability.
3. Stainless steel heater, safe and reliable.
4. Electrical motor to agitate oil sample makes the temperature of oil sample up equability.
5. Rational design with attractive appearance and easy operation.
6. Imported silicone tube
7. Speed conversion switch

Technical parameters

1. Rated voltage: AC220V±10% 50Hz
2. Temperature range: 40~300°C
3. Heating power: 0~1000W (Continuously adjustable)
4. Agitation way: Motor stirrer, 90~120 r/m, 250±10 r/m
5. Ignition gas: Pipeline coal gas, Liquid gas, and gas pressure less than 10Kpa
6. Ignition way: Ignition is controlled by hand
7. Ambient requirement: Temperature: 10~40°C ; Humidity ≤85%



KN-93Z Automatic Pensky-Martens Closed Cup Flash Point Tester

Overview

KN-93Z Automatic Pensky-Martens Closed Cup Flash Point Tester conforms to **ASTM D93 Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester**. It is used to test for those liquids which have a kinematic viscosity of 5.8mm²/s (cSt) or more at 37.8°C or 9.5mm²/s (cSt) or more at 25°C (77°F), or that contain suspended solids, or have a tendency to form a surface film while under test. These departments for liquids using these test methods have established other classification flash points.

Features

1. MCU control, large LCD color touch screen, program heating as ASTM D93 requires
2. Automatic ignition and judgment of flash point, ignition can be electric or gas supply
3. Equipped with automatic ignition wire, can automatically ignite the gas
4. Stepper motor is used for sample stirring, the speed is stable, accurate and adjustable, fully in line with ASTM D93 A,B and C procedure
5. Quick detection function, the heating rate can be set according to requirements, and the expected flash point of unknown oil sample can be judged quickly.
6. Automatic lifting and lowering function, easy to operate.
7. Temperature correction function is equipped, The atmospheric pressure can be automatically corrected
8. Be able to set the highest detection temperature, ignition times, reach the set value automatically stop heating.
9. Nitrogen distinguisher is optional
10. The tester will disconnect the gas supply when power off
11. Be able to detect the real-time atmosphere pressure

Technical parameters

1. Measurement range: 40 ~ 360°C
2. Applicable standards: ASTM D93 (A ,B and C procedure)
3. Temperature detection: platinum resistance (PT100)
4. Flash point detection: miniature thermocouple
5. Heating rate: A method 5 ~ 6°C/ min (ASTM D93A), B method 1 ~ 1.5°C/min (ASTM D93B)
6. Heater: 220V, 0.5KW
7. Stirring speed: 105rpm (ASTM D93A), 250RPM (ASTM D93B)
8. Ignition mode: optional gas ignition or electric
9. Working power supply: AC220V±10%, 50Hz



KN-93E Automatic Pensky-Martens Closed Cup Flash Point Tester

Overview

KN-93E Automatic Pensky-Martens Closed Cup Flash Point Tester conforms to **ASTM D93 Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester**. It is used to test for those liquids which have a kinematic viscosity of 5.8mm²/s (cSt) or more at 37.8°C or 9.5mm²/s (cSt) or more at 25°C (77°F), or that contain suspended solids, or have a tendency to form a surface film while under test. These departments for liquids using these test methods have established other classification flash points.

Features

1. Adopts color touch LCD screen
2. Automatic heating control
3. Automatic open the cup cover
4. Automatic ignition and cooling
5. Automatic atmospheric pressure correction
6. After detecting the flash point, the tester will display, print and save the results automatically

Technical parameters

1. Measuring range: Ambient~250°C
2. Accuracy
Flash point ≤ 110°C, ±2°C
Flash point > 110°C, ±4°C
3. Detection mode: Thermocouple differential detection
4. Ignition mode: Automatic electronic ignition
5. Screen: 7 inch touch screen
6. Cooling mode: Fan cooling
7. Working temperature: 10~35°C
8. Related humidity: 30~80%
9. Rated voltage: AC220V ± 10%, 50Hz ± 5%
10. Power ≤ 450W



KN-93M Microscale Continuously Closed Cup Flash Point Tester

Overview

KN-93M Microscale Continuously Closed Cup Flash Point Tester determines flash points according to ASTM D6450 and advanced ASTM D7094 standard. This procedure with the highest repeatability and reproducibility explains the “Standard Test Method for Flash Point by Modified Continuously Closed Cup (MCCCFP)”, correlates well with the D93 Pensky-Martens, and the conclusion is attained through continuous cycling tests that “there is no statistically significant difference in test results between ASTM D7094 and ASTM D93A”.

Features

1. Advanced continuously closed cup flash point test method is adopted for higher precision and efficiency
2. Small sample size, low cost of testing, and low pollution
3. Continuously closed cup operation without open flame, which is highly safe
4. With built-in refrigeration module, which ensures wide test range of flash test and fast cooling speed
5. Preset standard test method able to relate to other closed up methods
6. Full-automatic test and automatic flash point calibration with atmospheric pressure
7. Real-time display of temperature and pressure curve for more direct test process
8. The test result includes temperature-pressure rise curve to provide more flash point information

Technical parameters

1. Temperature range: 0~260°C, -30~260°C, 0~400°C, -30~400°C
2. Temperature increment: 2.5±3°C/min, 5.5±0.5/min°C, 0.5~12°C/min (adjustable)
3. Temperature accuracy: ±0.1°C
4. Pressure range: 0~200kPa
5. Sample volume: 1ml or 2ml
6. Ignition mode: High-voltage ignition
7. Stirring speed: 50~300rpm
8. Data: Be able to save 5000 results
9. Port: RS232*1, RJ45*1, USB*2
10. Power supply: AC220V, 50Hz
11. Power: 300W
12. Ambient requirement: Temperature: 5~40°C; Humidity≤85%
13. Dimension: 225mm*310mm*415mm



KN-56 Manual Tag Closed Cup Flash Point Tester

Overview

KN-56 Manual Tag Closed Cup Flash Point Tester conforms to **ASTM D56 Standard Test Method for Flash Point by Tag Closed Cup Tester**. Flash point measures the tendency of the specimen to form a flammable mixture with air under controlled laboratory conditions. It is only one of a number of properties that shall be considered in assessing the overall flammability hazard of a material.

It is used to measure the liquid whose viscosity is less than 5.5mm²/S at 40°C, or less than 9.5mm²/S at 25°C, and the flash point is lower than 93°C. the instrument has a built-in compressor refrigeration device, the temperature of the liquid bath can be set below -30°C, which is a real low-temperature flash point instrument.

Features

1. The liquid bath is made of stainless steel, with built-in heating tube, ventilation stirring head, overflow hole, cooling copper coil, etc.
2. The bath can be heated or refrigerated. A digital gauge controls the temperature. In addition, the temperature field passes through the water pump, and the temperature is relatively uniform, which is beneficial to improve the test accuracy.

Technical parameters

1. Flash point measurement range: -40°C ~ +93°C
2. Test cup: inner $\Phi 54 \pm 0.3$, total height about 54.5, made of brass.
3. Cup lid and slide plate: the size conforms to ASTM D56 standard.
4. Liquid bath: stainless steel, the dimension meets the standard requirements.
5. Heater: Ring 400W
6. Refrigerator: Hermetic compressor refrigeration.
7. Temperature sensor: Pt100 Ω German JUMO company.
8. Temperature display: digital instrument, resolution 0.1°C
9. Heating rate control: microprocessor instrument program temperature control.
10. Ignition gas source: external coal gas or liquefied gas, etc.
11. Power supply: AC220V 1200W
12. Dimensions: 450×380×530mm, L*W*H



KN-170 Abel Closed Cup Flash Point Tester

Overview

KN-170 Abel Closed Cup Flash Point Tester conforms to **ISO 13736 Petroleum Products and Other Liquids - Determination of Flash Point - Abel Closed Cup Method** and **IP170 Determination of flash point - Abel closed-cup method**. This International Standard specifies a method for the determination of the closed cup flash point of petroleum products and other liquids having flash points between -30°C and 70°C inclusive. However, the precision given for the method is only valid for flash points in the range -5°C to 66.5°C. This standard is not acceptable to water borne paints which may however be tested using ISO 3679

Features

1. Full stainless steel gas pipeline
2. High precision needle valve
3. Stand reagent calibration
4. Low temperature circulating bath is optional

Technical parameters

1. Rated voltage: AC 220V±10% 50Hz
2. Power: 350W
3. Ignition method: Gas
4. Measuring range: -30~70°C
5. Stirring speed: 30r/min
6. Repetitive error: < ±1°C
7. Ambient requirement: Temperature: 5~40°C; Humidity≤85%

Package Information

1. Dimension: 400*550*550mm
2. Volume: 0.16m³
3. Weight: 25kg



KN-170Z Automatic Abel Closed Cup Flash Point Tester

Overview

KN-170Z Automatic Abel Closed Cup Flash Point Tester conforms to **IP170 Petroleum products and other liquids -- Determination of flash point -- Abel closed cup method** and **ISO 13736 Petroleum Products and Other Liquids - Determination of Flash Point - Abel Closed Cup Method**. This International Standard specifies a method for the determination of the closed cup flash point of petroleum products and other liquids having flash points between -30°C and 70°C inclusive. However, the precision given for the method is only valid for flash points in the range -5°C to 66.5°C. This standard is not acceptable to water borne paints which may however be tested using ISO 3679

Features

1. **Control system:** bilingual menus in Chinese and English, true color GUI touch screen interface design, intuitive display, easy operation, reasonable structure, fast test speed, wide test range, good repeatability and authenticity, etc. The test process is fully automated, and the temperature, time and other parameters involved will be displayed on the LCD screen, on which the user will also see the working status of the instrument and related operation prompts. Only need to preset the expected flash point or starting temperature of the sample to be measured, and the instrument can start to cool and heat up at the specified rate, and then perform ignition, flash point detection, air cooling, and printout. The instrument will automatically correct the test results according to changes in atmospheric pressure. The instrument has powerful data processing capabilities: be able to save 1000 test records for checking and printing. It can save the preset parameters before each shutdown.
2. **Double ignition mode:** the ignition mode adopts electronic ignition or gas ignition, operator can select the ignition method as real demands, and there is no difference of both methods
3. **Split independent design:** The cup lid assembly, flash point sensor and temperature sensor are all split independent design, which makes it easier to replace each accessory.
4. **Self-check and self-diagnosis:** When the instrument is turned on, the flash point sensor, Pt100 oil temperature sensor, electronic igniter, thermofuse, etc. will be automatically checked; At the same time, self-check will be carried out on the ignition, stirring arm, cooling and heating system start/reset, etc. If there is a fault or the connection is not normal, the instrument will beep and give an alarm, and the screen text prompts "xxx abnormal, please check whether it is connected"

Technical parameters

1. Test temperature range: -30~80°C
2. Temperature detection: Platinum resistor, Pt100
3. Display mode: 7-inch LCD
4. Cooling mode: Compressor (connect external circulating water bath)
5. Heating rate: 1°C/min, Temperature Resolution: 0.1°C
6. Stirring speed: 0.5r/s (30rpm)
7. Ignition mode: Electric or gas
8. Ambient requirements: 10~40°C, Relative humidity≤85%
9. Power consumption≤450W
10. Low temperature circulating bath≤1000W



KN-659 Autoignition Temperature Tester

Overview

KN-659 Autoignition Temperature Tester conforms to **ASTM E659 Standard Test Method for Autoignition Temperature of Chemicals**. A small, metered sample of the product to be tested is inserted into a uniformly heated 500ml glass flask containing air at a predetermined temperature. The contents of the flask are observe in a dark room for 10min following insertion of the sample, or until autoignition occurs. Autoignition is evidenced by the sudden appearance of a flame inside the flask and by a sharp rise in the temperature of the gas mixture. The lowest internal flask temperature at which hot-flame ignition occurs for a series of prescribed sample volumes is taken to be the hot-flame autoignition temperature of the chemical in air at atmospheric pressure. Ignition delay times (ignition time lags) are measured in order to determine the ignition delay-ignition temperature relationship.

Features

1. Exclusive use of XECOM data processing chips imported from the United States to accurately process data
2. Adopt advanced microcomputer technology and color display with touch screen
3. Advanced embedded microcontroller technology
4. Adopt SMT surface mount technology
5. PID temperature control and setting technology, high precision of temperature control
6. Automatic thermal printing of Chinese characters
7. Standard RS232 interface, can communicate with computer
8. Automatically complete the determination of the self-ignition point of fire-resistant fuel, with automatic constant temperature countdown after reaching the preset self-ignition point, automatic sampling, automatic detection of the self-ignition point, and automatic printing of results
9. Automatic sampling to avoid the problem of inaccurate positioning caused by manual sampling
10. Users can set the test temperature interval by themselves

Technical parameters

1. Display mode: LCD touch screen
2. Temperature control range: 100~800°C, ±1°C
3. Timing accuracy: 1s
4. Injection volume: 0.07ml
5. Sampling interval: ≥15min
6. Voltage: AC220V ± 10%, 50Hz ± 5%
7. Power: <1500W
8. Ambient temperature: 5~35°C
9. RH ≤ 85%



KN-86 Distillation Tester for Petroleum Products

Overview

KN-86 Distillation Tester conforms to **ASTM D86 Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure**, which is suitable for light and middle distillates, and spark ignition engine fuels with or without oxygenates aviation gasoline, aviation turbine fuels, diesel fuels, biodiesel blends up to 20%, marine fuels, special petroleum spirits, naphtha, white spirits, kerosene, Grade 1 and 2 burner fuels.

Features

1. The tester adopts quartz tube furnace heating, stainless steel bath and stainless steel lighter stand, etc.
2. The tester adopts silicone plug to fix the thermometer and distillation flask
3. Attach measuring cylinder insulation bath, cylinder plug, cylinder SS lighter stand and SS briquette
4. Quartz glass inspection window
5. LED auxiliary lighting, Digital voltmeter display

Technical parameters

1. Rated voltage : AC220V $\pm$ 10%, 50Hz
2. Heating power:0~1000W (Continuously adjustable)
3. Bath temperature range:0~60 $^{\circ}$ C
4. Temperature controlling precision: $\pm$ 0.5 $^{\circ}$ C
5. SSVR (Stepless)
6. Agitation way: Motor stirring
7. Electric furnace body control: Manually
8. Ambient requirements: Temperature 10~40 $^{\circ}$ C; Humidity $\leq$ 85%



KN-86A Double Tubes Distillation Tester

Overview

KN-86A Double Tubes Distillation Tester conforms to **ASTM D86 Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure**, which is suitable for light and middle distillates, and spark ignition engine fuels with or without oxygenates aviation gasoline, aviation turbine fuels, diesel fuels, biodiesel blends up to 20%, marine fuels, special petroleum spirits, naphtha, white spirits, kerosene, Grade 1 and 2 burner fuels.

Features

1. Be able to do two groups of tests simultaneously
2. Quartz tube heating
3. LED lighting, two groups of air-cooling for the furnace

Technical parameters

1. Rated voltage : AC220V $\pm$ 10%, 50Hz
2. Power: 3800W
3. Temperature control mode: Digital temperature controller
4. Accuracy: $\pm 0.5^{\circ}\text{C}$
5. Stirring mode: Pump circulation
6. Ambient requirement: Temperature 5~40 $^{\circ}\text{C}$, Humidity $\leq$ 85%

Package Information

1. Dimension: 760*600*630mm
2. Volume: 0.29m³
3. Weight: 40kg



KN-86Z Automatic Distillation Tester

Overview

KN-86Z Automatic Distillation Tester for Petroleum Products is a new designed distillation tester. It conforms to standard **ASTM D86 Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure**, which is suitable for testing distillation of light and middle distillates, automotive spark-ignition engine fuels with or without oxygenates, aviation gasoline, aviation turbine fuels, diesel fuels, biodiesel blends up to 20 %, marine fuels, special petroleum spirits, naphtha, white spirits, kerosene, and Grades 1 and 2 burner fuels.

Features

1. The tester can automatically measure and control all experimental process by the single chip microcomputer, 10-inch touching LCD screen displays all experimental process and show the temperature data, volume data and related curves
2. Accept the cylinder bath temperature via automatic control
3. The tester adopts quartz base plate
4. Automatic nitrogen fire extinguish is OK
5. Track the liquid level automatically and control the flow velocity

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz or 110V $\pm$ 10% 60Hz
2. Power: 1200W
3. Temperature range: Environment temperature $\sim$ 400 $^{\circ}$ C
4. Temperature control Precision: $\pm$ 0.1 $^{\circ}$ C
5. Temperature sensor: RTD Pt100
6. Start heating to Initial distillation point time: 5 $\sim$ 15min
7. Distillation rate: 4 $\sim$ 5min
8. Residues in flask is 5 ml: less than 5 min
9. Initial distillation point temperature detection: Optical fiber sensors
10. Recycling volume measurement range: 0 $\sim$ 100ml
11. Recycling volume measurement precision: $\pm$ 0.1ml
12. Ambient requirements: Temperature 10 $^{\circ}$ C $\sim$ 40 $^{\circ}$ C; Humidity $\leq$ 85%

Package Information

1. Dimension: 710*610*820mm
2. Volume: 0.36m³
3. Weight: 94kg



KN-7345 Automatic Micro Distillation Tester

Overview

KN-7345 Automatic Micro Distillation Tester conforms to **ASTM D7345 Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure (Micro Distillation Method)**. The distillation (volatility) characteristics of hydrocarbons have an important effect on their safety and performance, especially in the case of fuels and solvents. The boiling range gives information on the composition, the properties, and the behavior of the fuel during storage and use. Volatility is the major determinant of the tendency of a hydrocarbon mixture to procedure potentially explosive vapors.

Features

1. Faster test than ASTM D86
2. Only 10ml sample needed
3. One button operation, system will judge the end point automatically
4. With good repeatability and accuracy
5. Be able to test the petroleum products with range 30~370°C

Technical parameters

1. Application: Gasoline, diesel, kerosene, fuel oil, heavy oil and other mineral oil
2. Rated voltage: 220V
3. Sample volume: 10ml
4. Measuring range: 30~370°C, accuracy: 0.1°C
5. Temperature measuring element: Imported sensor
6. Power consumption: Standby:15W, Full load: 200W
7. Ambient temperature: Room temperature
8. Relative Humidity<90%



KN-1160 Vacuum Distillation Tester

Overview

KN-1160 Vacuum Distillation Tester conforms to the **ASTM D1160 Standard Test Method for Distillation of Petroleum Products at Reduced Pressure**. It is used for measuring at reduced pressures, of the range of boiling points for petroleum products and biodiesel that can be partially or completely vaporized at a maximum liquid temperature of 400°C. The tester consists of distillation column, pressure detecting system, receiver cabin, vacuum pump, cold trap, refrigeration unit, press etc.

Features

1. High precision thin diaphragm vacuum differential pressure gauge replaces hydrargyrum differential pressure gauge
2. Digital LCD displays pressure result clearly
3. High precision needle valve control pressure
4. Temperature display: digital display temperature controller
5. PID temperature control technology makes the temperature more accurate, precision within $\pm 0.1^{\circ}\text{C}$
6. Pressure range: 760mmHg $\sim$ 0.1mmHg
7. Portable-type electric furnace regulation device, easy operation
8. The receiver is equipped with flow nappe, which makes flow rate more equal.

Technical parameters

1. Applicable standards: ASTM D1160 ISO6616
2. Heating power: 1200W
3. Temperature sensor: Glass Pt100
4. Pressure display: Digital display
5. Pressure adjustment method: Precision needle valve
6. Cooling temperature: Below -45°C
7. Cooling method: Imported compressor refrigeration
8. Water level control: Alarm
9. Temperature control method: PID precision temperature control instrument
10. Cycle method: Circulating method
11. Cooling mode: Air cooling

Package Information

1. Dimension: 1010*620*1170mm
2. Volume: 0.73m³
3. Weight: 130kg



KN-4006A Water in Crude Oil Tester (Distillation Method)

Overview

KN-4006A knowledge of the water content of crude oil is important in the refining, purchase, sale, or transfer of crude oils. It conforms to the **ASTM D4006 Standard Test Method for Water in Crude Oil by Distillation**. This test method covers the determination of water in crude oil by distillation. This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

KN-4006: Single tube

KN-4006A: Double tubes

Features

1. Stepless solid-state voltage regulator, heating without fire, safety and reliability.
2. Heating jackets no flame, safe and reliable.
3. Voltmeter shows clearly, accurate temperature, good insulation properties.
4. Simple operation with elegant structure.

Technical parameters

1. Rated voltage: AC 220V $\pm$ 10% 50Hz
2. Power: 0~650W Continuously adjustable
3. Heating method: Heating jacket
4. Adjust the display: AC voltmeter 0~250V
5. Temperature control mode: Stepless voltage solid-state regulator
6. Distillation flask: 1000ml
7. Accepting bottles: 5ml, scale 0.05ml
8. Liebig condenser: 400mm
9. Temperature accuracy: $\pm 0.1^{\circ}\text{C}$
10. Ambient requirements: Temperature: 10~40°C; Humidity $\leq$ 85%



KN-95 Dean Stark Distillation Water Content

Overview

KN-95 Dean Stark Distillation Water Content conforms to the **ASTM D95 Standard Test Method for Water in Petroleum Products and Bituminous Materials by Distillation**. The tester is used for testing water in the range from 0 to 25 % volume in petroleum products, tars, and other bituminous materials by the distillation method.

Features

1. The instrument adopts solid state voltage regulator, stepless to change temperature, easy to accommodate temperature.
2. The instrument comprises single element.
3. Voltage regulator outputs without contact, sparkle and noise and it is stable.
4. Voltmeter is used to show the voltage changed by the solid state voltage regulator, convenient to direct-view.
5. Reasonable structure with beautiful shape and safe operation.

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Heating Power:0 ~ 650W (Continuously adjustable)
3. Temperature control mode: Solid-state voltage regulator (stepless)
4. Regulator display: AC Voltage Meter 0 ~ 300V
5. Ambient requirement: Temperature: 10 ~ 40°C; Humidity $\leq$ 85%



KN-6304 Coulometric Karl-Fischer Titration Tester

Applicable Standard

- **ASTM E1064 Standard Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration**
- **ASTM D4928 Standard Test Method for Water in Crude Oils by Coulometric Karl Fischer Titration**
- **ASTM D6304 Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration**
- **ASTM D1533 Standard Test Method for Water in Insulating Liquids by Coulometric Karl Fischer Titration**

Features

1. 7-inch TFT true color LCD touch screen
2. 32-bit microprocessor as the main control core, a new generation of intelligent operating system
3. Polarization detection technology, good stability, high precision, fast determination speed
4. The dual-channel isolated power supply separates the electrolytic electrode and the measuring electrode, and the instrument can automatically remove various interferences, which greatly improves the precision of the test results
5. Automatic calculate the results and PPM value, which can be widely used in different standards
6. Automatic data query function, it is convenient to find test records and statistical data, and the results can be printed at any time
7. Sample number and total amount of samples can be set, the report sheet is automatically calculated and generated, and the result can be printed at any time
8. Automatic display function of measuring electrode open circuit fault, short circuit fault, electrolyte over iodine, over water and other instrument faults.

Technical parameters

1. Screen resolution: 1024*768
2. Electrolytic current: 0~430mA, automatic control
3. Measuring range: 2 μ g~500mg, 0.1 μ g
4. Accuracy: 3 μ g~1000 μ g, $\pm$ 3 μ g (without injection error)
>1mg, $\leq$ 0.5% (without injection error)
5. Printer: 58mm Micro thermal printer
6. Rated voltage: 220V $\pm$ 10%, 50Hz
7. Rated power: 35W
8. Ambient requirements: 5~40 $^{\circ}$ C, RH<80%

Package Information

1. Dimension: 400*260*250mm
2. Volume: 0.03m³
3. Weight: 5kg



KN-203 Volumetric Karl Fischer Titrator

Overview

KN-203 Volumetric Karl Fischer Titrator conforms to **ASTM E203 Standard Test Method for Water Using Volumetric Karl Fischer Titration**. It is an automatic volumetric Karl Fischer titrator with high accuracy, great flexibility and repeatability. The titrator is designed to perform titrations for a variety of sample types/matrices, allowing the user to obtain both good results and high-speed analysis. The KN-203 analyzes for water content ranging from 100 ppm to 100%. This powerful titrator automatically dispenses the titrant, detects the endpoint, and performs all necessary calculations and graphing.

Features

1. LCD display screen.
2. Support KF Titration Mode and Titer Detection Mode.
3. Features of auto-filling, auto-purging and auto-mixing of the reagents ensure safe handling of Karl Fischer Chemicals
4. Selectable units including mg, mg/L, ppm, etc.
5. Settable parameters, including measurement unit, polarization current, stirring rate, titration rate stop volume, endpoint potential, stop criterion, etc.
6. Store up to 200 titration data sets (GLP - compliant)
7. Data can be easily transferred to printer via RS-232 communication interface
8. Reset feature Automatic resumes all settings back to factory default options

Instrument includes

1. 10ml burette
2. Volumetric titration cell (with electrodes and anti-diffusion capillary)

Technical parameters

1. Range: 0.1mg~250mg
2. Resolution: 0.1mg
3. Polarization current accuracy: $1\mu\text{A}\pm 0.2\mu\text{A}$, $50\mu\text{A}\pm 10\mu\text{A}$
4. Repeatability: $\pm 0.5\%$
5. Power supply: $\text{AV}220\text{V}\pm 10\%$, $50\text{Hz}\pm 10\%$
6. Dimension: 340*400*400mm
7. Weight: 10kg



KN-titrate Automated Potentiometric Titrator

Overview

KN-titrate Automated Potentiometric Titrator is used for determination of Total Acid Number (TAN), Total Base Number (TBN), Mercaptan Sulfur and chlorine content of petroleum products, lubricants and transformer insulating oils. Titration is the fundamental chemical analysis procedure whereby the concentration of a chemical substance in solution is determined by reacting it with a measured amount of another chemical. The Auto titrator performs this analysis using a motor driven dispenser, stirred reaction vessel and electrodes which sense the completion of reaction by measuring the potential difference between two electrodes. Automatic Titration increases accuracy, repeatability and reproducibility as well as minimizing errors in calculation and documentation.

Application standards

1. ASTM D664 Standard Test Method for Acid Number of Petroleum Products by Potentiometric Titration
2. ASTM D974 Standard Test Method for Acid and Base Number by Color-Indicator Titration
3. ASTM D2896 Standard Test Method for Base Number of Petroleum Products by Potentiometric Perchloric Acid Titration
4. ASTM D4929 Standard Test Methods for Determination of Organic Chloride Content in Crude Oil, test method A
5. ASTM D3227 Standard Test Method for (Thiol Mercaptan) Sulfur in Gasoline, Kerosine, Aviation Turbine, and Distillate Fuels (Potentiometric Method)
6. ASTM D4739 Standard Test Method for Base Number Determination by Potentiometric Hydrochloric Acid Titration
7. UOP163 Hydrogen Sulfide and Mercaptan Sulfur in Liquid Hydrocarbons by Potentiometric Titration
8. ASTM D94 Standard Test Methods for Saponification Number of Petroleum Products

Features

1. Unique built-in dosing unit to avoid the harmless chemical leak
2. Can do multiple kinds of titration, Acid-base or aqueous titration, Redox titration, Complexometric titration or EDTA titration, Blank titration, Silver Assay titrations, Non-aqueous titration, Argentometric or Precipitation titration, Back titration
3. Multiple self-checking function to avoid mis-operating
4. Flexible application edit functions, operator can store the dedicated titration mode to the test and adopt this mode next time by one click
5. RS232/USB port, with networked CAN bus communication functions.
6. Very easy to use - intuitive keypad and function guide display
7. Programmable – TAN, TBN software built-in
8. Results expressed in mg KOH/g
9. Connects to external pc keyboard for easy text and sample information data entry
10. Connects to different types printers, pc and balances
11. Data Logger – automatic data storage of last 55 analysis results
12. Hamilton electrode ,model number: 238060 FLUSHTRODE made in Swiss

Technical parameters

MV Measuring range: -2000.0mV~+2000.0mV, ± 0.1 mV

PH measuring range: -20.000PH~+20.000PH

PH resolution: 0.001PH, Accuracy: ± 0.003 PH

Operation: PC controlled

Sampler: standard equipped with single titration platform

Optional 16-stations 100mL autosampler, 12-stations

250mL autosampler, 18-stations 50mL autosampler

Stirring way: magnetic stir, optional up stirring

Burette resolution: 1/1500000

Titration type: Potentiometric titration

Temperature measuring: -5~120°C,

MV test: Resolution 0.1mV, accuracy 0.1mV $\pm 0.03\%$

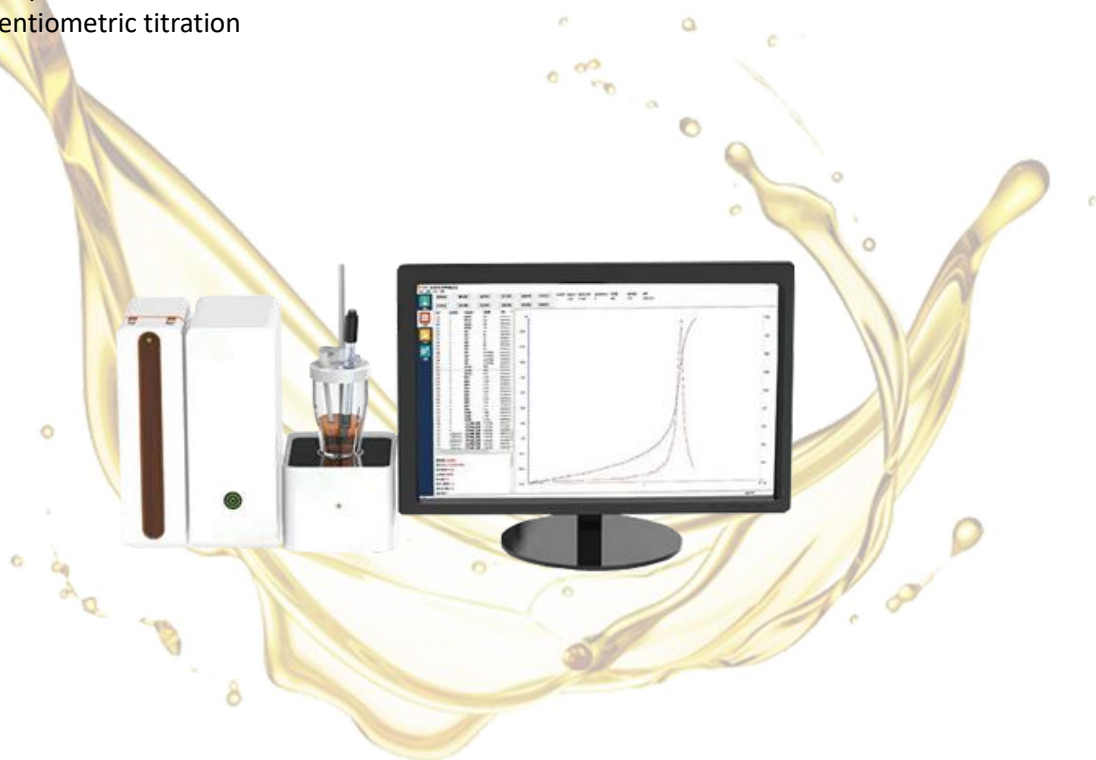
Temperature measuring precision: $\pm 0.1^\circ\text{C}$

Burette rehydration time: 16s (100% filling rate)

Electrode connector type: mV/pH measuring electrode interface, reference electrode interface, PT1000 temperature electrode interface

Burette refill time: 16S

Compatible with burette specifications: 1mL 5mL 10mL 25mL



KN-Titrate-A Automated Potentiometric Titrator

Overview

KN-Titrate-A Automated Potentiometric Titrator is used for determination of Total Acid Number (TAN), Total Base Number (TBN), Mercaptan Sulfur and chlorine content of petroleum products, lubricants and transformer insulating oils. Titration is the fundamental chemical analysis procedure whereby the concentration of a chemical substance in solution is determined by reacting it with a measured amount of another chemical. The Auto titrator performs this analysis using a motor driven dispenser, stirred reaction vessel and electrodes which sense the completion of reaction by measuring the potential difference between two electrodes. Automatic Titration increases accuracy, repeatability and reproducibility as well as minimizing errors in calculation and documentation.

Application standards

1. ASTM D664 Standard Test Method for Acid Number of Petroleum Products by Potentiometric Titration
2. ASTM D974 Standard Test Method for Acid and Base Number by Color-Indicator Titration
3. ASTM D2896 Standard Test Method for Base Number of Petroleum Products by Potentiometric Perchloric Acid Titration
4. ASTM D4929 Standard Test Methods for Determination of Organic Chloride Content in Crude Oil, test method A
5. ASTM D3227 Standard Test Method for (Thiol Mercaptan) Sulfur in Gasoline, Kerosine, Aviation Turbine, and Distillate Fuels (Potentiometric Method)
6. ASTM D4739 Standard Test Method for Base Number Determination by Potentiometric Hydrochloric Acid Titration
7. UOP163 Hydrogen Sulfide and Mercaptan Sulfur in Liquid Hydrocarbons by Potentiometric Titration
8. ASTM D94 Standard Test Methods for Saponification Number of Petroleum Products

Features

1. Unique built-in dosing unit to avoid the harmless chemical leak
2. Can do multiple kinds of titration, Acid-base or aqueous titration, Redox titration, Complexometric titration or EDTA titration, Blank titration, Silver Assay titrations, Non-aqueous titration, Argentometric or Precipitation titration, Back titration
3. Multiple self-checking function to avoid mis-operating
4. Flexible application edit functions, operator can store the dedicated titration mode to the test and adopt this mode next time by one click
5. RS232/USB port, with networked CAN bus communication functions.
6. Very easy to use - intuitive keypad and function guide display
7. Programmable – TAN, TBN software built-in
8. Results expressed in mg KOH/g
9. Connects to external pc keyboard for easy text and sample information data entry
10. Connects to different types printers, pc and balances
11. Data Logger – automatic data storage of last 55 analysis results
12. Hamilton electrode ,model number: 238060 FLUSHTRODE made in Swiss

Technical parameters

MV Measuring range: -2000.0MV~+2000.0MV, ± 0.1 MV

PH measuring range: -20.000PH~+20.000PH

PH resolution: 0.001PH, Accuracy: ± 0.003 PH

Operation: PC controlled

Sampler: standard equipped with single titration platform

Optional 16-stations 100mL autosampler, 12-stations

250mL autosampler, 18-stations 50mL autosampler

Stirring way: magnetic stir, optional up stirring

Burette resolution: 1/1500000

Titration type: Potentiometric titration

Temperature measuring: -5~120°C,

MV test: Resolution 0.1mV, accuracy 0.1mV $\pm 0.03\%$

Temperature measuring precision: ± 0.1 °C

Burette rehydration time: 16s (100% filling rate)

Electrode connector type: mV/pH measuring electrode interface, reference electrode interface, PT1000 temperature electrode interface

Burette refill time: 16S

Compatible with burette specifications: 1mL 5mL 10mL 25mL



KN-4049 Water Spray for Lubricating Grease

Overview

KN-4049 Water Spray for Lubricating Grease conforms to **ASTM D4049 Standard Test Method for Determining the Resistance of Lubricating Grease to Water Spray**. This tester covers the ability of a grease to adhere to a metal surface when subjected to a water spray under prescribed laboratory conditions.

Features

1. PMMA chamber, convenient to observe, Precision pressure gauge displays spray pressure
2. Stainless steel plate conforms to standard requirement: 152.4×50.75×6.35mm
3. Stainless steel grinding tool conforms to standard requirement: 203.2×76.2×11.11mm
4. Stainless steel nozzle, $\Phi 3.18$ mm, Bypass-valve in front of the pressure gauge: 40psi $\pm$ 1psi
5. Microcomputer temperature controller, digital display, accurate to $\pm 0.2^{\circ}\text{C}$, PT100 sensor
6. Full enclosed compressor cooling Digital timer to control the spraying time
7. Magnetic pump circulating to cool the medium, insulation drivepipe on the circulating pipe

Technical parameters

1. Heating mode: Electrical heating pipe
2. Timing mode: Digital timer
3. Cooling mode: Compressor cooling
4. Temperature control mode: Digital PID temperature controller
5. Rated voltage: AC220V 50HZ, Working temperature: $38\pm 0.2^{\circ}\text{C}$
6. Working pressure: 40psi $\pm$ 1psi
7. Water pressure control: By-pass valve
8. Power: 2.5KW
9. Spray mode: Precision nozzle



KN-1264 Water Washout Characteristics of Lubricating Grease

Overview

KN-1264 Water Washout Characteristics Of Lubricating Grease conforms to the **ASTM D1264 Standard Test Method for Determining the Water Washout Characteristics of Lubricating Greases**.

This tester covers the evaluation of the resistance of a lubricating grease to washout by water from a bearing, when tested at 38 and 79°C (100 and 175°F) under the prescribed laboratory conditions. It is not to be considered the equivalent of service evaluation tests. Precision and bias was determined using grease ranging from NLGI 3 to 0 grades in the research report.

Features

1. Stainless steel bath with good bearing and SS spray circuit
2. Imported motor direct drive spindle, silence and stable
3. Digital tachometer, real time display revolving speed
4. Flowmeter, two groups of precision needle valve to control the flow rate

Technical parameters

1. Rated voltage: AC 220V±10% 50Hz or 110V±10% 60Hz
2. Sink heating power: 500W
3. Sink temperature range: Room temperature ~ 100°C, continuously adjustable
4. Control temperature accuracy: ± 1 °C
5. Total power: 600 W
6. Spray water: 5 ± 0.5ml/s.
7. Bearing speed: 600 ± 30r/min
8. Ambient requirements: Temperature: 10 ~ 40°C ; Humidity≤85%



KN-2711 Tester for Demulsibility Characteristics of Lubricating Oils

Overview

KN-2711 Tester for Demulsibility Characteristics of Lubricating Oils conforms to **ASTM D2711 Standard Test Method for Demulsibility Characteristics of Lubricating Oils**, this tester covers the measurement of the ability of oil and water to separate from each other. It is intended for use in testing medium and high-viscosity lubricating oils. This test provides a guide for determining the demulsibility characteristic of lubricating oils that are prone to water contamination and may encounter the turbulence of pumping and circulation capable of producing water-in-oil emulsions.

Features

1. Constant temperature bath is made of explosion-proof glass
2. This tester is suitable to test the Demulsibility of medium and high viscosity lubricating oils
3. Heating bath adopts digital display temperature control
4. Accurate to $\pm 0.1^{\circ}\text{C}$
5. Bath is equipped with lighting device
6. Number of revolutions of separating funnel stirring motor is displayed via the revolution counter. Timing to stir.
7. The stirrer is automatic lifting, convenience to use
8. Equipped with separating funnel

Technical parameters

1. Applicable standard: ASTM D2711
2. Heating method: Electric heating tube
3. Temperature range: Ambient $\sim 82^{\circ}\text{C}$, $\pm 0.1^{\circ}\text{C}$
4. Speed regulation: Precision potentiometer, digital display
5. Heating power: 2.5kW
6. Rated voltage: AC220V $\pm 10\%$, 50Hz



KN-1401 Manual Water Separability Tester

Overview

KN-1401 Manual Water Separability Tester conforms to **ASTM D1401 Standard Test Method for Water Separability of Petroleum Oils and Synthetic Fluids**. This tester provides a guide for determining the water separation characteristics of oils subject to water contamination and turbulence. It is used for specification of new oils and monitoring of in-service oils. And it covers measurement of the ability of petroleum oils or synthetic fluids to separate from water. Although developed specifically for steam-turbine oils having viscosities of 28.8–90 mm²/s at 40°C, this test method may be used to test oils of other types having various viscosities and synthetic fluids at other test temperatures. It is recommended, however, that the test temperature be raised to 82 ± 1°C when testing products more viscous than 90 mm²/s at 40°C.

Features

1. Digital display temperature controller, temperature control high accuracy.
2. Digital timer alarm, easy to operate.
3. The tester is made of glass bath to facilitate observation.
4. Three holes design to improve experimental efficiency.
5. Decent and beautiful design.

Technical parameters

1. Rated voltage: AC 220V±10%; 50Hz
2. Power: 2000W
3. Temperature: Digital display temperature controller
4. Temperature range: Room temperature~100°C
5. Temperature sensor: Pt100 (Platinum resistor)
6. Bath temperature mixing method: Motor agitation, 1200r/min
7. Oil sample mixing method: Motor agitation, 1500r/min
8. Control temperature accuracy: ±0.5°C
9. Ambient requirements: Temperature: 10~40°C; Humidity≤85%



KN-1401Z Automatic Water Separability Tester

Overview

KN-1401Z Automatic Water Separability Tester conforms to **ASTM D1401 Standard Test Method for Water Separability of Petroleum Oils and Synthetic Fluids**. This tester provides a guide for determining the water separation characteristics of oils subject to water contamination and turbulence. It is used for specification of new oils and monitoring of in-service oils. And it covers measurement of the ability of petroleum oils or synthetic fluids to separate from water. Although developed specifically for steam-turbine oils having viscosities of 28.8–90 mm²/s at 40°C, this test method may be used to test oils of other types having various viscosities and synthetic fluids at other test temperatures. It is recommended, however, that the test temperature be raised to 82 ± 1°C when testing products more viscous than 90 mm²/s at 40°C.

Features

1. It adopts single-chip control and PID self-tuning temperature control technology with fast heating and high control precision;
2. The instrument is automatically stirred and timed, and the test tube mixing motor boom is automatically raised and lowered;
3. Automatic prompt function, automatic alarm when the experiment is over;
4. The mechanical transmission is noise-free, and the heating parts are made of stainless steel, which is corrosion-resistant and durable;
5. The constant temperature bath is round glass cylinder with uniform temperature distribution inside and with good temperature control effect;
6. Automatic printing and storage that can store 100 results.

Technical parameters

1. Display: 320*240 dot matrix LCD screen
2. Temperature control range: Ambient~100°C, ±0.1°C
3. Water bath temperature: 54±1°C, 82±1°C
4. Timing range: Arbitrary set within 0~99min
5. Stirring speed: 1500±15rpm
6. Temperature sensor: Platinum resistance
7. Test station: 4
8. Rated voltage: AC220V ± 10%, 50Hz
9. Max power consumption: 1000W
10. Working Temperature: Ambient~45°C
11. Humidity ≤ 85%
12. Dimension & Weight: 540*380*600mm, 26kg



KN-445 Manual Kinematic Viscosity Bath

Overview

KN-445 Manual Kinematic Viscosity bath conforms the **ASTM D445 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)**. It is used to test the 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. The dynamic viscosity, η , can be obtained by multiplying the kinematic viscosity, ν , by the density, ρ , of the liquid. Under certain constant temperature. The range of kinematic viscosities covered by this tester method is from 0.2 to 300 000 mm²/s at all temperatures

Features

1. The tester is equipped with 4 advanced viscometer holders, easy to operate.
2. The tester adopts digital display temperature control with high temperature controlling precision.
3. The tester is equipped with heat preservation bath.
4. The rotational constant bath must be provided when the temperature is 20 °C.
5. Rational design with elegant structure and easy operation.

Technical parameters

1. Rated voltage: AC220V±10% 50Hz
2. Temperature control range: 20~100°C
3. Temperature control mode: Digital display temperature control
4. Precision of temperature control: ±0.1°C (±0.01°C)
5. Output power: 1800W
6. Ambient requirements: Temperature: 10~40°C; Humidity≤85%

Package Information

1. Dimension: 830*540*730mm
2. Volume: 0.33m³
3. Weight: 40kg



KN-445BZ Semi-Automatic Kinematic Viscosity Bath

Overview

KN-445BZ Semi-Automatic Kinematic Viscosity bath conforms the **ASTM D445 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)**. It is used to test the 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. The dynamic viscosity, η , can be obtained by multiplying the kinematic viscosity, ν , by the density, ρ , of the liquid. Under certain constant temperature. The range of kinematic viscosities covered by this tester method is from 0.2 to 300 000 mm²/s at all temperatures

Features

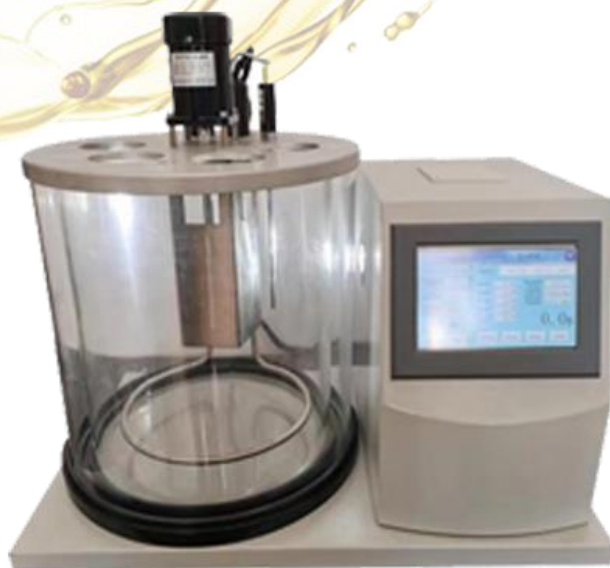
1. Large LCD, independent research and development of embedded temperature control system, plastic injection integrated display screen frame is attractive and reasonable. Meanwhile, it has the authority management function, which effectively prevents non-professionals from setting the key parameters of the analyzer.
2. Double-layer transparent round glass constant temperature bath, 20L glass cylinder which is heat preservation and explosion-proof.
3. With temperature correction function, the correction value will be lost after power off.
4. LED lighting, illuminating the capillary line, clear and not dazzling.
5. Dedicated viscometer holder, easy to operate
6. Automatic timing, calculation and convert to the viscosity index
7. Embedded thermal printer, it features quiet, fast and clear

Technical parameters

1. Temperature range: Ambient~100℃, adjustable
2. Accuracy: $\pm 0.1^{\circ}\text{C}$
3. Heating power: 1.5KW
4. Test station: 4
5. Rated voltage: AC220V $\pm 10\%$ 50Hz
6. Ambient temperature requirement: 5℃~ 40℃
7. Relative humidity: $\leq 85\%$

Package Information

1. Dimension: 830*540*730mm
2. Volume: 0.33m³
3. Weight: 40kg



KN-445Z Full Automatic Kinematic Viscosity Tester

Overview

KN-445Z Automatic Kinematic Viscosity Tester conforms the **ASTM D445 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)**. It is used to test the 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. The dynamic viscosity, η , can be obtained by multiplying the kinematic viscosity, ν , by the density, ρ , of the liquid. Under certain constant temperature. The range of kinematic viscosities covered by this tester method is from 0.2 to 300 000 mm²/s at all temperatures.

Features

1. Equipped with 16-bit sample tray, can work all day long. Intelligent preheat, inject, measure, clean, dry, calculate results and repetitive calculation.
2. The tester adopts photoelectric or thermal detection, can measure transparent and opaque samples, include Newtonian fluid such as gasoline, diesel, kerosene, cutting fluid, heat conducting oil, additive, fresh and in-use lubricating oils, etc.
3. With PTC sample intelligent preheating function. The tester can control preheating temperature automatically according to the expected temperature of the sample.
Preheat temperature range: room temperature~120°C Heating rate:15°C/min
Reduce the sample thermostatic time greatly during testing.
4. Build-in Peltier refrigeration system. It uses thermostatic bath liquid as cooling medium directly, features fast cooling speed.
5. Apply the self-adaptive liquid level balance technology. It adapts to large-span adjustment of test temperature, can increase and decrease thermostatic medium automatically during heating and cooling process, keep the same immersion depth.
6. The tester build-in Windows operating system, easy to operate, can be connected to LIMS system and barcode scanner, input sample information automatically.

7. The system build-in automatic calibration function of the viscometer constant, and temperature calibration, internal clock timing calibration, also can convert Kinematic viscosity into Engler viscosity and calculate viscosity Index automatically and other functions
8. Overtemperature protection function of both software and hardware. Over temperature alarm, dry heat protection, cleaning solution insufficient prompt, waste liquid cleaning prompt and other functions, ensuring safe operation.
9. Double glass bath design, PT1000 high precision temperature sensor, double-blade stir, make the thermostatic bath keep stable and accurately, temperature precision is 0.005°C .
10. Automatic intelligent dual solvent cleaning function, cleaning mode can be customized.
11. With timing verification port, can do accurate time verification to the instrument through a standard time calibrator.

Technical parameters

1. Standard: ASTM D445, D446, ISO3104
2. Measuring range: $0.3 \sim 10000 \text{ mm}^2/\text{s}$, 100 times measuring span of one viscometer tube
3. Number of sample loaded: 16
4. Bath volume: 3L
5. Temperature control range: $20 \sim 100^{\circ}\text{C}$ (built-in Peltier refrigeration)
6. Temperature control accuracy: 0.005°C
7. Timing accuracy: 0.01 S
8. Repeatability: $\leq 0.4\%$
9. Total Power: $\leq 1000 \text{ W}$
10. Main host dimension: $400 \times 700 \times 800 \text{ (mm)}$
11. Rated voltage: $\text{AC}220\text{V} \pm 10\%$ $50\text{HZ} \pm 10\%$
12. Ambient temperature: $10 \sim 28^{\circ}\text{C}$ Relative humidity: $< 80\% \text{RH}$
13. Others: no strong vibration, airflow, strong electromagnetic interference and corrosive gas



KN-445P Portable Kinematic Viscosity Tester

Overview

KN-445P Portable Kinematic Viscosity bath conforms the **ASTM D445 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)**. It is used to test the 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. The dynamic viscosity, η , can be obtained by multiplying the kinematic viscosity, ν , by the density, ρ , of the liquid. Under certain constant temperature.

Applicable Standard

ASTM D7279, ASTM D445

Features

1. Fully automatic test, cleaning, drying and calculating
2. Fast test speed. The fastest result will be got in one minute, generally within 3 minutes. The whole process of injection, test, cleaning, drying, and result calculation takes no more than 5 minutes.
3. Portable integrated design, customized three-proof engineering box, small size, light weight, and thorough protection.
4. Be able to test both transparent and opaque samples, such as gasoline, diesel, kerosene, cutting fluids, heat transfer fluids, additives, new lubricants, and in-service oils, etc.
5. Cleaning is fast and cheap. Normally will spend no more than 10ml for once cleaning.
6. Built-in with constant calibration, temperature calibration, reliable heating protection.
7. Guided operation, plug-in quick change the viscometer in less than 10 seconds.
8. Adopts high-quality lithium battery cells, be able to keep at 100°C up to 10 hours.
9. Be able to export the data by USB
10. Be able to equip with a disposable filter, which greatly reduces the workload of the operator for sample pretreatment.

Technical parameters

1. Measuring Range: 2~2000mm²/s, the test span between two viscometer tubes is 100 times
2. Injection Volume: 0.3~1ml
3. Temperature control range: 40~100°C ±0.1°C
4. Timing accuracy: 0.01s
5. Total power≤25W
6. Built-in 24V rechargeable lithium battery
7. Weight: 8kg
8. Dimension: 390*230*300mm
9. Ambient requirements
Temperature: 10~28°C, RH<80%
10. There are no strong vibrations, air currents, strong electromagnetic interference and corrosive gases around the laboratory.



KN-445Z-1 Full Automatic Kinematic Viscosity Tester (Dual Baths)

Overview

KN-445Z-1 Automatic Kinematic Viscosity Tester (Dual Baths) conforms the **ASTM D445 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)**. It is used to test the 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. The dynamic viscosity, η , can be obtained by multiplying the kinematic viscosity, ν , by the density, ρ , of the liquid. Under certain constant temperature. The range of kinematic viscosities covered by this tester method is from 0.2 to 300 000 mm²/s at all temperatures.

Features

1. Equipped with 16-bit sample tray, can work all day long. Intelligent preheat, inject, measure, clean, dry, calculate results and repetitive calculation.
2. Independent temperature control of the bath, be able to do test, clean and dry operation to the corresponding bath simultaneously
3. The tester adopts photoelectric or thermal detection, can measure transparent and opaque samples, include Newtonian fluid such as gasoline, diesel, kerosene, cutting fluid, heat conducting oil, additive, fresh and in-use lubricating oils, etc.
4. With PTC sample intelligent preheating function. The tester can control preheating temperature automatically according to the expected temperature of the sample.
Preheat temperature range: room temperature~120℃ Heating rate:15℃/min
Reduce the sample thermostatic time greatly during testing.
5. Build-in Peltier refrigeration system.It uses thermostatic bath liquid as cooling medium directly, features fast cooling speed.
6. Apply the self-adaptive liquid level balance technology. It adapts to large-span adjustment of test temperature, can increase and decrease thermostatic medium automatically during heating and cooling process, keep the same immersion depth.
7. The tester build-in Windows operating system, easy to operate, can be connected to LIMS system and barcode scanner, input sample information automatically.

8. The system build-in automatic calibration function of the viscometer constant, and temperature calibration, internal clock timing calibration, also can convert Kinematic viscosity into Engler viscosity and calculate viscosity Index automatically and other functions
9. Over temperature protection function of both software and hardware. Over temperature alarm, dry heat protection, cleaning solution insufficient prompt, waste liquid cleaning prompt and other functions, ensuring safe operation.
10. Double glass bath design, PT1000 high precision temperature sensor, double-blade stir, make the thermostatic bath keep stable and accurately, temperature precision is 0.005°C .
11. Automatic intelligent dual solvent cleaning function, cleaning mode can be customized.
12. With timing verification port, can do accurate time verification to the instrument through a standard time calibrator.

Technical parameters

1. Standard: ASTM D445, D446, ISO3104
2. Measuring range: $0.3 \sim 10000 \text{ mm}^2/\text{s}$,
10000 times measuring span of the two viscometer tubes
3. Number of sample loaded: 16×2
4. Bath volume: $3\text{L} \times 2$
5. Temperature control range: $20 \sim 100^{\circ}\text{C}$ (built-in Peltier refrigeration)
6. Temperature control accuracy: 0.005°C
7. Timing accuracy: 0.01 S
8. Repeatability: $\leq 0.4\%$
9. Total Power: $\leq 1600 \text{ W}$
10. Main host dimension: $400 \times 700 \times 800 \text{ (mm)} \times 2$
11. Rated voltage: $\text{AC}220\text{V} \pm 10\%$ $50\text{HZ} \pm 10\%$
12. Ambient temperature: $10 \sim 28^{\circ}\text{C}$ Relative humidity: $<80\% \text{RH}$
13. Others: no strong vibration, airflow, strong electromagnetic interference and corrosive gas



KN-445Z-2 Full Automatic Kinematic Viscosity Tester

Overview

KN-445Z-2 Automatic Kinematic Viscosity Tester conforms the **ASTM D445 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)**. It is used to test the 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. The dynamic viscosity, η , can be obtained by multiplying the kinematic viscosity, ν , by the density, ρ , of the liquid. Under certain constant temperature. The range of kinematic viscosities covered by this tester method is from 0.2 to 300 000 mm²/s at all temperatures.

Features

1. Double-layer bath design, be able to maintain a much more constant temperature from 20-100°C $\pm$ 0.01°C with 0.01°C resolution. Using 10# methyl silicone oil as the bath medium, it can be used for a long time without replacement.
2. Adopts ARM single-chip microcomputer to control the temperature and viscosity testing, so that make the test results are more accurate. Using Windows 7 operating system, full English/Russian operation language, convenient for operation, providing a variety of communication interfaces (RS-232, USB and RJ-45, etc.), can be connected to LIMS system and WLAN.
3. Wide kinematic viscosity measurement range, each viscometer adopts two detection bubble design, with 20 times the viscosity measurement range. Every tester is equipped with one calibrated viscometer, the software also has the calibration function, it is able to calibrate the viscometer by the operator for a wider measuring range.
4. Full automatic cleaning process, no need manually operation
5. One PC is able to connect 1~4 testers for operation simultaneously

Technical parameters

1. Standard: ASTM D445, D446, ISO3104
2. Rated voltage: AC220V $\pm$ 10%, 50Hz
3. Total power: 1600W
4. Detection mode: Phototube with 0.01s accuracy, thermistor with 0.01s accuracy
5. Cooling mode: Absolute ethanol
6. Temperature measuring element: Pt100
7. Working temperature: 20~100°C
8. Ambient temperature requirement: -20~50°C



KN-445L Low Temperature Kinematic Viscosity Tester

Overview

KN-445L Low Temperature Kinematic Viscosity Tester is suitable to the standard of **ASTM D445 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)**. It is used to test kinematic viscosity 0°C and below 0°C for liquid petroleum products (Newtonian liquid).

Features

1. Digital display temperature controller, temperature control high precision, easy to adjust.
2. Using Dewar cold bath, transparency, good insulation properties.
3. H lighting equipment facilitate observation the sample of cold bath .
4. Import compressor, refrigeration compressor technology, cooling capacity, cooling speed.
5. Using motor stirrer, stir well, to make cold bath temperature constant.
6. Cold bath cover with two holes, with a new viscometer clip, easy to operate, while oil sample test can be done in parallel to improve efficiency.
7. Instrument reasonable structure, beautiful shape, easy to operate.

Technical parameters

1. Rated voltage: AC 220V±10% 50Hz
2. Power: 1200W
3. Heating power: 800W
4. Cold bath volume: 8L
5. Temperature control: Digital display temperature control
6. Temperature range: 20 ~-60°C
7. Temperature accuracy: ±0.1°C
8. Temperature sensor: Pt100 (Platinum resistor)
9. Slot holes: Single Hole
10. Mixing method: Mixing motor, 1200r/min
11. Cooling time: ≤120min
12. Ambient temperature: ≤30°C Humidity≤80%

Package Information

1. Dimension:
Main host: 580*350*570mm
Cooling source: 330*570*650mm
2. Volume:
Main host: 0.12m³
Cooling source: 0.12m³
3. Weight:
Main host: 20kg
Cooling source: 55kg



KN-7279 Automated Houillon Viscometer

Overview

KN-7929 Automated Houillon Viscometer conforms to **ASTM D7279 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids by Automated Houillon Viscometer**. Many petroleum products and some non-petroleum products are used as lubricants in the equipment, and the correct operation of the equipment depends upon the appropriate viscosity of the lubricant being used. Additionally, the viscosity of many petroleum fuels is important for the estimation of optimum storage, handling, and operational conditions. Thus, the accurate determination of viscosity is essential to many product specifications.

The viscosity of used oils is a commonly determined parameter in the oil industry to assess the effect of engine wear on the lube oils used, as well as the degradation of the engine parts during operation.

The Houillon viscometer tube method offers automated determination of kinematic viscosity. Typically a sample volume of less than 1mL is required for the analysis.

Features

1. Fast analysis, be able to get the results within 15s under the fast analysis mode. The results are generally obtained within 3 minutes. The whole process of sample injection, test, cleaning, drying, and result calculation generally takes no more than 7 minutes.
2. High automation. Test, cleaning, drying, and result calculation are all done automatically
3. Be able to test transparent and opaque samples, including gasoline, diesel, kerosene, cutting fluid, heat transfer oil, additives, new oil for lubricating oil and oil in use and other Newtonian liquids
4. Fully automatic cleaning, fast cleaning and low cleaning cost. A cleaning process generally consumes no more than 10 ml cleaning solution
5. Many auxiliary functions: constant calibration, temperature calibration, internal clock timing verification, automatic calculation of viscosity index, automatic conversion of kinematic viscosity to Enn's viscosity
6. Software and hardware dual over-temperature protection, over-temperature alarm, anti-dry burning protection function

7. The heating and cooling speed is fast. The fastest heating and cooling rate is 5 °C/min
8. Adopts double-layer glass cylinder, the temperature is more uniform
9. Adopts PT500 high-precision temperature sensor, the temperature of the constant temperature bath is stable and accurate, and the temperature control accuracy reaches 0.01 °C
10. It can be equipped with a disposable filter, which greatly reduces the workload of the operator on sample pretreatment
11. Quick viscometer replacement without emptying the bath
12. Be able to transmit data through WIFI, connect to LIMS system

Technical parameters

1. Rated voltage: AC220V±10% 50Hz
2. Ambient temperature: 10~28°C
3. Relative humidity < 80%
4. Measuring range: 0.3~6000mm²/s, the measuring span of a single viscometer is 10 times
5. Sample volume: 0.3~1ml
6. Temperature control range: 20~100°C (chiller is optional, if the expected temperature is lower than 40°C)
7. Temperature control accuracy: 0.01°C
8. Timing accuracy: 0.01s
9. Repeatability: ≤0.05%
10. Total power: ≤300W
11. Dimension: 330*200*450mm
12. There should be no strong vibration, airflow, strong electromagnetic interference and corrosive gas around the laboratory



KN-7279A Automated Houillon Viscometer

Overview

KN-7929A Automated Houillon Viscometer conforms to **ASTM D7279 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids by Automated Houillon Viscometer**. Many petroleum products and some non-petroleum products are used as lubricants in the equipment, and the correct operation of the equipment depends upon the appropriate viscosity of the lubricant being used. Additionally, the viscosity of many petroleum fuels is important for the estimation of optimum storage, handling, and operational conditions. Thus, the accurate determination of viscosity is essential to many product specifications.

The viscosity of used oils is a commonly determined parameter in the oil industry to assess the effect of engine wear on the lube oils used, as well as the degradation of the engine parts during operation.

The Houillon viscometer tube method offers automated determination of kinematic viscosity. Typically a sample volume of less than 1mL is required for the analysis.

Features

1. Fast analysis, be able to get the results within 15s under the fast analysis mode. The results are generally obtained within 3 minutes. The whole process of sample injection, test, cleaning, drying, and result calculation generally takes no more than 7 minutes.
2. High automation. Test, cleaning, drying, and result calculation are all done automatically
3. Be able to test transparent and opaque samples, including gasoline, diesel, kerosene, cutting fluid, heat transfer oil, additives, new oil for lubricating oil and oil in use and other Newtonian liquids
4. Fully automatic cleaning, fast cleaning and low cleaning cost. A cleaning process generally consumes no more than 10 ml cleaning solution
5. Many auxiliary functions: constant calibration, temperature calibration, internal clock timing verification, automatic calculation of viscosity index, automatic conversion of kinematic viscosity to Enn's viscosity
6. Software and hardware dual over-temperature protection, over-temperature alarm, anti-dry burning protection function

7. The heating and cooling speed is fast. The fastest heating and cooling rate is $5^{\circ}\text{C}/\text{min}$
8. Adopts double-layer glass cylinder, the temperature is more uniform
9. Adopts PT500 high-precision temperature sensor, the temperature of the constant temperature bath is stable and accurate, and the temperature control accuracy reaches 0.01°C
10. It can be equipped with a disposable filter, which greatly reduces the workload of the operator on sample pretreatment
11. Quick viscometer replacement without emptying the bath
12. Be able to transmit data through WIFI, connect to LIMS system

Technical parameters

1. Rated voltage: $\text{AC}220\text{V}\pm 10\%$ 50Hz
2. Ambient temperature: $10\sim 28^{\circ}\text{C}$
3. Relative humidity $< 80\%$
4. Measuring range: $0.3\sim 6000\text{mm}^2/\text{s}$, the measuring span of two viscometers is 100 times
5. Sample volume: $0.3\sim 1\text{ml}$
6. Temperature control range: $20\sim 100^{\circ}\text{C}$ (chiller is optional, if the expected temperature is lower than 40°C)
7. Temperature control accuracy: 0.01°C
8. Timing accuracy: 0.01s
9. Repeatability: $\leq 0.05\%$
10. Total power: $\leq 400\text{W}$
11. Dimension: $420*300*500\text{mm}$
12. There should be no strong vibration, airflow, strong electromagnetic interference and corrosive gas around the laboratory



KN-7279B Automated Houillon Viscometer

Overview

KN-7929B Automated Houillon Viscometer conforms to **ASTM D7279 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids by Automated Houillon Viscometer**. Many petroleum products and some non-petroleum products are used as lubricants in the equipment, and the correct operation of the equipment depends upon the appropriate viscosity of the lubricant being used. Additionally, the viscosity of many petroleum fuels is important for the estimation of optimum storage, handling, and operational conditions. Thus, the accurate determination of viscosity is essential to many product specifications.

The viscosity of used oils is a commonly determined parameter in the oil industry to assess the effect of engine wear on the lube oils used, as well as the degradation of the engine parts during operation.

The Houillon viscometer tube method offers automated determination of kinematic viscosity. Typically a sample volume of less than 1mL is required for the analysis.

Features

1. Fast analysis, be able to get the results within 15s under the fast analysis mode. The results are generally obtained within 3 minutes. The whole process of sample injection, test, cleaning, drying, and result calculation generally takes no more than 7 minutes.
2. High automation. Be able to work continuously. Test, cleaning, drying, and result calculation are all done automatically
3. Be able to test transparent and opaque samples, including gasoline, diesel, kerosene, cutting fluid, heat transfer oil, additives, new oil for lubricating oil and oil in use and other Newtonian liquids
4. The measurement data is accurate. The tester has the function of secondary accurate quantification, automatically cuts the sample liquid column, precisely controls the sample volume, and no longer relies on micropipette quantification, avoids the limitations and deviations of pipette quantification, and ensures accurate data
5. Fully automatic cleaning, fast cleaning and low cleaning cost. A cleaning process generally consumes no more than 10 ml cleaning solution
6. The software is intelligent and user-friendly. Automatically select viscometers, rationally allocate sample test sequences, add samples, delete samples, and prioritize tests at any time. Automatically calculate the viscosity index if the conditions are met.
7. Many auxiliary functions: constant calibration, temperature calibration, internal clock timing verification, automatic conversion of kinematic viscosity to Enn's viscosity
8. Software and hardware dual over-temperature protection, over-temperature alarm function, anti-

dry burning protection function, cleaning agent liquid level, waste liquid level alarm function

9. Adopts double-layer glass cylinder, the temperature is more uniform. Different temperature points can be tested and cleaned at the same time without affecting each other. Quick viscometer replacement without emptying the bath
10. Equipped with an air source power cabinet, once the test is completed, cleaning will be done at once
11. Adopt micro automatic sampling system, low failure rate, smooth sample injection, and small vibration
12. Adopts PT1000 high-precision temperature sensor, the temperature of the constant temperature bath is stable and accurate, and the temperature control accuracy reaches 0.005 °C
13. Adopts advanced optical fiber amplifier, high temperature packaged optical fiber, it features higher signal stability and accuracy
14. Windows operating system, simple operation, friendly man-machine interface, can be connected to LIMS system, can be connected to an external scan code gun, and automatically enter sample information
15. It can be equipped with a disposable filter, which greatly reduces the workload of the operator on sample pretreatment

Technical parameters

1. Rated voltage: AC220V±10% 50Hz
2. Ambient temperature: 10~28°C
3. Relative humidity < 80%
4. Measuring range: 0.3~6000mm²/s, the measuring span of two viscometers is 100 times
5. Sample volume: 0.3~1ml
6. Bath capacity: 2L*2
7. Temperature control range: 20~100°C (chiller is optional, if the expected temperature is lower than 40°C)
8. Temperature control accuracy: 0.005°C
9. Timing accuracy: 0.01s
10. Repeatability: ≤0.05%
11. Total power: ≤600W
12. Dimension: 350*640*600mm
13. There should be no strong vibration, airflow, strong electromagnetic interference and corrosive gas around the laboratory



KN-7279C Automated Houillon Viscometer

Overview

KN-7279C Automated Houillon Viscometer conforms to **ASTM D7279 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids by Automated Houillon Viscometer**. Many petroleum products and some non-petroleum products are used as lubricants in the equipment, and the correct operation of the equipment depends upon the appropriate viscosity of the lubricant being used. Additionally, the viscosity of many petroleum fuels is important for the estimation of optimum storage, handling, and operational conditions. Thus, the accurate determination of viscosity is essential to many product specifications.

Features

1. Single-chip microcomputer control, color touch screen operation, stable and reliable
2. Fast test speed, some results can be got within 30s, generally will get results around 3~5 minutes
3. Measurement, cleaning, drying and result calculation will be done automatically
4. Fast cleaning speed with low cost, every cleaning will cost only about 10ml cleaning solvent
5. Software and hardware double over-temperature protection, over-temperature alarm, anti-dry burning protection function.
6. Required sample volume is less than 1ml
7. Be able to calculate the viscosity index, and with multi-point temperature correction function

Technical parameters

1. Viscosity measuring range: 0.5~3000 (select the corresponding viscometer by the required range)
2. Temperature control range: 20~100°C (External cooling source is required for 20°C)
3. Temperature accuracy: $\pm 0.02^{\circ}\text{C}$
4. Test station: Two
5. Timing accuracy: 0.01s
6. Test accuracy $\leq 0.68\%$
7. Heating mode: Spiral heater
8. Display: Color touch screen
9. Control mode: Automatic measurement, cleaning and drying
10. Data storage: 1000 pieces
11. Rated voltage: AC220V $\pm 10\%$, 50Hz
12. Total power: 1500W
13. Dimension: 160*400*350mm
14. Weight: 15kg



KN-2983 Low Temperature Brookfield Viscometer

Overview

KN-2983 Low Temperature Brookfield Viscometer conforms to **ASTM D2983 Standard Test Method for Low-Temperature Viscosity of Automatic Transmission Fluids, Hydraulic Fluids, and Lubricants using a Rotational Viscometer**. It covers the use of Brookfield viscometers of appropriate torque for the determination of the low shear- rate viscosity of lubricants. The test is applied over the viscosity range of 500 to 900 000mPa·s within a low temperature range appropriate to the capacity of the viscometer head. Mainly used for testing liquid lubricants, such as gear oils, torque and tractor fluids, and industrial and automotive hydraulic oils

Features

1. Four precise Spindles strictly conforms to the standard, great repeatability
2. Semiconductor cooling bath with transparent observation. Inner LED light makes operation more convenient.
3. Standard Test Tube Stator, inner diameter 22~22.5mm,length: 120mm
4. Imported digital rotary viscometer, equipped with Seven gear spindle speed
5. Microcomputer temperature controller with PID control, PT100 temperature sensor, with high precision.
6. Big Viscosity detection range: 1000~1000000mPa.s

Technical parameters

1. Applicable standards: ASTM D2983
2. Refrigerating method: semiconductor refrigeration
3. Temperature control method: digital PID temperature controller
4. Temperature control range: ambient temperature~-70±0.1℃
5. Required lowest test temperature: -40℃
6. Rotate speed:0.5~60r/min
7. Power:1200W
8. Rated voltage:AC220V 50HZ



KN-4603 Inherent Viscosity Tester for PET Polyester

Overview

KN-4603 Inherent Viscosity Tester for PET Polyester conforms the **ASTM D4603 Inherent Viscosity Tester for PET Polyester**. It is used to test the of liquid petroleum products, both transparent and opaque. It used for the determination of the inherent viscosity of poly (ethylene terephthalate) (PET) soluble at 0.50% concentration in a 60/40 phenol/1,1,2,2-tetrachloroethane solution by means of a glass capillary viscometer. Highly crystalline forms of PET that are not soluble in thsi solvent mixture will require a different procedure.

Features

1. Multifunction Viscometer Holder can hold the cannon ubbelohde viscometer (Size 1B)
2. The tester is equipped with ASTM 118C thermometer (for use at 30°C) Range:28.6°C~31.4°C, 0.5°C
3. The tester adopts digital display temperature control with high temperature controlling precision.
4. The tester is equipped with heat preservation bath.
5. The rotational constant bath must be provided when the temperature is 20 °C.
6. Rational design with elegant structure and easy operation.

Technical parameters

1. Rated voltage: AC220V±10% 50Hz
2. Temperature control range: 20~100°C
3. Temperature control mode: Digital display temperature control
4. Precision of temperature control: ±0.1°C (±0.01 °C)
5. Output power: 1800W
6. Ambient requirements: Temperature: 10~40°C; Humidity≤85%

Package Information

1. Dimension: 410*470*650mm
2. Volume: 0.13m³
3. Weight: 25kg



KN-5293 Cold Cranking Simulator (CCS) Apparent Viscosity Tester

Overview

KN-5293 Cold Cranking Simulator (CCS) Apparent Viscosity Tester conforms to the **SAE J300** and **ASTM D5293 Standard Test Method for Apparent Viscosity of Engine Oils and Base Stocks Between -5 and -35°C Using Cold-Cranking Simulator**, which used for determining apparent viscosity of engine oils and base stocks by cold cranking simulator (CCS) at temperatures between -5 and -35°C at shear stresses of approximately 50 000 to 100 000 Pa and shear rates of approximately 105 to 104 s⁻¹ for viscosities of approximately 900 to 25 000mPa•s. The range of an instrument is dependent on the instrument model and software version installed. Apparent Cranking Viscosity results by this method are related to engine-cranking characteristics of engine oils.

Features

1. We use retro reflector to observe the experimental phenomenon
2. Total English version operation interface.
3. Omron temperature controller, Light touch button with convenient operation.
4. The tester can detect rotary speed automatically, use fine tuning knob to control current, reduce much manual operation error.
5. Equipped with double imported compressors, refrigeration depth can reach -60°C.
6. The tester is equipped with imported click drive with good precision.
7. It can print and store test result.
8. The tester will calculate result automatically after calibrating with CANNON CL160 viscosity standards
9. We adopt embedded operating system with highly stable and reliable working application.
10. Second generation rotor, low torque testing condition with high repeatability
11. The tester will automatically shut down and start to heat after each experiment, this function is good for rapid clean.
12. The tester recommends refrigeration speed automatically.
13. The tester is equipped with digital rotary encoder to detect rotary speed automatically.
14. User can edit and store all standard oil's reference value
15. The tester has a capacity of storing over 1000 tests data, very easy to check.
16. Software has High viscosity function to avoid Weissenberg effect

Technical parameters

1. Rated Voltage: AC220V±20%
2. Power: 1500W
3. Temperature Range: external circulated alcohol bath temperature control range ~-60°C
4. Cooling Bath Temperature accuracy: ±0.1°C
5. Stator Temperature Accuracy: ±0.05°C
6. Temperature display accuracy: ±0.01°C
7. Viscosity Measuring Range: 1500~27000mPa.s
8. Ambient Requirements: temperature 10~40°C, humidity≤85%



KN-5293Z Cold Cranking Simulator (CCS) Apparent Viscosity Tester

Overview

KN-5293Z Cold Cranking Simulator (CCS) Apparent Viscosity Tester conforms to the **SAE J300** and **ASTM D5293 Standard Test Method for Apparent Viscosity of Engine Oils and Base Stocks Between -5 and -35°C Using Cold-Cranking Simulator**, which used for determining apparent viscosity of engine oils and base stocks by cold cranking simulator (CCS) at temperatures between -5 and -40°C at shear stresses of approximately 50 000 to 100 000 Pa and shear rates of approximately 105 to 104 s⁻¹ for viscosities of approximately 900 to 25 000mPa•s. The range of an instrument is dependent on the instrument model and software version installed. Apparent Cranking Viscosity results by this method are related to engine-cranking characteristics of engine oils.

Application

Engine oil, lubricating oil, base oil

Features

1. Windows operation system
2. Full automatic test process, only need to inject sample, select test temperature
3. Compound compressor cooling with big cooling capacity
4. One button operation, no need operator monitors the tester
5. Test results can be saved and printed
6. Automatic calculates the test results after being calibrated by standard oil
7. Be able to edit, add and save all related data of standard oil, already built-in 23 kinds of standard oil data
8. Improved rotor, good repeatability under low torque test status
9. After the test, the tester will stop the test and warm up automatically for easy cleaning
10. After selecting the test temperature, software will give the recommended cooling temperature
11. Omron rotary encoder detects the rotating speed
12. Every temperature point has its own B value, also will display the corresponding curve
13. Be able to save 2000 pieces of test results
14. 1 hour is able to test 7 samples
15. Minimum sampling volume is 5ml

Technical parameters

1. Temperature Range: external circulated ethanol bath temperature control range $\sim -70^{\circ}\text{C} \pm 0.1^{\circ}\text{C}$
2. Stator temperature can reach -40°C
3. Stator temperature accuracy: 0.05°C
4. Measuring range: 1000~27000mPa.s
5. Ambient temperature: $10\sim 40^{\circ}\text{C}$
6. Relative humidity $< 85\%$
7. Power $< 2.5\text{kW}$
8. Rated voltage: $\text{AC}220\text{V} \pm 20\%$



KN-4684 Yield Stress Apparent Viscosity of Engine Oils Tester

Overview

KN-4684 Yield Stress Apparent Viscosity of Engine Oils Tester is suitable to the standards of **ASTM D3829** and **ASTM D4684**. It is used to predict the borderline pumping temperature and determine the yield stress apparent viscosity of engine oils at low temperature. Temperature controlled from -10~-40°C. All the testing processes controlled by the computer automatically.

Features

1. Touch screen operation, built-in CPU can control the temperature curve accurately
2. Adopts various kinds of method programs, one button operation
3. Built-in cleaning mode, easy to clean
4. Equip the dedicated cryostat and new special defrost system

Technical parameters

1. Rated voltage: AC220V±10% ,50Hz
2. Power: 1800W
3. Test temperature: -10~-40°C
4. Cleaning temperature: 20~80°C
5. Accuracy: ±0.1°C
6. Test holes: 4
7. Ambient requirement Temperature: 5~40°C
8. Humidity≤85%



KN-5481 High-Temperature and High-Shear Rate Apparent Viscosity Tester (HTHS)

Overview

KN-5481 High-Temperature and High-Shear Rate Apparent Viscosity Tester (HTHS) conforms to **ASTM D5481 Standard Test Method for Measuring Apparent Viscosity at High-Temperature and High-Shear Rate by Multicell Capillary Viscometer**, it covers the laboratory determination of high-temperature high-shear (HTHS) viscosity of engine oil at a temperature of 150°C using a multicell capillary viscometer containing pressure, temperature, and timing instrumentation. The shear rate for this test method corresponds to an apparent shear rate at the wall of 1.4 million reciprocal seconds ($1.4 \times 10^6 \text{s}^{-1}$). This shear rate has been found to decrease the discrepancy between this test method and other high temperature high-shear test methods used for engine oil specifications. Viscosities are determined directly from calibrations that have been established with Newtonian oils with viscosities from 2 to 5 mPa-s at 150°C.

Features

1. Touch screen operation, built-in standard computer calculation program, easy to operation
2. Imported needle valve, full time safe pressure detecting system
3. One button to start the test, easy and convenient to operate

Technical parameters

1. Applicable standard: ASTM D5481
2. Temperature control method: Electrical heating bar
3. Temperature control range: Ambient-150°C $\pm$ 0.1°C
4. Capillary tube dimension: $\phi 0.15 \times 18 \text{mm}$
5. Power: 700W
6. Pressure oxygen source: Oxygen, CO₂

Package Information

1. Dimension: 360*450*630mm
2. Volume: 0.1m³
3. Weight: 45kg



KN-4683 Tester for Viscosity by TBS

Overview

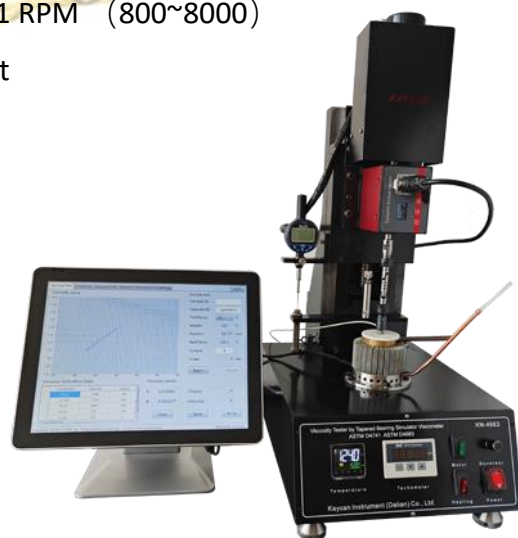
KN-4683 Tester for Viscosity by TBS conforms to **ASTM D4683 Standard Test Method for Measuring Viscosity of New and Used Engine Oils at High Shear Rate and High Temperature by Tapered Bearing Simulator Viscometer at 150 °C** and **ASTM D4741 Standard Test Method for Measuring Viscosity at High Temperature and High Shear Rate by Tapered-Plug Viscometer**. The ASTM D4683 covers the laboratory determination of the viscosity of engine oils at 150 °C and 1.0·10⁶s⁻¹ using a viscometer having a slightly tapered rotor and stator called the Tapered Bearing Simulator (TBS) Viscometer.

Features

1. Heating method: high temperature oil bath
2. Test temperature: 100 °C, 150 °C
3. Test station: 5
4. Operating system: Windows 7
5. Results calculation: Dedicated software, Manual sampling, 5 tests per hour
6. Do not need solvent cleaning, only need little fresh sample to flush
7. Software will automatically calculates the calibration deviation of the standard oil
8. Be able to store and print the test results

Technical parameters

1. Rated voltage: 210~240V, 50Hz/60Hz
2. Shear rate: Lowest 50000s⁻¹, highest can reach 7000000s⁻¹ RPM (800~8000)
3. Safety control: Overheating, programmable temperature limit
4. Total power: 2.5KW
5. Sample volume: 50ml
6. Test time: 5~10min per sample
7. Bath temperature: 40~200 °C , ±0.1 °C



KN-2170 Asphalt Kinematic Viscosity Bath

Overview

KN-2170 Asphalt Kinematic Viscosity Bath conforms to the **ASTM D2170 Standard Test Method for Kinematic Viscosity of Asphalts (Bitumens)**, it is used this tester is used for determination of viscosity of asphalt ,road oils and distillation residues of liquid asphalts all at 60°C and asphalt cements at 135°C in the range from 6 to 100000cSt.

Features

1. Double-layer constant temperature bath: the inner layer is made of $\phi 300 \times 300$ mm hard glass cylinder, the outer layer of insulation is $\phi 360 \times 285$ mm of plexiglass tube, the air insulation layer is between the inner and outer layers, and the bathtub cover has four holes, respectively Place the capillary viscometer clip and bakelite cover. Three adjustment screws are installed on the clamp to adjust the verticality of the capillary viscometer.
2. The lighting adopts 220V16W2D fluorescent lamp, which provides a guarantee for clearly observing the reading of the capillary viscometer.
3. Temperature controller:
 - 1) Temperature sensor: industrial platinum resistance, its index number is Pt100.
 - 2) Temperature controller: intelligent temperature controller, with a temperature control accuracy of $\pm 0.1^\circ\text{C}$.
 - 3) Heating system: 1000W and 600W double electric heating tube heating. The 1000W auxiliary heating is turned off, and only 600W temperature control heating works to ensure the stability of the bath temperature.
4. Stirring system: The electric mixer is a single-phase asynchronous motor. The electric shaft and the stirring shaft are separated by epoxy rods, which will not affect the normal operation of the motor.

Technical parameters

1. Power: AC220V $\pm 10\%$, 50Hz
2. Bath heating power: 2 steps, 1000w (Auxiliary heating) 600w (temperature controlling heat)
3. Bath temperature: room temperature $\sim 150.0^\circ\text{C}$.
4. Temperature accuracy: $\pm 0.1^\circ\text{C}$.
5. Thermometers: subdivision: 0.1°C , range: $100\sim 150^\circ\text{C}$.
6. Bath volume: 20L.
7. Test station: Four
8. Stirring motor: power: 6w, RPM: 1200r/min.
9. Ambient temperature: $-10^\circ\text{C} \sim +35^\circ\text{C}$.
10. Relative humidity: less than 85%
11. Sensor: Pt100
12. Total consumption: less than 1800W



KN-2171 Tester for Viscosity of Asphalts

Overview

KN-2171 Tester for Viscosity of Asphalts conforms to **ASTM D2171 Standard Test Method for Viscosity of Asphalts by Vacuum Capillary Viscometer**. The viscosity at 60°C characterizes flow behavior and may be used for specification requirements for cutbacks and asphalt binders. This time is measured for a fixed volume of the liquid to be drawn up through a capillary tube by means of vacuum, under closely controlled conditions of vacuum and temperature. The viscosity in Pascal-seconds is calculated by multiplying the flow time in seconds by the viscometer calibration factor.

Features

1. Functions of storing and time measuring
2. Automatic regulation of the temperature and vacuum degree
3. Automatic timing function
4. LCD screen with easy operation interface
5. High precision pressure sensor to measure the vacuum degree
6. Be able to control the parameters of three groups of capillary viscometers and calculate the viscosity value of each section. Then the tester will pick the valid data as per the standard requirements, and calculate the average value.
7. Equipped with printer, be able to print the test result and historical data

Technical parameters

1. Rated voltage: AC220V $\pm$ 10%, 50Hz
2. Ambient temperature requirement: 0~50°C
3. Ambient humidity $\leq$ 85%
4. Temperature control range: 0.00~100.00°C $\pm$ 0.1°C
5. Pressure range: 300 $\pm$ 0.5mmHg
6. Timing accuracy $\leq$ 0.5%
7. Measuring range: 4.2~580000Pa.s



KN-6278 Tester for Shear Stability of Polymer Containing Fluids

Overview

KN-6278 Tester for Shear Stability of Polymer Containing Fluids conforms to **ASTM D6278 Standard Test Method for Shear Stability of Polymer Containing Fluids Using a European Diesel Injector Tester**. The tester determines oxidation stability of new and in service turbine oils and other industrial oils. It utilizes an oxygen pressured vessel 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.

Features

1. The tester consists of motor, coupler, gears, oxygen bomb tray, oxygen bomb, heater, temperature controller, touched LCD screen and pressure transmitter.
2. The oxygen bomb is equipped with free all angle rotating transmitter, can transmit signal accurately with a long lifetime.
3. The tester is equipped with overflow port and oil outlet, rotate with low noise.
4. The tester is equipped with 4 groups of pressure transmitters and 2 groups baths, easy to test.
5. Controlled by a LCD touch screen with easy operation, can display the actual time pressure and curve and calculate the final result, it can store over two hundred result, the data can be printed and deleted, user can find the historical data to calculate the results.

Technical parameters

1. Test bomb: four
2. Test bath: 2 groups; 30L
3. Bath temperature: 150±0.1°C
4. Motor rotary speed (RPM): 105±5 r/min
5. Heat power: 2500W/set
6. Ambient requirements: Temperature: 10~40°C, Humidity≤85%



KN-51350-6 Tester for Shear Stability of Lubricating Oils Containing Polymers

Overview

KN-51350-6 Tester for Shear Stability of Lubricating Oils Containing Polymers conforms to **DIN 51350-6. Testing of lubricants - Testing in the Shell four-ball tester - Part 6: Determination of shear stability of lubricating oils containing polymers**. The tester is used for the determination of the shear stability in the Shell four-ball tester of lubricating oils containing polymers.

The tapered roller shearing system is a system for assessing the viscosity shear stability of a transmission lubricant. The equipment is a standard four-ball extrusion tester with a constant temperature device. Its composition consists of: embedded body, mandrel, tapered roller friction pair, tapered roller bearing, and temperature control instrument

The tapered roller bearing tester (KRL) is a mechanical shear stress caused by the lubricating oil under the test conditions similar to the gearbox, resulting in permanent viscosity loss and movement according to the test lubricant before and after the test. The rate of decrease in viscosity is indicative of the shear stability of the lubricating oil. This test method evolved from the sixth part of the German standard DIN 51350, also known as KRL (German Kugel Rollen Lager abbreviated) or CEC L-45-99.

Note: This tester also conforms to the four ball wear standards as below

ASTM D2783 Standard Test Method for Measurement of Extreme-Pressure Properties of Lubricating Fluids (Four-Ball Method)

ASTM D2266 Standard Test Method for Wear Preventive Characteristics of Lubricating Grease (Four-Ball Method)

ASTM D4172 Standard Test Method for Wear Preventive Characteristics of Lubricating Fluid (Four-Ball Method)

Technical Parameters

1. Motor speed: 1475 ± 25 RPM
2. Temperature control mode: Imported compressor
3. Sample temperature: 60 ± 1 °C
4. Sample volume: 40 ± 0.5 ml
5. Test load: 5000 ± 200 N
6. Test period: 174000 (about 19h40min)
7. Power: 5.5KW
8. Weight: 150kg
9. Dimension: 640*380*895mm



KN-2272 Oxidation Stability Bath, RPVOT / RBOT / TFOUT

Overview

KN-2272 Oxidation Stability Bath, RPVOT / RBOT / TFOUT conforms to **ASTM D2112 Standard Test Method for Oxidation Stability of Inhibited Mineral Insulating Oil by Pressure Vessel**, **ASTM D2272 Standard Test Method for Oxidation Stability of Steam Turbine Oils by Rotating Pressure Vessel**, **ASTM D4742 Standard Test Method for Oxidation Stability of Gasoline Automotive Engine Oils by Thin-Film Oxygen Uptake (TFOUT)**. It determines oxidation stability of new and in-service turbine oils and other industrial oils; it utilizes an oxygen-pressured vessel 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.

Features

1. The tester consists of motor, coupler, gears, oxygen bomb tray, oxygen bomb, heater, temperature controller, touched LCD screen and pressure transmitter.
2. The oxygen bomb is equipped with free all angle rotating transmitter, can transmit signal accurately with a long lifetime.
3. The tester is equipped with overflow port and oil outlet, rotate with low noise.
4. The tester is equipped with 4 groups of pressure transmitters and 2 groups baths, easy to test.
5. Controlled by a LCD touch screen with easy operation, can display the actual time pressure and curve and calculate the final result, it can store over two hundred result, the data can be printed and deleted, user can find the historical data to calculate the results.

Technical parameters

1. Test station: Two
2. Test bath: 2 groups; 30L
3. Bath temperature: $150 \pm 0.1^\circ\text{C}$
4. Motor rotary speed (RPM): 105 ± 5 r/min
5. Heat power: 2500W/set
6. Ambient requirements: temperature: $10 \sim 40^\circ\text{C}$, Humidity $\leq 85\%$

Package Information

1. Dimension: 750*670*1170mm
2. Volume: 0.59m³
3. Weight: 110kg



KN-OXIDATE Metal Bath Oxidation Stability Tester

Overview

KN-OXIDATE Metal Bath Oxidation Stability Tester conforms to ASTM D2272, ASTM D2112, ASTM D7098 and ASTM D4742. The oxidation stability is place the test material in a stainless steel pressure chamber, is exposed to oxygen at a specific test temperature and pressure.

Features

1. It can test new and in-service oils, lubricating oils used in gasoline engine service, lubricating grease
2. The metal chamber reduces the unpleasant odor emitted by the medium oil during the test, and eliminates the danger that may occur due to the long time test
3. The instrument can automatically do detection, calculation and control, and the entire test process does not require personnel to be on duty, with a high degree of automation. Real-time communication with the host computer, the connection method is simple and reliable
4. The benchtop design is small in size, and the metal bath no needs bath liquid
5. Simple ventilation, no need to place it in a fume hood, and exhaust gas and odors can be easily discharged through plastic pipes
6. Be able to do two tests simultaneously
7. Be able to calibrate the calibration temperature and pressure to ensure the accuracy of pressure and temperature
8. Windows microcomputer platform, better scalability. Automatically record data and test results during testing. The test history can be queried and compared, and the pressure change curve can be printed out. Automatically judge the pressure inflection point and automatically end the test
9. Be able to select all corresponding standard in the software (ASTM D2272, ASTM D2112, ASTM D7098 and ASTM D4742)

Technical parameters

1. Rated voltage: 220V $\pm$ 10%
2. Heating power: 2500W
3. Pressure transmitter range: 0~1.6MPa, precision: $\pm$ 2‰
4. Temperature control range: Ambient~200°C, continuously adjustable
150°C is mostly common used
5. Temperature control precision: $\pm$ 0.1°C
6. Rotating speed: 100 $\pm$ 5rpm
7. Angle between the oxygen bomb and the horizontal: 30°



RPVOT Test – ASTM D2272 & ASTM D2112

The Rotating Pressure Vessel Oxidation Test (RPVOT, formerly RBOT) uses an oxygen pressured vessel to evaluate the oxidation stability of new and in-service oils with water and a copper catalyst coil at 150°C for ASTM D2272 or 140°C for ASTM D2112.

An electrically heated, dry pressure chamber replaces the hot oil bath. The sample rotates axially at 100 RPM at an angle of 30° with-in the stationary pressure chamber by an internal magnetic drive motor.

The pressure chamber seals with a unique lid designed to fasten via three knurled thumb nuts. Our RPVOT enables testing proficiency due to independent sample analysis which increases productivity, especially with the multi-unit setup.

TFOUT Test – ASTM D4742 & ASTM D7098

The Thin Film Oxidation Uptake Test (TFOUT) evaluates the oxidation stability of lubricating oils used in gasoline engine service. The test operates by reacting an oil/catalyst mixture at 160°C while pressurized with oxygen. The end-of-test is measured by the oxidation induction time resulting from the depletion of the antioxidant package. The TFOUT screens formulated oils prior to engine tests and is useful for quality control of oxidation stability of re-refined oils from batch to batch.

The primary adjustments when performing the TFOUT test include a temperature setting of 160°C, Our TFOUT Catalyst mixture in a small segmented dish, and a Chamber Volume Reducer.



KN-7525 Rapid Small Scale Oxidation Stability Tester (RSSOT)

Overview

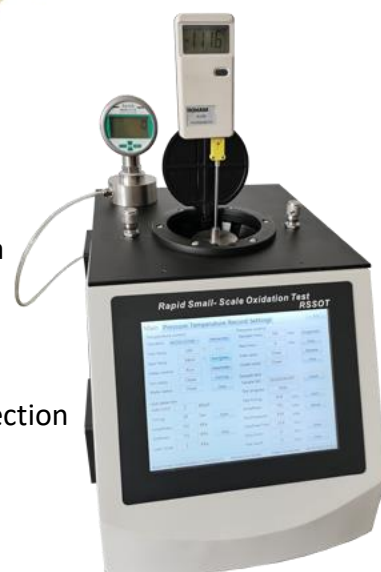
KN-7525 Rapid Small Scale Oxidation Stability Tester (RSSOT) conforms to **ASTM D7525 Standard Test Method for Oxidation Stability of Spark Ignition Fuel—Rapid Small Scale Oxidation Test (RSSOT)** and **ASTM D7545 Standard Test Method for Oxidation Stability of Middle Distillate Fuels—Rapid Small Scale Oxidation Test (RSSOT)**.

Features

1. Including an oxidation pressure vessel, which is equipped with a test sample cup that can be heated quickly, and equipped with a pressure sensor that can measure pressure up to 2000kPa and a temperature sensor with resolution of 0.1°C.
2. The integrated cooling fan cools the pressure vessel from the test temperature to the ambient temperature through air flow.
3. Temperature calibration device, including a cover and a temperature sensor, a thermometer with an accuracy of $\pm 0.1^{\circ}\text{C}$.
4. 2000kPa pressure sensor, calibrated to 10kpa
5. The extremely thin stainless steel pipe makes the dead volume small. With the help of high-temperature and high-pressure solenoid valve, the flow-limiting proportional valve realizes the oxygen filling and deoxygenation actions at the specified flow rate. During the test, the pressure and temperature in the oxidation vessel are continuously recorded. Calculate the oxidation time and judge the oxidation end point.
6. Adopt safety protection insulation heat shield, high pressure relief valve, automatic pressure relief device to protect the personal safety.
7. The independent instrument (without external PC) adopts a modernly designed 5.7" touch screen. During the test, the pressure curve can be monitored on the screen, and temperature, time and pressure value can be displayed in real time.

Technical parameters

1. Temperature: Up to 180°C
2. Cooling method: Cooling fan & Automatic Peltier
3. Sample Volume: 5ml or 4g
4. Test cell: Stainless-steel
5. High temperature and high pressure module pressure range: Up to 2000kPa
6. Inner storage device: No limit
7. Screen display: Pressure, temperature and pressure curve
8. Oxygen source: 800kPa (Max input pressure)
9. Safety: cell cover, isolation can, overheat protection and overpressure protection
10. Power: 220V, 50Hz/60Hz, 1000W



KN-525Z Gasoline Oxidation Stability Tester

Overview

KN-525Z Gasoline Oxidation Stability Tester conforms to **ASTM D525 Standard Test Method for Oxidation Stability of Gasoline (Induction Period Method)**. It is used to test the stability of gasoline in finished form only, under accelerated oxidation conditions. (Warning This test method is not intended for determining the stability of gasoline components, particularly those with a high percentage of low boiling unsaturated compounds, as these may cause explosive conditions within the tester.).

Features

1. The temperature control adopts human-computer interface of touch screen, easy to use, convenient to observe.
2. The screen shows terminal point after reaching the inflection point.
3. The instrument adopts advocate complementary type heating, warming fast and reducing the power consumption.
4. Bath adopts stainless steel material, corrosion resisting and antioxidant.
5. Equipped with automatic water charging system, keeping the water level.
6. Be able to do two groups of tests , improving the working efficiency.
7. Be able to detect the leakage of testing bomb and show the result automatically.
8. Adopts imported AJG, high accuracy, good stability, can revise the pressure

Technical parameters

1. Rated voltage: 220V $\pm$ 10%, 50Hz
2. Main heating power: 1000W
3. Auxiliary heating power: 1500W
4. Temperature controlling point: 100 $^{\circ}$ C, $\pm$ 0.5 $^{\circ}$ C
5. Operation mode: Four-strand touch screen type
6. Sensor: Pt100 (platinum resistor)
7. Test station: Double
8. Ambient requirement: 15~30 $^{\circ}$ C, RH $\leq$ 85%

Package Information

1. Dimension: 780*580*610mm
2. Volume: 0.28m³
3. Weight: 75kg



KN-2440 Oxidation Stability Tester for Mineral Insulating Oil

Overview

KN-2440 Oxidation Stability Tester for Mineral Insulating Oil conforms to the **ASTM D2440 Standard Test Method for Oxidation Stability of Mineral Insulating Oil**. This tester covers the resistance of mineral transformer oils to oxidation under prescribed accelerated aging conditions. Oxidation stability is measured by the propensity of oils to form sludge and acid products during oxidation. This test method is applicable to new oils, both uninhibited and inhibited, but is not well defined for used or reclaimed oils.

Features

1. Metal bath heating, temperature is even and stable
2. Equipped with latest gas regulator, it is able to keep the stable output pressure
3. Equipped with 6 test station, be able to do one single test or 6 tests simultaneously
4. 6 flow meters are able to adjust and indicate the corresponding gas flow rate
5. Digital display timer for recording the test time

Technical parameters

1. Rated Voltage: AC220V±10% 50HZ
2. Temperature control mode: Digital display temperature controller
3. Temperature range: Ambient~160℃
4. Temperature accuracy: 0.2℃
5. Temperature measuring element: Thermal resistance
6. Test station: 6
7. Note: It is able to take the oxygen tank as the gas source



KN-2274Z Oxidation Stability Tester for Distillate (Acceleration Method)

Overview

KN-2274Z Oxidation Stability Tester for Distillate (Acceleration Method) conforms to the **ASTM D2274 Standard Test Method for Oxidation Stability of Distillate Fuel Oil (Acceleration Method)**. This tester covers the measurement of the inherent stability of Middle distillate petroleum fuels under specified oxidizing conditions at 95°C

Features

1. Automatically complete the oxidation and cooling procedure one at a time, easy to operate.
2. The oxidation thermostatic bath is equipped with 6 or 4 holes, improving the testing efficiency.
3. The flow meter is equipped with voltage and steady flow stabilization device. The precision of flow is high.
4. The temperature control adopts digital display temperature controller. The temperature control precision is high.
5. The oxidation process adopts digital stopwatch to do time keeping.
6. The sample cooling adopts air-cooling, less than four hours.
7. The oxidation thermostatic bath is equipped liquid level, automatically control, ensuring the height of the liquid level during the oxidation process.
8. It is kept out of the sun during the oxidation and cooling process, ensuring the credibility and reliability of the sample's data.
9. The instrument is designed rationally, having attractive appearance. It is easy to operate, safe and reliable.

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Heating power: 2400W
3. Temperature control: 95°C
4. Precision of temperature control: $\pm$ 0.2°C
5. Bath hole: Four or Six
6. Timer: Digital stopwatch
7. Cooling mode: Wind-cooled
8. Flowmeter: 50 $\pm$ 5ml/min
9. Motor stirrer: 75W
10. Ambient temperature: 10~40°C, Humidity $\leq$ 85%

Package Information

1. Dimension: 800*510*460mm
2. Volume: 0.19m³
3. Weight: 40kg



KN-942Z Greases Oxidation Stability Tester

Overview

KN-942Z Greases Oxidation Stability Tester conforms to the **ASTM D942 Standard Test Method for Oxidation Stability of Lubricating Greases by the Oxygen Pressure Vessel Method**, This tester determines resistance of lubricating greases to oxidation when stored statically in an oxygen atmosphere in a sealed system at an elevated temperature under conditions of test.

Features

1. The tester consists of motor, coupler, gears, oxygen bomb tray, oxygen bomb, heater, temperature controller, touched LCD screen and pressure transmitter.
2. All procedures controlled by a touched LCD screen, it can record and display test value, also determine final point automatically.
3. We equip with 0.1 level pressure transmitters for the tester, with pressure calibration device.
4. We equip Agilent measured transmitter processor for the tester.
5. Accurate oxygenating connector with convenient usage.
6. The tester is equipped with standard heatproof vessel and vessel stand.

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Heating power: 1500W
3. Temperature control point: 99 $^{\circ}$ C
4. Temperature control accuracy: $\pm$ 0.1 $^{\circ}$ C
5. Operation method: 4 wires touched LCD
6. Sensor: Pt100(RTD)
7. Test station: 2 holes
8. Ambient requirements: Temperature 10~40 $^{\circ}$ C; Humidity $\leq$ 85%

Package Information

1. Dimension: 825*630*740mm
2. Volume: 0.38m³
3. Weight: 110kg



KN-14112A Full Automatic Biodiesel Oxidation Stability Tester

Overview

KN-14112A Full Automatic Biodiesel Oxidation Stability Tester is our domestically initiated, with independent intellectual property rights; also, this is a crucial biodiesel test instrument. The KN-14112A Full Automatic Biodiesel Oxidation Stability Tester fills the blank of domestic unable to production, conforms to the **EN14112 Fat and oil derivatives —Fatty Acid Methyl Esters (FAME) —Determination of oxidation stability (accelerated oxidation test)**, used for the determination of the oxidation stability of fatty acid methyl esters (FAME) at 110 °C. Moreover, our KN-14112 overall system performance can meet with UNIX operating system, part of the performance got better performance.

Features

1. We invent the tester strictly according to EN 14112 Standard, used for testing the oxidation stability of the biodiesel.
2. Conform to two Standards of EU and China
3. Imported digital PID temperature controller, temperature control range is room temperature to 150°C, precision is $\pm 0.1^{\circ}\text{C}$
4. Imported dedicated heating band, safer and more environment
5. Dedicated diaphragm pump with precise flow control and constant flow
6. Unique air filtration system ensures that multi gas pipes are unblocked and good air source.
7. Conductivity meter measures data in real time, big screen liquid crystal industrial PC automatically records and stores data. Multi channels input and process data, can display the oxidation process of grease and the conductivity of induction period at real-time.
8. Display Mode: Digital pattern
9. Work station: Four
10. Single control for each sample, automatically set according to requirements.
11. Two samples separately control, convenient for parallel samples
12. Two temperature control systems, user can set arbitrarily.

Technical parameters

1. Applicable Standard: EN14112
2. Temperature Control: PID digital Temperature controller
3. Air Source: Dedicated diaphragm pump 10L/H
4. Temperature control Method: Electrical heating rod
5. Working temperature: Room temperature $\sim 150 \pm 0.1^{\circ}\text{C}$
6. Test time: About 14 hours
7. Rated Voltage: AC220V $\pm 10\%$ 50HZ
8. Result processing: PC automatically measure and store



KN-7097 Thermo-Oxidation Engine Oil Simulation Tester

Overview

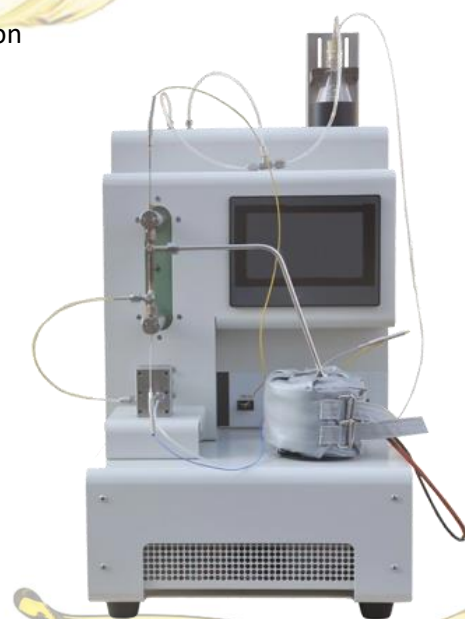
KN-7097 Thermo-Oxidation Engine Oil Simulation Tester conforms to **ASTM D7097 Standard Test Method for Determination of Moderately High Temperature Piston Deposits by Thermo-Oxidation Engine Oil Simulation Test—TEOST MHT** and **ASTM D6355 Standard Test Method for Determination of High Temperature Deposits by Thermo-Oxidation Engine Oil Simulation Test**. Deposit-forming tendencies of an engine oil under oxidative conditions are determined by circulating an oil-catalyst mixture comprising a small sample of the oil and a very small (0.1g) amount of an organo-metallic catalyst. This sample mixture is then circulated for exactly 24h in the TEOST MHT instrument over a special wire-wound depositor rod heated by electrical current to a controlled temperature of 285 °C at the hottest location on the rod. The depositor rod is weighed before and after the test and any deposit formation on the rod as well as any deposits collected from rod washings are determined. During the test, precisely controlled and directed air is caused to bathe the oil flowing down the depositor rod and, thereby, to provide opportunity for oxidation. Precision of the test is strongly influenced by the care in manufacture of the wire-wound steel depositor rods and the treatment of the coating of the wound wire, the rate of air flow, and the amount and degree of mixing of the catalyst.

Features

1. Crucial elements are all imported
2. Be able to set the working time, the tester will stop working when times out
3. ASTM D6335 test assembly is optional
4. Catalyst magnetic mixing device to set mixing time and mixing speed
5. Automatic electric flow controller to control the flow rate at $10\text{ml} \pm 0.2\text{ml/min}$
6. All parameters are able to set on the touch screen, one button operation

Technical parameters

1. Test temperature: Ambient~500 °C $\pm 2^\circ\text{C}$
2. Test time: 24 hours
3. Sample weight: 8.4g
4. Test mode: Automatic
5. Pump flow rate: 0.25g/min
6. Flow rate: $10\text{ml} \pm 0.2\text{ml}$
7. Rated voltage: AC220V $\pm 10\%$, 50Hz



KN-97J Metal Bath Pour and Cloud Point Tester

Overview

KN-97J Metal Bath Pour and Cloud Point Tester is suitable to the standards of **ASTM D97 Standard Test Method for Pour Point of Petroleum Products** and **ASTM D2500 Standard Test Method for Cloud Point of Petroleum Products**, It is used to test the pour and cloud point of petroleum products.

Features

1. Digital display, PID temperature control
2. Dedicated cooling technology, it features fast cooling speed and high efficiency
3. Benchtop type with easy operation mode
4. Adopts metal bath cooling, no need liquid medium

Technical parameters

1. Rated voltage: AC220V $\pm$ 10%, 50Hz
2. Bath: Double test stations with different temperature setting
3. Temperature range: -70°C~ ambient
4. Temperature accuracy: $\pm$ 0.2°C
5. Cooling system: Danfos compound compressor cooling
6. Ambient temperature requirement: $\leq$ 30°C
7. Relative humidity requirement: $\leq$ 85%
8. Total power consumption: $\leq$ 1500W



KN-97M Multiple Pour and Cloud Point Refrigerator

Overview

KN-97M Multiple Pour and Cloud Point Refrigerator conforms to the **ASTM D97 and ASTM D2500**. this cryostat is intended for use on any petroleum product. Suitable for black specimens, cylinder stock, and non-distillate fuel oil and for testing the fluidity of a residual fuel oil at a specified temperature is described. Three compartments have a temperature range of ambient to -34 °C and one has a low temperature compartment -34 to -51 °C. Refrigeration is accomplished by a two stage CFC free system.

Features

1. Floor Model
2. 4 liquid bath with different temperature
3. Light a resistant structure made in die-casted aluminum covered by special plastic material
4. Fitted with four wheels allowing movement
5. PVC cover with 16 wells (4 for each temperature) for accommodate 16 graduated jars
6. Equipped with 4 holes for thermometer accommodation
7. Equipped with 4 holes where liquid is poured and thermometer is placed
8. 16 small stand-by covers
9. Working temperatures: -18, -33, -51 and -69°C
10. Temperature is controlled by 4 digital thermo regulators (one for each temperature) fitted with a probe PT100 A
11. Automatic defrosting device low voltage
12. CFC free refrigerant gases are used

Applicable standard

ASTM D97, ASTM D2500, ASTM D5853, ASTM D6922

Technical parameters

Item	Bath 1	Bath 2	Bath 3	Bath 4
Temperature	Ambient~ -18°C	Ambient~ -33°C	Ambient~ -51°C	Ambient~ -69°C
Precision	±0.2°C			
Compressor	Triple Danfoss 380W			
Rated voltage	AC220V±10%, 50Hz			
Ambient Temperature	≤30°C			
Humidity	≤85%			
Power	Less than 2800W			



KN-9725 Automatic Pour and Cloud Point Tester

Overview

KN-9725 Automatic Pour and Cloud Point Tester developed for classic determination of cloud point (CP) and pour point (PP) of petroleum products according to ASTM D97, ASTM 2500, ASTM D5950, EN 23015, ISO 3015, ISO 3016, IP 15. KN-9725 determines CP and PP in one test cycle with high precision in compare with manual methods. Unique integrated cooling system provides cooling of samples up to -80°C in a short time without any external chiller.

Features

1. Fully automated control of testing process
2. Integrated cooling system for cooling bath up to -80°C without an external liquid chiller
3. Automatic lifting and rotating of the test tube
4. Determination of CP&PP in one test cycle
5. High precision of results with 0.1°C resolution
6. Optical measuring system
7. Pt-100 temperature probe
8. Built-in heater for the quick bath heating
9. Large color LCD display with touch screen
10. Internal memory (8Gb) to store tests results
11. Automatic diagnostic system
12. USB-port for external storage device or printer
13. LAN-port for network connection (LIMS support)
14. Connection to network printer
15. Remote firmware update
16. Compact design and high energy efficiency

Technical parameters

1. Temperature range: $-80\sim 51^{\circ}\text{C}$, $\pm 0.1^{\circ}\text{C}$
2. Sample volume: 45ml
3. Cooling mode: Integrated cooling system without external chiller
4. Interface: USB, LAN
5. Power consumption: 500W
6. Rated voltage: $220\text{V} \pm 10\%$, 50Hz
7. Dimension: 500*440*770mm
8. Weight: 35kg



KN-6371 Fully Automatic Cold Filter Plugging Point Tester (CFPP)

Overview

KN-6371 Fully Automatic Cold Filter Plugging Point Tester conforms to national standard **ASTM D6371 Standard Test Method for Cold Filter Plugging Point of Diesel and Heating Fuels**. It adopts modern advanced technology, mechanical, optical, electronic and computer technology, and can be done automatically test the cold filter plugging point of petroleum products, automatic cold filter plugging point analyzer using optical detection technology, imported compressor refrigeration system ensure the required refrigeration depth. Automatic cold filter plugging point tester reasonable structure, stable performance, simple operation, is the ideal detection equipment.

Features

1. High degree of automation equipment, automatic cooling, automatic sample aspiration, automatic detection, automatic save the results, the test process without human intervention;
2. The instrument configuration of two test units do parallel test can also detect single group;
3. Instrument automation control technology, human-friendly interface, photoelectric automatic detection;
4. Instrument with integrated design, to avoid damage due to vibration of the floe and the impact of the test data.
5. The instrument uses photoelectric liquid level sensor can accurately detect the position of the horizontal surface, the cold filter plugging point accurate judgment.
6. The instrument uses a built-in vacuum pump and electronic precision pressure balance system to ensure automatic balancing suction filtration pressure at the set value.
7. The instrument can automatically control the cooling medium and the temperature difference between the sample being tested, to ensure a controlled and uniform cooling rate stable.

Technical parameters

1. Temperature measuring range: $-45 \sim 50^{\circ}\text{C}$; resolution 0.1°C
2. Pressure measuring range: $0 \sim 200.0\text{KPa}$; resolution 1Pa
3. Test samples: 2-way
4. Temperature measurement element: PT100
5. Detection method: a photo detector
6. Refrigeration: Refrigeration Compressors
7. Control mode: single-chip control
8. Ambient temperature: $10 \sim 35^{\circ}\text{C}$



KN-6371A CFPP Suction Device

Overview

KN-6371A CFPP Suction Device conforms to national standard **ASTM D6371 Standard Test Method for Cold Filter Plugging Point of Diesel and Heating Fuels**. It adopts modern advanced technology, mechanical, optical, electronic and computer technology, and can be done automatically test the cold filter plugging point of petroleum products, automatic cold filter plugging point analyzer using optical detection technology, imported compressor refrigeration system ensure the required refrigeration depth. Automatic cold filter plugging point tester reasonable structure, stable performance, simple operation, is the ideal detection equipment.

Features

1. Equipped with stopwatch
2. Equipped with flow meter for stable pressure

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Power: 100W
3. Flow rate display: flow meter
4. Timing mode: digital stopwatch
5. Ambient temperature: 10~50°C
6. Ambient humidity $\leq$ 85%



KN-2386Z Automatic Freezing Point Tester

Overview

KN-2386Z Automatic Freezing Point Tester conforms to **ASTM D2386 Standard Test Method for Freezing Point of Aviation Fuels**. This tester covers the determination of the temperature below which solid hydrocarbon crystals may form in aviation turbine fuels and aviation gasoline. The freezing point of an aviation fuel is the lowest temperature at which the fuel remains free of solid hydrocarbon crystals that can restrict the flow of fuel through filters if present in the fuel system of the aircraft. The temperature of the fuel in the aircraft tank normally falls during flight depending on aircraft speed, altitude, and flight duration. The freezing point of the fuel must always be lower than the minimum operational tank temperature.

Features

1. Automatic operation: The instrument can automatically complete the cooling, stirring, heating, crystallization judgment and other operations of the sample, so as to improve the testing efficiency.
2. Color touch screen: Equipped with a 7-inch color LCD touch screen, providing an intuitive user interaction interface.
3. High-precision sensor: KEYENCE photoelectric sensor is used to improve the accuracy of test results.
4. Big data model: KAYCAN's self-developed big data curve model automatically identifies the temperature of the inflection point of the curve when crystallization occurs and disappears
5. Versatility: Data storage, printing, and historical data query capabilities.
6. Easy maintenance: Regular maintenance and adjustment guidelines ensure long-term stable operation of the instrument and reduce maintenance costs.

Technical parameters

1. Applicable standard: ASTM D2386
2. Rated voltage: AC220V $\pm$ 10%, 50Hz (60Hz is available)
3. Heating power: 700W
4. Cooling power: 800W
5. Stirring motor: DC24V 80W
6. Cooling bath temperature range: -80~20°C
7. Temperature control accuracy: 0.1°C
8. Stir: Mechanical stirring, speed is adjustable



KN-1177Z Automatic Freezing Point for Engine Coolant

Overview

KN-1177Z Automatic Freezing Point for Engine Coolant conforms to **ASTM D1177 Standard Test Method for Freezing Point of Aqueous Engine Coolants**. This tester involves the determination of the time-temperature curve prior to freezing and the determination of the horizontal or flattened portion of the freezing curve. The freezing point is taken as the intersection of projections of the cooling curve and the freezing curve. If the solution super cools, the freezing point is the maximum temperature reached after super cooling.

Features

1. The tester adopts SPCC and surface electrostatic spray, so it has high corrosion resistance and easy to clean
2. The tester adopts the compound compression refrigerator, green refrigerants and fast refrigerating
3. The tester adopts butt-joint, no welding spot with a good exterior
4. Dewar bottle as the cooling bath, so as to keep the low temperature
5. The glass test tubes conform to ASTM standard
6. Unique damping technology with less noisy
7. Good quality motor, 0-80rpm adjustable
8. The tester equips guide crystal hole
9. Integrative structure, easy to move

Technical parameters

1. Standard: ASTM D1177
2. Temperature control: PID digital display temperature control
3. Temperature accuracy: $-45 \pm 0.1^{\circ}\text{C}$ (-70°C can be selected)
4. Cooling method: Compound compression refrigerator
5. Stirring method: Motor stir
6. Timing method: Digital display timer



KN-7153 Automatic Rapid Freezing Point Tester

Overview

KN-7153 Automatic Rapid Freezing Point Tester conforms to **ASTM D7153 Standard Test Method for Freezing Point of Aviation Fuels (Automatic Laser Method)**. The freezing point of an aviation fuel is the lowest temperature at which the fuel remains free of solid hydrocarbon crystal which, if present in the fuel system of the aircraft, can restrict the flow of fuel through filters. The temperature of the fuel in the aircraft tank normally decreases during flight depending on aircraft speed, altitude, and flight duration. The freezing point of the fuel shall always be lower than the minimum operational fuel temperature.

Features

1. Accurate monitoring of oil sample changes using optical principles, automatic measurement and reporting of test results through detection software
2. Fast cooling speed, only takes 15~35min for reaching the required value
3. Peristaltic pump automatic quantitative injection, fast and efficient, be able to be set automatically for repeated determination
4. Equipped with stirring function, also meets the traditional method
5. 10.4 touch LCD
6. Efficient and fast database function, easy to consult and call the saved result
7. Password protection, to ensure the database security
8. All imported crucial parts to ensure the performance and reliability

Technical parameters

1. Rated voltage: 198V~242V, 50Hz
2. Power: 1100W
3. Temperature range: -70~10°C
4. Test time: 15~35min
5. Sample required: 12ml
6. Ambient temperature: 10~30°C
7. Humidity $\leq$ 85%
8. Dimension: 760*470*510mm
9. Weigh: 40kg



KN-4294 X-ray Fluorescence Sulfur Content Tester

Overview

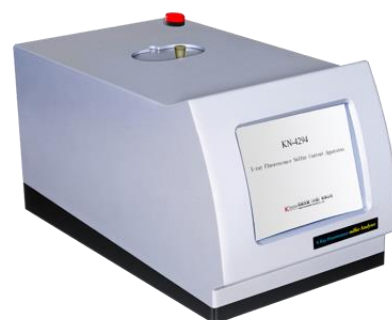
KN-4294 X-ray Fluorescence Sulfur Content Tester has been the overwhelming choice in the petroleum industry for years. Continuous improvements in performance and usability allow us to offer a better instrument to suit your requirements. Our XRF sulfur analyzers comply with **ASTM D4294 Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy-Dispersive X-ray Fluorescence Spectrometry**, while offering the most cost effective alternative for sulfur in petroleum measurement.

Features

1. The analyzer got electromechanical integration design of computerization, large screen LCD display, man-machine dialogue operation, concise and beautiful;
2. High measurement range, fast detection speed and small quantity sample consumption.
3. We adopt Fluorescence intensity ratio analysis method, can calibrate temperature, atmospheric pressure and carbon hydrogen ratio(C/H).
4. Using disposable sample cup, can avoid cross contamination; also user may record the sample batch number, S%(m/m) date;
5. Highly accurate sample platform location, it's very easy to put or replace oil samples.
6. Big storage for at least 1000 test data, user may check the content detection results and calibrated curve anytime.
7. We equip thermal printer for the analyzer.
8. The analyzer is equipped with standard RS-232C interface, can be connected to each PC

Technical parameters

1. Measuring range: 7ppm~5%;
2. Accuracy: a, repeatability (r): $<0.02894(x+0.1691)$;
b, reproducibility (r): $<0.1215(x+0.05555)$;
3. sample volume: 2~3ml(sample height 3mm~4mm);
4. measuring period: 60,120,240,300,600 seconds, Arbitrary set;
5. Single sample auto test measured times: 2,3,5,10,50 Arbitrary set ,it can provide AVG and standard deviation at every end of measurement;
6. Calibrated curve: our analyzer can store 9 calibrated curves, five of linear line with one unknown; 4 of Binomial parabola
7. Working Condition:Temperature:5~35℃,humidity:≤85% (30℃)
8. Rated voltage:AC220V±20V,50Hz; Power: 30W



KN-4294A Portable EDXRF Sulfur Analyzer

Overview

KN-4294A Portable EDXRF Sulfur Analyzer is a complete solution to test and verify adherence to the International Maritime Organization (IMO) Low Sulfur Fuel Oil Standard Requirement in response to the significant reduction of the maximum permissible levels of sulfur in marine fuels from 3.5 % to 0.5 %, as being enforced from the beginning of 2020.

KN-4294A is a high performance, portable XRF analyzer that provides the energy industry with the perfect sulfur elemental analysis method for analyzing elemental content in oils such as lubricants, diesel fuels, jet fuels, kerosene, other distillates, volatile oils, residual oils, hydraulic oils, crude oils, unleaded petrol, alcoholic gasoline, biodiesel. Also, it can check the existence of elements content, wear elements, pollutants and sulfur content in other similar petroleum products. It can be used in any place, providing safe, high-quality sulfur content analyzing condition for liquid, solid or gas samples. In line with **ASTM D4294 Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy Dispersive X-ray Fluorescence Spectrometry, ISO8754 Petroleum Products – Determination of Sulfur Content – EDXRF up-to date version** and other testing standards

Purpose

1. It can be used to determine mass% of total sulfur in the crude petroleum, petroleum, heavy oil, diesel oil, gasoline, and naphtha.
2. It can be used to determine total sulfur content in the products of coal chemical industry.
3. It can be used to determine total sulfur or sulfide in other liquid or solid powder samples.

Instrument characteristics

1. With electrical, mechanical and microprocessor integration design, so it is compact and beautiful;
2. It can determine various products and in a wide measurement range. It is rapid for analysis and it only need little standard sample.
3. Adopts fluorescence intensity ratio analysis methods, it can make correction to temperature and pressure automatically .
4. 8-inch (1024*768)capacitive touch screen;
5. It can determine its working state and electric parameters by making repeatability test and spectrum scan using reference samples.

6. It takes disposable sample cell with Mylar film, so it can avoid cross contamination. Sample cell is made by a multifunction pressure shaping device, so it is rapid and convenient.
7. The sample holder is installed on a slide rail, It is convenient and it can avoid any contamination to detection system.
8. It can save large quantity of test data. You can browse test data and calibration curves at any time.
9. It uses a thermal printer, so it is easy to replace printing paper.
10. Its safe X-ray protection measures can keep people from injury of X-ray radiation.

Main technical specification and parameters

1. Measurement range: 0.0017% to 5%
2. Repeatability (r): $<0.4347 \times 0.6446$
3. Detection limit: 10ppm
4. Oil sample quantity: 5 ml~ 6ml
5. Measurement time: 60s or 120s or 180s ; Replication times can set 1 or 2 or 3 or 5 or 10
6. It will show average value and standard deviation at end of measurement.
7. Calibration curve numbers: it can save 10 calibration curves.
8. Working condition: a. Ambient temperature: $5 \sim 30^{\circ}\text{C}$; b. Relative humidity: $\leq 85\%$ (30°C)
9. Power supply: AC 220V $\pm$ 20V, 50 Hz/60Hz; Rated power: 50 W
10. Size and weight: 310mm $\times$ 230mm $\times$ 130mm; 6.5 kg



KN-4294M X-ray Fluorescence Sulfur Content Tester

Overview

KN-4294M X-ray Fluorescence Sulfur Content Tester has been the overwhelming choice in the petroleum industry for years. Continuous improvements in performance and usability allow us to offer a better instrument to suit your requirements. Our XRF sulfur analyzers comply with **ASTM D4294 Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy-Dispersive X-ray Fluorescence Spectrometry**, while offering the most cost-effective alternative for sulfur in petroleum measurement.

Features

1. The analyzer got electromechanical integration design of computerization, large screen LCD display, man-machine dialogue operation, concise and beautiful;
2. High measurement range, fast detection speed and small quantity sample consumption.
3. We adopt Fluorescence intensity ratio analysis method, can calibrate temperature, atmospheric pressure and carbon hydrogen ratio(C/H).
4. Using disposable sample cup, can avoid cross contamination; also user may record the sample batch number, S%(m/m) date;
5. Highly accurate sample platform location, it's very easy to put or replace oil samples.
6. Big storage for at least 1000 test data, user may check the content detection results and calibrated curve anytime.
7. We equip thermal printer for the analyzer.
8. The analyzer is equipped with standard RS-232C interface, can be connected to each PC

Technical parameters

1. Measuring range: 7ppm~5%;
2. Accuracy: a, repeatability (r): $<0.02894(x+0.1691)$;
b, reproducibility (r): $<0.1215(x+0.05555)$;
3. Sample volume: 2~3ml(sample height 3mm~4mm);
4. Measuring period: 60,120,240,300,600 seconds, Arbitrary set;
5. Single sample auto test measured times: 2,3,5,10,50 Arbitrary set ,it can provide AVG and standard deviation at every end of measurement;
6. Calibrated curve: our analyzer can store 9 calibrated curves, five of linear line with one unknown; 4 of Binomial parabola
7. Measurement time: it can be set to 60s or 120s or 180s ;
8. It can make determination automatically for 7 sample. Replication times can set 1,2, 3, 5, 10 at random; it will show average value and standard deviation at end of measurement
9. Working Condition: Temperature: 5~35℃, humidity: ≤85% (30℃)
10. Rated voltage: AC220V±20V, 50Hz; Power: 30W



KN-2622 Elements Analyzer by WDXRF

Overview

KN-2622 Elements Analyzer by WDXRF conforms to **ASTM D2622 Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry**, **ASTM D7039 Standard Test Method for Sulfur in Gasoline, Diesel Fuel, Jet Fuel, Kerosine, Biodiesel, Biodiesel Blends, and Gasoline-Ethanol Blends by Monochromatic Wavelength Dispersive X-ray Fluorescence Spectrometry** and **ASTM D7536 Standard Test Method for Chlorine in Aromatics by Monochromatic Wavelength Dispersive X-ray Fluorescence Spectrometry**. The sample is placed in the X-ray beam, and the peak intensity of the sulfur $K\alpha$ line at 0.5373 nm is measured. The background intensity, measured at a recommended wavelength of 0.5190nm (0.5437nm for a Rh target tube) is subtracted from the peak intensity. The resultant net counting rate is then compared to a previously prepared calibration curve or equation to obtain the concentration of sulfur in mg/kg or mass %.

Features

1. Unique optical path design
2. For sample with little content. For 10mg/kg fuel sample, RSD<5%
3. Portable, for convenient analysis in field, touch screen operation
4. Fast analysis, 60~300s for one test
5. No need consumables, vacuum and pre-treatment

Technical parameters

1. Measuring range: 0.5ppm~5% (for Silicone measuring range is 1ppm~5%, up to 20% is optional)
2. Accuracy<5% (10ppm content sample)
3. Test time: 60~300s
4. Sample type: Solid, Liquid, Powder
5. Rated voltage: AC220V±10%, 50Hz
6. Repeatability: Sn-1≤0.35ppm (10ppm)
7. Dimension: 335*255*268mm, 15kg



KN-6481 Portable Energy Dissipation X-ray Fluorescence Spectrometer

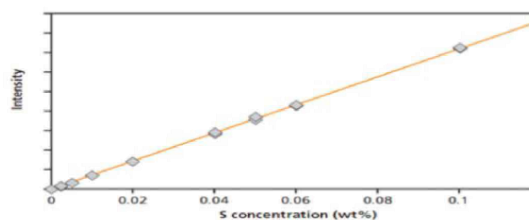
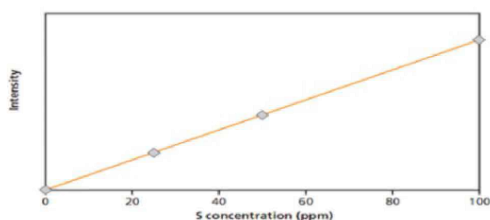
Overview

KN-6481 Portable Energy Dissipation X-ray Fluorescence Spectrometer conforms to **ASTM D6481 Standard Test Method for Determination of Phosphorus, Sulfur, Calcium, and Zinc in Lubrication Oils by Energy Dispersive X-ray Fluorescence Spectroscopy**, **ASTM D7751 Standard Test Method for Determination of Additive Elements in Lubricating Oils by EDXRF Analysis**, **ASTM D4294 Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy Dispersive X-ray Fluorescence Spectrometry** and **ASTM D5059 Standard Test Methods for Lead and Manganese in Gasoline by X-Ray Spectroscopy**. This tester is used to test metal elements in oils like P, S, Cl, Ca, Ti, V, Cr, Mn, Fe, Ni, Cu Zn, PB, Mo, Ag, Cd, Sn, etc.

Features

1. Rugged, compact elemental analyzer for repeatable and reproducible results in laboratories production environments and mobile operations.
2. Intuitive interface is displayed on the large, industrial touchscreen
3. Streamlined software and one-touch measurement start makes it easy for any operator to get high quality results
4. Training for routine analysis takes only minutes
5. Atmospheric compensation allows analysis without the need for helium or vacuum purge, minimizing the cost per analysis
6. Automatic carbon/hydrogen (C/H) ratio correction allows the analysis of multiple types of oils and fuels to be made on a single calibration, simplifying analyzer setup and operation
7. X-ray tube and detector are operated in conditions designed to ensure long-term reliability
8. Built for tough environments
9. Software inspired by point-and-shoot hand-held analyzers
10. Entire display area is dedicated to routine analysis
11. One-touch measurement start for routine testing
12. On-board data storage of up to 100,000 results, including spectra
13. Low cost for maintenance
14. Easy sample preparation and user-friendly operation
15. No gas consumption or vacuum needed

Working Curve Linear Chart



Technical Parameters

1. Factory calibration included
Low sulfur: 10ppm~100ppm
High sulfur: 0.01~5%
2. Dimension: 380*372*362mm
3. Fast SDD detector resolution proves the most excellent test performance
Area: 70mm²
Energy resolution: 130eV at Mn K α

High Precision Results Without Daily Calibration is Needed

Unit:	PPM	Test Time: 100 seconds		
No.	Calibration	300ppm	1000ppm	10000ppm
1	Crude Oil	297	1001	10080
2	Crude Oil	293	998	9993
3	Crude Oil	305	1017	9982
4	Crude Oil	295	1008	9918
5	Crude Oil	291	1007	9978
6	Crude Oil	309	990	10068
7	Crude Oil	312	995	9986
8	Crude Oil	316	1015	9999
9	Crude Oil	307	1010	9918
10	Crude Oil	313	999	9928
11	Crude Oil	302	1016	9958
Certified Value		300	1000	10000
Average Test Result		304	1005	9983
Standard Deviation Sn		8.64	9.10	53.96
Error ppm		4	5	-17
RSD		2.85%	0.91%	0.54%



KN-5059 Portable Energy Dissipation X-ray Fluorescence Spectrometer

Overview

The new KN-5059 Portable Energy Dispersion X-ray Fluorescence Spectrometer is designed for the onsite analysis of Sulfur in oils. This model fully meets onsite elements test in oils for the raw materials, production control and finished products inspections. *The outstanding advantages of the KN-5059* Light, small, one key test. The operator can perform the onsite analysis at anytime and anywhere.

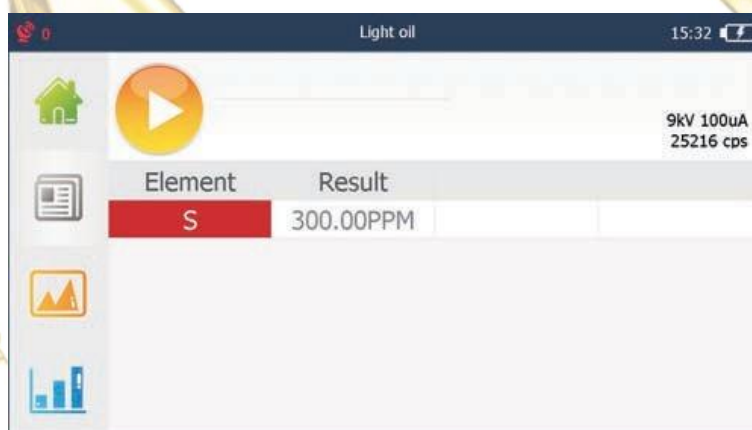
Applicable Standard

1. ASTM D5059 Standard Test Methods for Lead in Gasoline by X-Ray Spectroscopy
2. ASTM D4294 Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy Dispersive X-ray Fluorescence Spectrometry

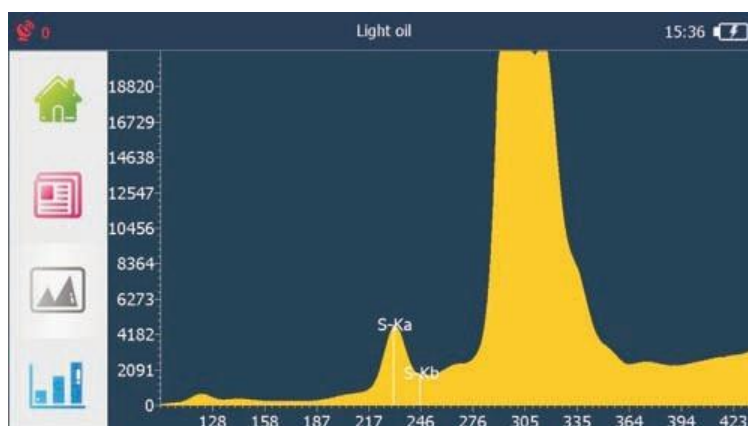
Testing Result

After testing, the data interface will show up

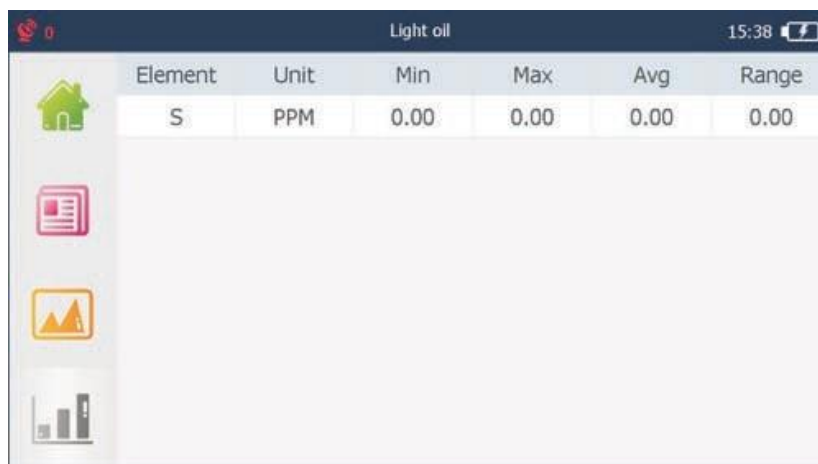
The data interface includes the testing results and statistics.



Result



Spectrum



Element	Unit	Min	Max	Avg	Range
S	PPM	0.00	0.00	0.00	0.00

Statistics

Instrument features

1. Small size and easy to carry
2. Net weight:4.5Kg. The instrument is convenient to carry.

Power indicator

1. Green indicator is on when the machine is power on. Red in the indicator is on when the machine is testing.
2. With the built-in camera
3. The sample image can be saved and put into the testing report.
4. Fully meet MARPOL international Convention on shipping Fuel Oil Regulation ISO8217-2010 for S analyze of ISO 8754
5. Portable Energy Dispersion X- ray Fluorescence Spectrometer

Technical specification

1. Measurement range: From P to U
2. Testing samples: Solid, liquid and powder
3. Content range: 1ppm—99.99%
4. Testing method: EDXRF
5. Detector: SDD detector, the lowest resolution reach to 125eV
6. Working Temperature: -20℃ ~ +50℃
7. Humidity≤90%
8. Detection limit: 20ppm for Sulfur in fuel oil
9. Operation: One key test
10. Testing time: 30-130s
11. Size: 212*258*258mm
12. Weight < 4.5kg



KN-7039 Tester for Sulfur Content in Petroleum Products

Overview

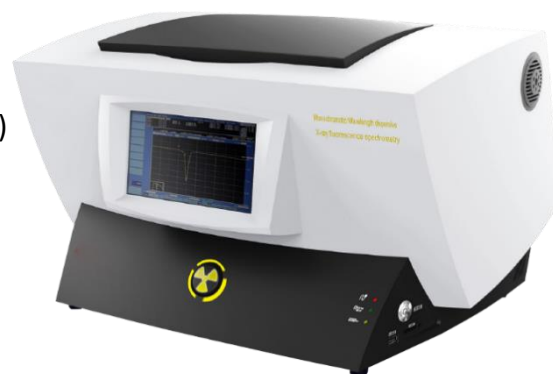
KN-7039 Tester for Sulfur Content in Petroleum Products by WDXRF conforms to **ASTM D7039 Standard Test Method for Sulfur in Gasoline, Diesel Fuel, Jet Fuel, Kerosine, Biodiesel, Biodiesel Blends, and Gasoline-Ethanol Blends by Monochromatic Wavelength Dispersive X-ray Fluorescence Spectrometry.** & **ASTM D2622 Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry.** The sample is placed in the X-ray beam, and the peak intensity of the sulfur $K\alpha$ line at 0.5373 nm is measured. The background intensity, measured at a recommended wavelength of 0.5190nm (0.5437nm for a Rh target tube) is subtracted from the peak intensity. The resultant net counting rate is then compared to a previously prepared calibration curve or equation to obtain the concentration of sulfur in mg/kg or mass %.

Features

1. Johansson-type DCG system, advanced design of beam path
2. After calibration before ex-factory, will never have optical path displacement
3. No need conversion gasses, vacuum requirements or self-aeration system
4. No need to establish working curves frequently
5. Intuitive touch screen operation

Technical parameters

1. Limit of detection 0.2ppm (300s)
2. Range: 0.5ppm~5%
3. Measuring time: 60~300s (selectable)
4. Standard deviation: $S_{n-1} \leq 0.5\text{ppm}$ (5ppm), 2.5ppm (50ppm)
5. I/O ports: USB
6. Rated voltage: 220V $\pm$ 10%, 5A/110V $\pm$ 10%, 5A
7. Dimension: 614*444*375mm



KN-7536 Tester for Chlorine in Aromatics

Overview

KN-7536 Tester for Chlorine in Aromatics conforms to **ASTM D7536 Standard Test Method for Chlorine in Aromatics by Monochromatic Wavelength Dispersive X-ray Fluorescence Spectrometry**. This test method provides for the precise measurement of the chlorine content of aromatics with minimal sample preparation and analyst involvement. The typical time for each analysis is five or ten minutes. Knowledge of the chlorine content of aromatics is important for process control as well as the prediction and control of operational problems such as unit corrosion and catalyst poisoning, and in the blending of products to commodity specifications. Various federal, state, and local agencies regulate the chlorine content of some petroleum products, including aromatics. Unbiased and precise determination of chlorine in aromatics is critical to compliance with regulatory standards.

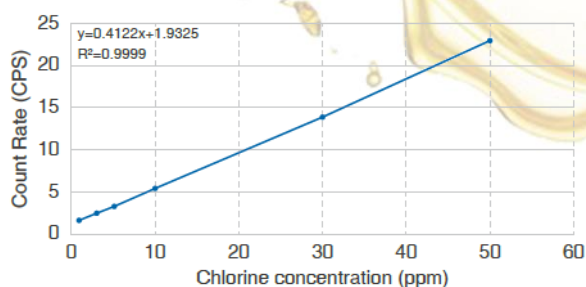
Features

1. Johansson-type DCG system, advanced design of beam path
2. After calibration before ex-factory, will never have optical path displacement
3. No need conversion gasses, vacuum requirements or self-aeration system
4. No need to establish working curves frequently
5. Intuitive touch screen operation

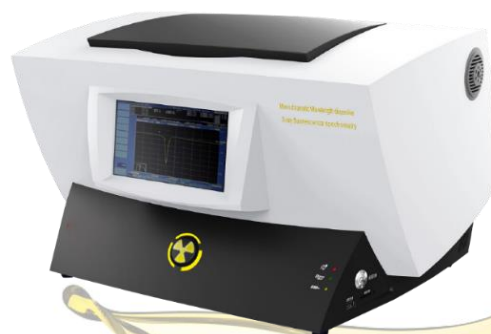
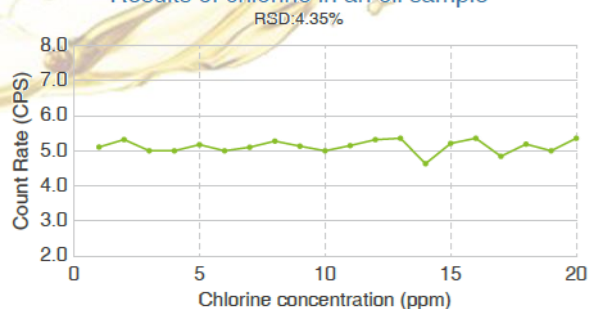
Technical parameters

1. Limit of detection 0.2ppm (300s)
2. Range: 0.5ppm~5%
3. Measuring time: 60~300s (selectable)
4. Standard deviation: $S_n-1 \leq 0.5\text{ppm}$ (5ppm), 2.5ppm (50ppm)
5. I/O ports: USB
6. Rated voltage: $220\text{V} \pm 10\%$, $5\text{A}/110\text{V} \pm 10\%$, 5A
7. Dimension: 614*444*375mm

Calibration curve of chlorine



Results of chlorine in an oil sample



KN-5453 Ultraviolet Fluorescence Sulfur Tester

Overview

KN-5453 Ultraviolet Fluorescence Sulfur Tester conforms to **ASTM D5453 Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence**. It adopts advanced total sulfur analysis method--ultraviolet fluorescence method, determine the total sulfur content of various kinds of gas, liquid, solid oils and chemical product. It is an tester with high sensitivity, stable property, low detection lower limit, accurate test result, and good repeatability.

Features

1. Adopts the most advanced ultraviolet lamp and other critical components to ensure the super high sensitivity and reliability.
2. Adopts the imported American Nafion pipe membrane dryer, good water removal to ensure the stability tester
3. The tester can establish and store the working curve; user can make the specimen analysis without establishing the working curve again.
4. By selecting the gas sample injector or the solid sample injector, the tester can make the analysis of gas, liquid and solid sample to meet various tests
5. Windows interface, convenient to operate

Technical parameters

1. Specimen species: liquid, solid and gas specimen
2. Measurement method: ultraviolet fluorescence
3. Specimen sample size: solid sample size: 1~20mg
liquid sample size: 1~30 μ L
gas sample size: 1~10 mL
4. Measurement range: 0.2 mg/L~3%
5. Detection lower limit: 0.2 mg/L
6. Temperature control range: room temperature to 1100 $^{\circ}$ C
7. Temperature control precision: 0.5% $\pm$ 2 $^{\circ}$ C
8. Gas source requirement: Argon: above 99.995% ,Oxygen: above 99.99%, humidity<5%
9. Rated voltage: AC220V $\pm$ 22V 50Hz $\pm$ 0.5Hz
10. Power: 1500W



KN-5453A Automatic Ultraviolet Fluorescence Sulfur Tester

Overview

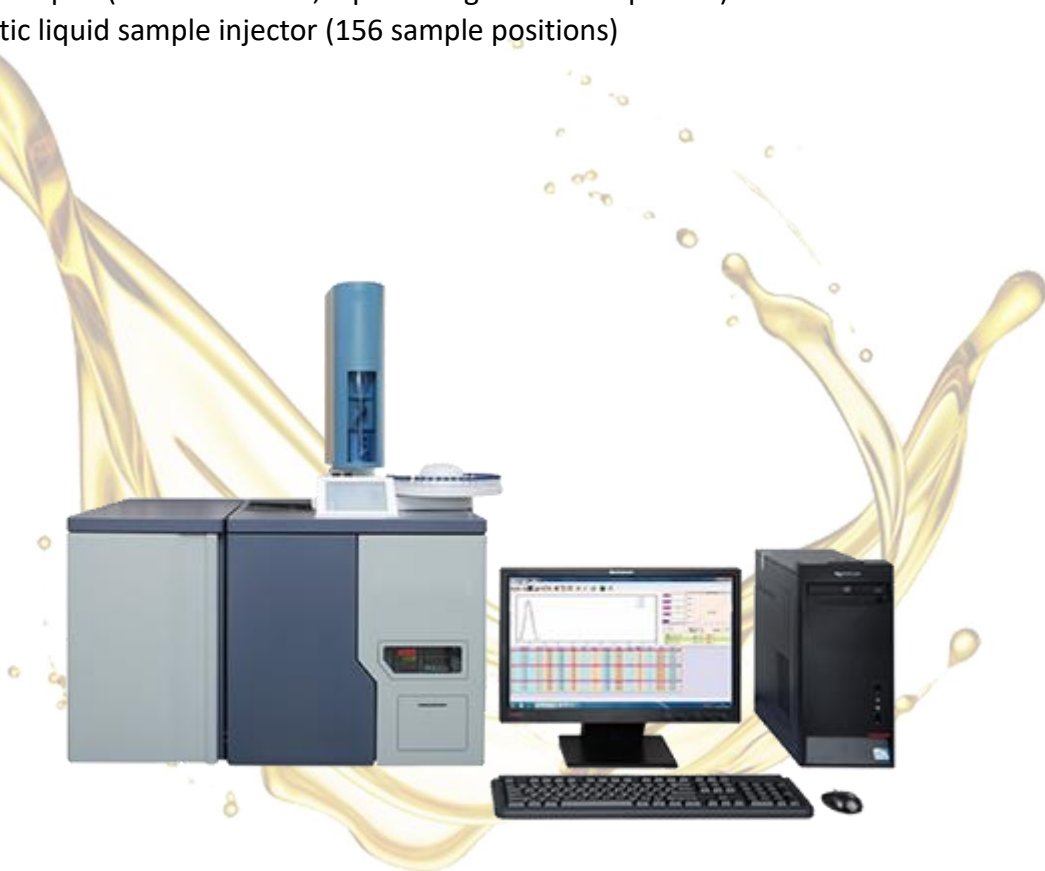
KN-5453A Automatic Ultraviolet Fluorescence Sulfur Tester conforms to **ASTM D5453 Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence**. It adopts advanced total sulfur analysis method--ultraviolet fluorescence method, determine the total sulfur content of various kinds of gas, liquid, solid oils and chemical product. It is an tester with high sensitivity, stable property, low detection lower limit, accurate test result, good repeatability.

Features

1. Windows operation platform, computer controls analysis, data processing and other processes, display the working status of the whole process; test parameters and results can be saved or printed; historical data query and graphic playback can be realized, which is convenient for comparison and analysis.
2. Adopts the latest internationally popular pulsed ultraviolet fluorescence analysis method, which can effectively avoid the unstable sampling value caused by the attenuation of the ultraviolet lamp signal by modulating and demodulating the light source signal. Lower detection limit and higher accuracy. Be able to meet higher standard oil sulfur content testing requirements.
3. Automatic replacement of CRM or sample, automatic cleaning, automatic elimination of air bubbles, automatic standard curve drawing, etc.
4. Standard sample single-point reverse calibration, high pressure can be adjusted arbitrarily, no need to redo the standard curve.
5. Reaction chamber: For the low-sulfur detection, we have made major adjustments to the structure of the reaction chamber. The reaction chamber has a good anti-leakage effect. At the same time, the double leakage-proof (light and gas) processing technology is adopted to protect the reaction chamber from light. Sealed without air leakage, so that the detection sensitivity and repeatability are significantly improved, and the measurement data results have reached the international level.
6. Gas cut-off protection function: If the gas source pressure is unstable, the tester will automatic shutdown to avoid system pollution.
7. Adopts imported high-quality heating furnace wire, the cracking furnace has a longer service life
8. The imported xenon lamp is used as the ultraviolet light source to replace the traditional zinc lamp. The zinc lamp is easy to decay and needs to be replaced every 1-2 years. The service life of imported xenon lamps is more than 5 years, and the good stability ensures the accuracy of detection and greatly reduces maintenance costs.
9. Core components: Membrane dryer, filter, xenon lamp, photomultiplier tube, sampling needle and other main components are the original components imported from the United States, Japan and Europe, which ensure the quality of the instrument and the accuracy of the analysis results.
10. Equipped with 50ul imported injection needle, the injection volume is adjustable.
11. Tester calibration: CRM imported from the United States and Japan for calibration to ensure the accuracy of measurement.
12. Database management mode: Open lims database management mode, which is convenient for database retrieval management
13. Mass flowmeter is optional

Technical parameters

1. Measuring range: 0.1ppm~10000ppm~%
2. Lower detection limit: 0.05ppm
3. Detection accuracy
 $\pm 10\%$, 0ppm~5ppm
 $\pm 5\%$, 5ppm~100ppm
 $\pm 2.5\%$, 100ppm~10000ppm
4. Temperature range: Ambient~1300℃
5. Temperature accuracy: $\pm 1^\circ\text{C}$
6. Sample state: Liquid (Model for solid, liquid and gas state is optional)
7. Full automatic liquid sample injector (156 sample positions)



KN-6667 Tester for Sulfur Content in LPG

Overview

KN-6667 Tester for Sulfur Content in LPG conforms to **ASTM D6667 Standard Test Method for Determination of Total Volatile Sulfur in Gaseous Hydrocarbons and Liquefied Petroleum Gases by Ultraviolet Fluorescence**. It is used for determining the total volatile sulfur in gaseous hydrocarbons and liquefied petroleum (LP) gases. It is applicable to analysis of natural, processed, and final product materials. Precision has been determined for sulfur in gaseous hydrocarbons in the range of 1mg to 100mg and for sulfur in LP gases in the range of 1mg to 196mg.

Features

1. The key parts such as the UV lamp adopt the most advanced original components in the world today to ensure the ultra-high sensitivity and reliability of the instrument
2. The Nafion tube membrane dryer imported from the United States is adopted, which has good water removal effect and ensures the stability of the instrument
3. The working curve can be established and saved, and the sample can be analyzed at any time by recalling, and there is no need to repeatedly establish the working curve
4. Through the optional gas sampler or solid sampler, sample analysis of gas, viscous liquid, solid, etc. can be performed to meet various test requirements
5. Give the Chinese operation interface in Windows development, easy and fast to operate

Technical parameters

1. Sample injection volume: Solid sample volume: 1~20mg
Liquid sample volume: 1~30L
Gas sample volume: 1~10ml
2. Measuring range: 0.2mg/L~3%
3. Lower detection limit: 0.2mg/L
4. Temperature control range: room temperature~1100℃
5. Temperature control accuracy: 0.5%±2℃
6. Gas source requirements: Argon gas: 99.995% or more
Oxygen: 99.99% or more
7. Humidity: less than 5ppm
8. Power source: AC220V±22V 50Hz±0.5 Hz
9. Work rate: 1500W



KN-1551 Quartz Tube Sulfur Tester

Overview

KN-1551 (KN-1551A) Quartz Tube Sulfur Tester (Quartz-Tube Method) conforms to **ASTM D1551 Method of Test for Sulfur in Petroleum Oils (Quartz-Tube Method)**. Applicable to test sulfur content of lubricating oil, heavy oil products, crude oil, petroleum oil coke, paraffin wax, Sulfur-containing additives and other deep color petroleum products what sulfur content is more than 0.1% (m/m).

KN-1551:2 tubes

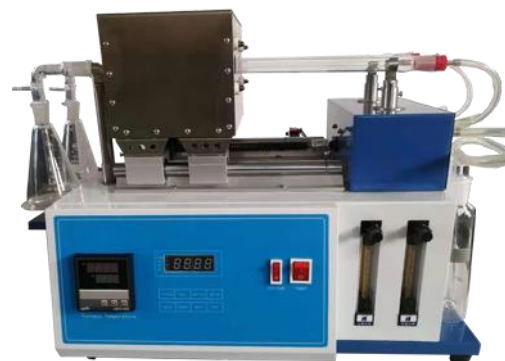
KN-1551A:3 tubes

Features

1. The tester adopts digital temperature controller, high precise temperature control.
2. User can set experimental time by own, suits for all kinds of test requirement.
3. Alarm when the test finishes.
4. Microchip controls the trip of tubular furnace automatically.
5. The tester adopts 2tubes (3tubes) Furnace device. Digital display temperature controls the tube temperature accurately.
6. Rational construction with attractive appearance and easy operation.

Technical Parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Power: 3000W
3. Method of temperature control: Digital temperature controller
4. Sensor: K-type thermodynamics
5. Temperature controlling range: 900~950°C
6. Tubular tube route: 150mm
7. Stroke time: 30 40 50 60min adjustable
8. Flowmeter: 100~1000ml/min
9. Ambient requirements: Temperature: 10~40°C; Humidity $\leq$ 85%



KN-1266 Sulfur Lamp Method Unit

Overview

KN-1266 Sulfur Lamp Method Unit conforms to **ASTM D1266 Standard Test Method for Sulfur in Petroleum Products (Lamp Method)**. This test method provides a means of monitoring the sulfur level of various petroleum products and additives. This knowledge can be used to predict performance, handling, or processing properties. In some cases the presence of sulfur components is beneficial to the product and monitoring the depletion of sulfur compounds provides useful information. In other cases the presence of sulfur compounds is detrimental to the processing or use of the product.

Features

1. The tester structure is unified be equipped with 5 tubes, 7 tubes devices, improves working efficiency.
2. The glassware stand adopts organic glass pane, safe and reliable.
3. The tester adopts high quality lamp and needle valve
4. The tester adopts stainless steel pipeline and standard glass bead
5. The pedestal of burning lamp is equipped with lift adjusting device, easy to be adjusted.
6. The tester adopts sucking pump, small in size and low in noise.
7. Easy operation with rational construction and attractive appearance.

Technical Parameters

1. Rated voltage: AC220V±10% 50Hz
2. Glassware components: 5 tubes (7 tubes)
3. Sucking pump: 220V 60W
4. Ambient requirements: Temperature: 10~40℃; Humidity≤85%



KN-4929 Sulfur and Chlorine Microcoulometric Titrator

Overview

Injected into quartz tube and mixed with O_2 , the sample burns. Then the combustion gases are routed into a titration cell and react with I_3^- or Ag^+ . Then the analyzer detects and adds I_3^- or Ag^+ to original concentration. In accordance with Faraday's laws of electrolysis, the detector module calculates energy they consumed and thus gets the concentration of sulfur or chlorine.

Features

1. Fast analyzing speed, only 3~4min for one sample
2. It overcomes the shortcomings of the traditional Coulometric titrator with high water quality requirements and low conversion rate. Since the upgraded instrument has reduced the need for water quality and other analysis conditions, the CRM conversion rate can easily reach between 90% and 110%, and the CRM reverse calibration deviation is not more than 5%.
3. The data processing software has the function of automatic cut-off of over-temperature protection. When the temperature exceeds the set upper limit, the software will automatically cut off the power to protect the electric furnace wire and combustion tube.
4. Delayed cooling function, the cooling time can be set after the analysis, and the power will be automatically turned off when the cooling is done.
5. Gas cut-off alarm to prevent contamination of cracking tube caused by reverse suction
6. The unique design of the chlorine titration cell adopts an all-silver rod electrode, which requires no prior preparation. The titration tank has a long service time, no less than 4 hours. The titration cell contains 75% glacial acetic acid solution with a capacity of 35ml. Be able to complete 60 tests without maintenance. The measurement is accurate, the start-up time is short, and the maintenance amount is small. The detector is equipped with independent temperature controlling system, and the titration cell has a long service life to keep a constant temperature. The detected gas can be discharged to the outside through the hose connection or passed into the distilled water bottle for adsorption
7. Open LIMIS database management mode, convenient for database retrieval management

Applicable standard

ASTM D4929, ASTM D3120, ASTM D3246, ASTM D5808

Technical parameters

1. Measuring range:
Sulfur: $0.1\text{mg/kg} \sim 10000\text{mg/kg} \sim \%$
Chlorine: $0.3\text{mg/kg} \sim 10000\text{mg/kg} \sim \%$
2. Sample type: Solid, liquid, gas (select the proper injector)
3. Temperature control range: Ambient $\sim 1000^\circ\text{C} \pm 1^\circ\text{C}$
4. Repeatability error: $X < 1.0\text{mg/kg}$, $C_v \leq 20\%$
 $1.0\text{mg/L} \leq X \leq 10\text{mg/kg}$, $C_v \leq 10\%$
 $X > 1.0\text{mg/kg}$, $C_v \leq 5\%$



KN-1275 Transformer Oil Corrosive Sulfur Tester

Overview

KN-1275 Transformer Oil Corrosive Sulfur Tester conforms to **ASTM D1275 Standard Test Method for Corrosive Sulfur in Electrical Insulating Oils**. In most of their uses, insulating oils are continually in contact with metals that are subject to corrosion. The presence of corrosive sulfur compounds will result in deterioration of these metals. The extent of deterioration is dependent upon the quantity and type of corrosive agent and time and temperature factors. Detection of these undesirable impurities, even though not in terms of quantitative values, is a means for recognizing the hazard involved.

Features

1. The liner is made of mirror stainless steel plate by argon arc welding.
2. The shell adopts sprayed high-quality steel plate material
3. Large double-layer tempered glass observation window
4. Vertical and vertical forced convection to ensure uniform temperature in the working chamber
5. Adopts digital microcomputer temperature controller, accuracy: 0.1 °C (display range)
6. With timing function, temperature control protection function, with fan stop switch
7. The thermal insulation system adopts ultra-fine glass fiber to fill the thermal insulation area, and the connection parts of the inner and outer part are made of non-metal high temperature resistant materials, which can effectively reduce the high temperature conduction.
8. The hot air circulation system consists of imported original fans and advanced air ducts that can run continuously at high temperatures

Technical parameters

1. Temperature range: RT+10~200°C
2. Temperature accuracy: $\pm 1^{\circ}\text{C}$
3. Temperature resolution: 0.1°C
4. Heating rate: 1.0~3.0°C/min
5. Timing range: 1~9999min
6. Copper strip purity $>99.9\%$
7. Rated voltage: AC220V, 50Hz
8. Working chamber dimension: 340*270*325mm
9. Dimension: 630*515*505mm



KN-SC Integrated Sulfur Analyzer

Overview

It is applicable in the industry such as electrical power, coal, commerce inspection, environment protection, metallurgy, paper making, petrochemical, earth probe, and the research institution or quality inspecting organization to measure the sulfur content in the materials of coal, cinder, coke, catalyst, minerals, rock, and petrochemicals.

Features

1. Adopting the integrated configuration, put the sample feeding device, electrical scale, vertical high temperature cracking furnace, electrolytic cell, stirrer, and gas purification system in a single container. Thus to make the instrument concise and graceful.
2. Testing time, normally about 5 minutes, can be automatically judged according to the different samples. System errors can be automatically corrected by software and the testing results is more accurate than GB (National Standard). Testing with the principle of coulometry, the testing time is shorter than Escar method and high temperature burn moderate method.
3. Using the PID temperature controlling algorithm, hence the temperature control is more accurate and the temperature rise more quickly. Using contactless switches. Have over-temperature protection and electrolyte anti-backflow facility, thus to make the system safe and reliable.
4. Adopting the multi-spots dynamic coefficient correcting method, the system error can be automatically corrected by software, hence to make the testing result more accurate.
5. Temperature control, sample feeding, electrolyzing, and calculation are done by the procedure. System automatically store testing results and print out. Using the dynamic windows operating interface, the operation is simple and easy.
6. Adopting the advanced USB technology, one computer can control several instruments. And the synthesized instrument can be composed combined with other instruments.
7. Completely support Windows systems; high stability; can link electronic scale and share data in long distance through network.

Technical parameters

1. Furnace temperature: 1150 °C
2. Temperature controlling precision: ± 2 °C
3. Sulfur testing resolution: 0.001 %
4. Sulfur testing range: > 0.01 %
5. Testing time: 5 min per sample
6. Sample weight: 45mg~100mg
7. Power Supply: 220V, 50/60HZ
8. Power: ≤ 3 kw
9. Dimension: 620mm× 500mm× 370 mm
10. Weight: 46kg



KN-8820 High Frequency Infrared Carbon & Sulfur Analyzer

Summary

KN-8820 Infrared carbon and sulfur analyzer is used in conjunction with the high-frequency furnace, which can quickly and accurately determine the mass fraction of carbon and sulfur in steel, iron and its alloys, non-ferrous metals, cement, ore, glass, coke, coal, catalyst and other solid materials. It is a new technology product integrating optical, mechanical, electrical, computer and analysis technology, with the characteristics of wide measurement range and accurate and reliable analysis results. Using stable computer technology, the intelligence of the instrument, the collection and processing of the graphics, text and data displayed on the screen have reached the current high level in China, and it is an ideal analysis equipment for the determination of carbon and sulfur in many industries.

Linear calibration in full scale range, linear without inflection points. Adopts gravimetric linear compensation technology, which can achieve good stability of non-quantitative weighing. No less than 16 carbon-sulfur channels, program heating function, through the software can achieve high-frequency furnace temperature control. When do the data statistics, it is able to select the analysis results which are needed to participate in the operation. Software will automatically calculates the average value, standard deviation, relative standard deviation. Self-diagnosis function: real-time monitoring of gas circuit, high-frequency furnace and detector, timely alarm in case of error; Multi-level management capabilities.

Standard Reference

1. **ISO 15350** Steel and iron - Determination of total carbon and sulfur content - Infrared absorption method after combustion in an induction furnace (routine method)
2. **ISO 9556** Steel and iron - Determination of total carbon content - Infrared absorption method after combustion in an induction furnace
3. **ISO 4935** Steel and iron -- Determination of sulfur content -- Infrared absorption method after combustion in an induction furnace

High Frequency Furnace

1. The high-frequency circuit design adopts high-power high-frequency air-cooled ceramic power tube, ceramic vacuum capacitor (100A), and non-inductive resistance to improve the stability of the high-frequency combustion system
2. The frequency of the high-frequency desktop induction furnace is 20MHz, the power is 2.7KVA, and the maximum adjustment is 5KVA
3. The self-excited directional coupler takes power feedback to ensure that the output power is consistent, so that the sample can be fully burned, and with good stability.
4. Adopts software control to automatically detect the working conditions of solenoid valves, lifting cylinders and high-frequency furnaces, with self-diagnosis and protection functions, automatically alarms in case of errors, and can be diagnosed remotely.
5. Automatic overtime/overcurrent alarm: ensures the HF furnace works properly
6. The cast aluminum integrated forming furnace body and gold processing are used to effectively prevent air leakage caused by the assembly

7. High-precision electronic flow meter (supply oxygen under constant pressure) is used to control and analyze the gas flow, and the analysis results are stable and reliable
8. Automatic double helix cleaning the dust on the furnace head, three-layer baffle anti-splash design, improve measurement accuracy
9. Constant temperature water removal device in the furnace
10. Automatic high-pressure dust discharge function, dedicated dust discharge channel, reduce air path blockage; The dust filtration device developed by powder metallurgy materials is installed in the stove, and the combustion chamber and dust filter are automatically cleaned twice per analysis, and the dust is automatically sucked to prevent the adsorption effect of dust on the analysis process
11. Multiple filtration in the gas path, and platinum-silicon catalyst, magnesium perchlorate and sodium hydroxide three-in-one additives are used as filter purification agents to ensure that the gas chamber will not be polluted for a long time.

Infrared Analysis System

1. The electronic circuit adopts modular design, it features stable and reliable, and adopts multi-level concealed isolation circuit to completely solve high-frequency interference
2. Power supply: Adopts high-quality linear integrated military-grade module power supply, stable output, no fault.
3. Adopts imported infrared light cut stepper motor, special new antioxidant platinum infrared light source, high efficiency, stable spectral characteristics, with tens of thousands of hours service life
4. The optical band emitted by the light source is limited to 2-10um at the source to ensure no stray light; Enter the subsequent detection channel to ensure the stability and accuracy of detection; The concentrating device inside the light source ensures the parallelism of the outgoing light; The inside of the light source is filled with protective gas to protect the stability of the light source and prevent oxidation
5. Equipped with independent four gold-plated infrared detection cells (high and low carbon cell, high and low sulfur cell) to automatically switch base on the different contents
6. The use of low-noise, high-sensitivity, high-stability pyroelectric solid-state infrared detector (Allif) ensures the precision and accuracy of the measurement
7. Standard samples can be used for single-point or multi-point correction, which is convenient and practical
8. Windows full English menu operation, the test software is fully functional, and there is no obstacle for any operator
9. The newly equipped remote diagnosis and positioning software system can remotely monitor the use and stability of equipment, once there is some problems, it will notify operators immediately, and remotely deal with all faults caused by operating software, so as to save a lot of time for maintenance
10. Brand computer control and precision electronic analytical balance, non-quantitative weighing, etc. all ensure the stability of operation and data reliability
11. The software has complete functions, providing more than 40 functions such as file help, system monitoring, channel selection, data statistics, result correction, breakpoint correction, automatic leak detection of system diagnosis, and outdated overcurrent alarm
12. The optical fiber data transmission system is adopted to avoid the interference problems caused by conventional RS232 interface transmission caused by high-frequency vibration, and greatly

improve the communication speed

13. Equipped with high-precision gas flow controller, automatic control of gas flow, it will not be affected by environment, temperature or pressure, metal double ferrules connection, good air tightness. Equipped with Swiss infrared modulation motor. Also equipped with ultra-microporous metal filter (0.4 μm)

Technical Parameters

1. Measuring range
Low carbon content: 0.00001~4% High carbon content: 4%~99.9999%
Low sulfur content: 0.00001~1% High Sulfur content: 1%~99.9999%
2. Accuracy: Meets the ISO 15350 requirements
3. Precision & Repeatability:
Carbon measurement conforms to ISO 9556, $\text{RSD} \leq 5\%$ or 1ppm
Sulfur measurement conforms to ISO 4935, $\text{RSD} \leq 1\%$ or 1ppm
4. Sensitivity (readout accuracy): 0.01ppm
5. Analysis time: 25~60s adjustable, generally will be about 35s
6. Minimum readout: 0.00001%
7. Electronic balance: Accuracy $\pm 0.1\text{mg}$, sensitivity: 100g/0.1mg
8. Gas flow:
Top blowing oxygen flow rate: 0.1~2.0L/min
Analytical gas flow rate: 3.0~4.0L/min
9. Max power: 2.7KW
10. Analytical absorption cell
Gold-plated carbon-sulfur analysis cell and high-precision pyroelectric infrared detector
The analytical cell signal will be tracked during the whole process and automatically adjusted
11. Desiccant: High-efficiency color-changing desiccant
12. Filtration and purification agent (special materials need to be used): sodium hydroxide, magnesium perchlorate, platinum-silicon catalyst
13. HF furnace dimension: 52*65*94cm



KN-1657 LPG Pressure Hydrometer Cylinder

Overview

KN-1657 LPG Pressure Hydrometer Cylinder conforms to the **ASTM D1657 Standard Test Method for Density or Relative Density of Light Hydrocarbons by Pressure Hydrometer**, is used for testing the density or relative density of light hydrocarbons including liquefied petroleum gases (LPG) having Reid vapor pressures exceeding 101.325kPa (14.696 psi). The tester is purged with a portion of the sample before filling with the portion to be used for testing. The pressure cylinder is filled to a level at which the enclosed hydrometer floats freely, and the cylinder is then placed in a constant-temperature bath. When the temperature has reached equilibrium, the hydrometer reading and the temperature of the sample are noted.

Features

1. The tester comprises of pressure gauge, which makes easier to observe the pressure of the inner tube. Ensure the operating safety.
2. A polymethylmethacrylate pressure cylinder, clear observation of the hydrometer and thermometer
3. Reasonable structure with decent appearance.

Technical parameters

1. Working pressure: 1.2MPa
2. Inlet and outlet mouth diameter: 6mm
3. Pressure cylinder diameter: 51mm, thickness: 6.5mm
4. Length of the cylinder: 445mm
5. Ambient requirements: Temperature 10~40°C; Humidity≤85%



KN-1657A Pressure Hydrometer Cylinder Bath

Overview

KN-1657A Pressure Hydrometer Cylinder Bath conforms to the **ASTM D1657 Standard Test Method for Density or Relative Density of Light Hydrocarbons by Pressure Hydrometer**, is used for testing the density or relative density of light hydrocarbons including liquefied petroleum gases (LPG) having Reid vapor pressures exceeding 101.325kPa (14.696 psi). The tester is purged with a portion of the sample before filling with the portion to be used for testing. The pressure cylinder is filled to a level at which the enclosed hydrometer floats freely, and the cylinder is then placed in a constant-temperature bath. When the temperature has reached equilibrium, the hydrometer reading and the temperature of the sample are noted.

Features

1. The shell of the instrument is made of high-quality cold-rolled steel plate, and the surface is treated by electrostatic spraying and high temperature baking, which is easy to clean and corrosion-resistant
2. Imported fully enclosed compressor, equipped with self-protection function
3. If the temperature is too high, the system will alarms
4. High-power magnetic circulation system to ensure temperature uniformity
5. Ultra-thick plexiglass bath, transparent for easy observation
6. Microcomputer controller, PID function, digital display temperature (continuous display during test)
7. The cylinder is equipped with a thickened transparent protective cover to fully ensure the safety of the operator.

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Temperature controlling range: 15 $\sim$ 20 $^{\circ}$ C
3. Temperature controlling precision: $\pm$ 0.1 $^{\circ}$ C
4. Total Power: 1500W
5. Tube diameter: 6mm
6. Working pressure: 1.4MPa



KN-1298 Density Test by API Hydrometer

Overview

KN-1298 Density Test by API Hydrometer conforms to **ASTM D1298 Standard Test Method for Density, Relative Density, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method**. The tester covers the laboratory determination using a glass hydrometer in conjunction with a series of calculations, of the density, relative density, or API gravity of crude petroleum, petroleum products, or mixtures of petroleum and nonpetroleum products normally handled as liquids, and having a Reid vapor pressure of 101.325kPa (14.696psi) or less. Values are determined at existing temperatures and corrected to 15°C or 60°F by means of a series of calculations and international standard tables.

Features

1. The tester can proceed two-way experiments, greatly improves test efficiency.
2. The tester adopts stainless steel heater anti-corrosion, long working life.
3. The digital display meter to show temperature, high precision of temperature control.
4. Simple operation with elegant structure.

Technical parameters

1. Rated voltage: AC 220V $\pm$ 10% 50Hz
2. Power: 2000W
3. Bath temperature: 20 ~ 95°C
4. Graduate flask: 1000ml
5. Temperature control: Digital display temperature controller
6. Temperature sensor: Pt100
7. Precision of temperature control: $\pm$ 0.2°C
8. Test station: Two holes
9. Mixing method: Mixing motor, 1200r/min
10. Ambient requirement: Temperature 10~40°C; Humidity $\leq$ 85%



KN-4052A Electronic liquid density meter [U-tube oscillation method]

Overview

KN-4052A Electronic liquid density meter [U-tube oscillation method] conforms to **ASTM D4052 Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter**. Density is a fundamental physical property that can be used in conjunction with other properties to characterize both the light and heavy fractions of petroleum and petroleum products.

Features

1. Automated integration to realize one-button operation
2. Built-in Peltier temperature control to improve accuracy and stability
3. High-definition video to avoid the influence of bubbles
4. Data can be printed directly through the printer

Technical parameters

1. Measuring range: $0\text{g}/\text{cm}^3$ to $3\text{g}/\text{cm}^3$
2. Resolution: $\pm 0.00001\text{g}/\text{cm}^3$
3. Repeatability: $\pm 0.0001/\text{cm}^3$
4. Accuracy: $\pm 0.0003/\text{cm}^3$
5. Injection Method: Automatic (Manually injection is available)
6. Temperature control mode: Peltier
7. Temperature range: $5\sim 45^\circ\text{C}$ or $5\sim 65^\circ\text{C}$, $\pm 0.02^\circ\text{C}$, adjustable
8. Display mode: 10.4 inch FTF color touch screen
9. Storage: 32G
10. Output method: USD, RS232, RJ45, SD and USB flash disk
11. WIFI print: Available
12. Output file format: PDF & Excel
13. Rated voltage: 110V~230V, 50Hz/60Hz



KN-4052B Electronic liquid density meter [U-tube oscillation method]

Overview

KN-4052B Electronic liquid density meter [U-tube oscillation method] conforms to **ASTM D4052 Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter**. Density is a fundamental physical property that can be used in conjunction with other properties to characterize both the light and heavy fractions of petroleum and petroleum products.

Applicable fields

- Pharmaceutical industry: quality control of APIs and pharmaceutical intermediates, determination of specific gravity and density of pharmaceuticals;
- Flavor and fragrance: raw material verification of edible flavor, daily flavor, tobacco flavor and food additive;
- Petrochemical industry: crude oil API index, gasoline and diesel density detection, additive mixing ratio process monitoring;
- Beverage industry: measuring sugar concentration, alcohol concentration, beer quality control, soft drink quality control;
- Food industry: quality control of grape juice, tomato juice, fructose syrup, vegetable oil and soft drink processing;
- Brewing industry: detection of alcohol concentration in liquor, rice wine, red wine, beer, fruit wine, rice wine, etc.;
- Chemical industry: testing of chemical urea, detergent, ethylene glycol, acid-base and ammonia concentration;
- Machinery manufacturing: cleaning agent testing for metal processing, machine manufacturing, automotive industry, electronic appliances;
- Inspection agency: standard laboratory, statutory testing agency, third-party testing liquid density measurement.

Features

1. Automated integration to realize one-button operation
2. Built-in Peltier temperature control to improve accuracy and stability
3. High-definition video to avoid the influence of bubbles
4. Data can be printed directly through the printer

Technical parameters

1. Test mode: Density, alcohol concentration and customized formula
2. Measuring range: $0\text{g}/\text{cm}^3$ to $3\text{g}/\text{cm}^3$
3. Resolution: $\pm 0.00001\text{g}/\text{cm}^3$
4. Repeatability: $\pm 0.00008\text{g}/\text{cm}^3$
5. Accuracy: $\pm 0.00005\text{g}/\text{cm}^3$
6. Injection Method: Automatic (Manually injection is available)
7. Temperature control mode: Peltier
8. Temperature range: $5\sim 65^\circ\text{C}$, $\pm 0.02^\circ\text{C}$, adjustable
9. Display mode: 10.4 inch FTF color touch screen
10. Storage: 64G
11. Output method: USD, RS232, RJ45, SD and USB flash disk
12. WIFI print: Available
13. Output file format: PDF & Excel
14. Rated voltage: 110V~230V, 50Hz/60Hz



KN-4052P Portable Density Meter

Overview

KN-4052P is used to measure the temperature and density (concentration) of the liquid in the tank. After the measurement, the data is automatically displayed, portable design. It is made for density and concentration measurement in harsh environments, including outdoor operation, while providing the accuracy expected from a lab instrument.

Working Principle:

Density and vibration frequency of the media conforms to $D=K0+K1T+K2T^2$

D: Medium density **T:** Inherent frequency

T2=Frequency of the medium flows through the tuning fork **K0, K1 and K2:**Constant

Features

1. Tuning fork vibrating density meter, equipped with microprocessor-based electronic conversion device
2. Reliable accuracy, be able to figure out the basic density, while measuring density and temperature, API, mass percentage, volume percentage, specific gravity, Brix and concentration percentage
3. LCD displays the related data, only need 100ml liquid sample
4. Wide measuring range, easy operation, high precision and fast test speed
5. Easy calibration of pure water density table, be able to do CRM calibration

Technical parameters

1. Material placed in the inner part of the liquid: stainless steel 316L, ceramic, zirconia, etc. Fork polishing: standard, PFA coating or electro polishing
2. Measuring range: 0.001~1.800g/cm³
3. Density accuracy: $\pm 0.005\text{g/cm}^3$
4. Temperature accuracy: $\pm 0.5^\circ\text{C}$
5. Repeatability error: $\pm 0.001/\text{cm}^3$
6. Ambient temperature: $-10\sim 120^\circ\text{C}$
7. Temperature compensation: Automatic



KN-1500 Colorimeter for Petroleum Products

Overview

KN-1500 Colorimeter for petroleum products conforms to the **ASTM D1500 Standard Test Method for ASTM Color of Petroleum Products (ASTM Color Scale)**. The tester covers the visual determination of the color of a wide variety of petroleum products, such as lubricating oils, heating oils, diesel fuel oils, and petroleum waxes. Experimenter pours different kinds of lubricating oil, kerosene, diesel and other petroleum product samples into colorimetric cylinder, then compare with normal glass color piece, determining the colourity by the corresponding color number.

Features

1. The standard color disk adopts 25 kinds of color number of standard color sheet glass.
2. The optical microscope adopts observation optical lens, be provided with focusing function.
3. The standard illuminant adopts inside-frosted bulb as luminous source.
4. Turning of the standard color disk adopts manual adjustment.
5. Easy operate with rational construction and attractive appearance.

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Standard illuminant: 100W Temperature: 2750K $\pm$ 50K
3. Standard color disk: No.1~25
4. Colorimetric cylinder: inner diameter 33*125 $\pm$ 5mm
5. Ambient requirement: Temperature: 10~40°C; Humidity $\leq$ 85%



KN-156 Saybolt Chromometer

Overview

KN-156 Saybolt Chromometer conforms to **ASTM D156 Standard Test Method for Saybolt Color of Petroleum Products (Saybolt Chromometer Method)**. The tester 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.

Features

1. The tester equips a matched set of sample and standard tube assemblies with optical viewer
2. Three-position turret on standard tube
3. Accessory Daylight Light provides standard light source per ASTM specifications
4. The sample tube has a 200W steel strip heater and a hinged cover to maintain even heat distribution
5. Optical viewer and stand are fully insulated from the heaters

Technical parameters

1. Rated voltage: AC220V±10% 50Hz
2. Specimen glass tube: Hard glass tube with a scale, the lower part is equipped with liquid discharge valve, tube inner diameter of 16.5-17.5mm, OD 21.3-22.7mm
3. Standard color glass tube: Hard glass tube, tube inner diameter of 16.5-17.5mm, OD 21.3-22.7mm
Standard color glass sheet: The whole thick plate 3 pieces, semi-thick one piece.
4. Optical means: Sight glass
5. Dimension: 690mm×160mm×160mm
6. Weight: 5kg
7. Ambient requirement: 5-40℃ Humidity≤85%



KN-4530 Micro Carbon Residue Tester

Overview

KN-4530 Micro Carbon Residue Tester conforms to the **ASTM D4530 Standard Test Method for Determination of Carbon Residue (Micro Method)**. This tester 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.

Features

1. Adjust the nitrogen flow and switch the flow automatically
2. Automatic program heating, according to the curve to control the temperature and to finish all the test procedures
3. Touch screen operation, it can print and save the data
4. The tester equips waste gas recycle system to reduce the exhaustion of toxic substance

Technical parameters

1. Rated voltage: AC 220V $\pm$ 10% 50Hz
2. Heating power: 1500W
3. Coking oven: 775 $^{\circ}$ C
4. Temperature control accuracy $\pm$ 2 $^{\circ}$ C
5. Test station:12
6. Flow adjustment range:100ml $\sim$ 1000ml;150ml/min and 600ml/min automatic switch
7. Ambient requirement: Temperature: 5 $\sim$ 40 $^{\circ}$ C Humidity $\leq$ 85%

Package Information

1. Dimension: 560*425*500mm
2. Volume: 0.12m³
3. Weight: 35kg



KN-189 Conradson Carbon Residue Tester

Overview

KN-189 Conradson Carbon Residue Tester conforms to **ASTM D189 Standard Test Method for Conradson Carbon Residue of Petroleum Products**. This tester 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 propensities. This test method is generally applicable to relatively nonvolatile petroleum products which partially decompose on distillation at atmospheric pressure, our KN-189 Provides an indication of relative coke forming properties of petroleum oils. The residue remaining after a specified period of evaporation and pyrolysis is calculated as a percentage of the original sample.

Features

1. The tester consists of a flame shield, a blowtorch and a tripod

Technical parameters

1. Blowtorch:Mig kerosene blowtorch, aperture : $\Phi 25\text{mm}$
2. Cover flame body:Back cut diameter $90\pm 2\text{mm}$ End opening diameter $82\pm 2\text{mm}$
3. Round iron shield: $\Phi 125\pm 5\text{mm}$
4. Porcelain crucible: $30\text{ml}\pm 1\text{ml}$
5. Internal iron crucible: $\Phi 55\pm 2\text{mm}$
6. External iron crucible: $\Phi 80\pm 2\text{mm}$



KN-524 Ramsbottom Carbon Residue Tester

Overview

KN-524 Ramsbottom Carbon Residue Tester conforms to the **ASTM D524 Standard for Ramsbottom Carbon Residue of Petroleum Products**. It is used for testing the amount of carbon residue left after evaporation and pyrolysis of an oil, and it is intended to provide some indication of relative coke-forming propensity. This test method is generally applicable to relatively nonvolatile petroleum products which partially decompose on distillation at atmospheric pressure.

Features

1. The tester can proceed four experiments at the same time, improving working efficiency.
2. The tester adopts metal bath temperature, constant temperature rapid, and bath temperature even.
3. The tester adopts digital display temperature controller, convenient to adjust the temperature controlling precision is high.
4. The output adopts solid-state relay, contactless, sparkless and noiseless. It is safe and reliable and with long lifetime.
5. Rational designed with easy operation and attractive appearance.

Technical parameters

1. Rated voltage: AC 220V $\pm$ 10%; 50Hz
2. Heating power: 2000W
3. Temperature controlling mode: Digital display
4. Temperature control point: 520 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C
5. Sensor: Pt100 (platinum resistor)
6. Bath holes: Four holes
7. Ambient requirements: Temperature 10~40 $^{\circ}$ C
8. Humidity $\leq$ 85%



KN-5800 Lubricating Oil Evaporation Loss Tester (NOACK Test)

Overview

KN-5800 Lubricating Oil Evaporation Loss Tester (NOACK Volatility Test) conforms to **ASTM D5800 Standard Test Method for Evaporation Loss of Lubricating Oils by the Noack Method, Procedure A**, The evaporation loss is of particular importance in engine lubrication. Where high temperatures occur, portions of an oil can evaporate.

Features

1. Temperature controller can maintain the temperature rapidly.
2. High density thermal insulation material ensures outer panel is not hot.
3. Stopwatch can timing and control pump start at the same time.
4. High needle valve ensures constant voltage.

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Power: 1300W
3. Temperature control method: LCD display
4. Voltage regulate: Precise needle valve
5. Temperature control point: 250 $\pm$ 0.5 $^{\circ}$ C
6. Pressure display: Inclined manometer
7. Ambient requirements: Temperature 10 ~ 40 $^{\circ}$ C, Humidity $\leq$ 85%



KN-5800Z Automatic Lubricating Oil Evaporation Loss Tester (NOACK Test)

Overview

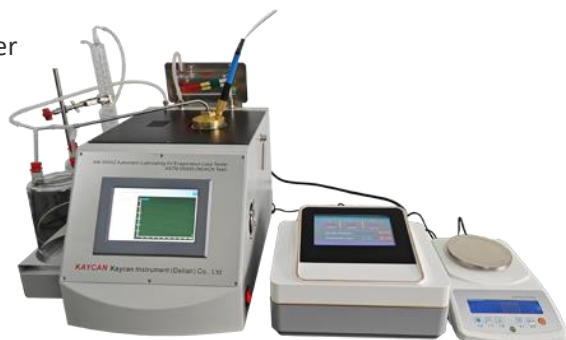
KN-5800Z Automatic Lubricating Oil Evaporation Loss Tester (NOACK Volatility Test) conforms to **ASTM D5800 Standard Test Method for Evaporation Loss of Lubricating Oils by the Noack Method, Procedure B**. It uses the automated non-Woods metal Noack evaporative tester. The evaporation loss is of particular importance in engine lubrication. Where high temperatures occur, portions of an oil can evaporate, which is suitable for the determination of lubricating oil (especially Evaporation loss of engine oil) and lubricating base oil at 250 °C.

Features

1. Metal bath heating device, safe and environmentally friendly.
2. Imported differential pressure gauge to ensure accurate pressure.
3. Woods alloy is added to the bath body for better heat transfer.
4. Equipped with special vacuum suction system.
5. Digital timer to record test time.
6. The evaporation crucible meets ASTM standards.
7. Precision pressure regulation system and imported needle valve to ensure accurate flow regulation.
8. There is a gas buffer bottle inside.
9. High-power solid state relay control heater.
10. Imported temperature control gauge for precise control.
11. Be able to get the dedicated balance data from the data processing system, with printing function

Technical parameters

1. Rated voltage: AC220V $\pm$ 10%, 50Hz
2. Temperature control mode: Digital display PID temperature controller
3. Temperature control range: Ambient $\sim$ 250°C $\pm$ 0.1°C
4. Heating method: Metal bath heating
5. Pressure regulation: High precision needle valve
6. Suction method: Vacuum pump



KN-972 Evaporation Loss for Lubricating Grease

Overview

KN-972 Evaporation Loss for Lubricating Grease conforms to **ASTM D972 Standard Test Method for Evaporation Loss of Lubricating Greases and Oils**. It is suitable to test the evaporation loss of the lubricating oil and lubricating grease. The evaporation loss is an important factor when using these lubricants, the evaporation loss can be tested at any agreed upon temperature between 100 and 150°C (210 to 300°F).

Features

1. The tester adopts the table model structure, including the heating bath and precise flow meter. There is a hole on the stainless steel cover, user can put specimen bottle in it.
2. Ceramics clad layer stainless steel structure
3. Environment friendly oil bath heats, decrease the harm of lampblack to human body, high-efficiency thermal-insulation effect
4. Stainless steel heater
5. Point-device flow meter, equipped with needle valve, flow rate is 0 to 2L/min
6. Air filter, equipped with glass wool
7. Micro program thermostat and PID control, digital display temperature, precision 0.5°C, Pt100 RTD temperature
8. Metal bath heating device, safe and environmentally friendly.

Technical parameters

1. Rated voltage: AC220V±10% 50Hz
2. Power: 2000
3. Temperature control range: Room Temperature~220°C, ±0.2°C
4. Temperature control mode: High accurate PID digital display temperature controller
5. Motor stirring: 1450r/min
6. Bath holes: 2
7. Timer: Digital timer, 0.01s~99.99h
8. Flow control: 2L/min
9. Evaporator: 304 Stainless Steel
10. Coiler: Tinned red copper
11. Noise: <47dB
12. Ambient requirement: Temperature: 10 ~ 40°C ; Humidity ≤85%

Package Information

1. Dimension: 380*460*630mm
2. Volume: 0.11m³
3. Weight: 25kg



KN-2595 Lubricating Grease Wide Temperature Range Evaporation Loss Tester

Overview

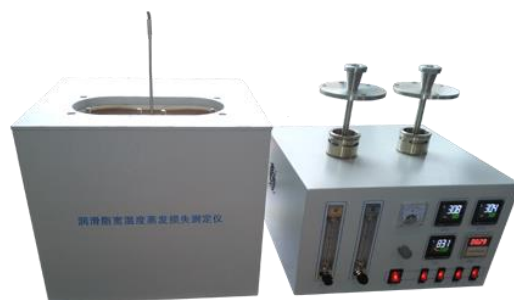
KN-2595 Lubricating Grease Wide Temperature Range Evaporation Loss Tester conforms to **ASTM D2595 Standard Test Method for Evaporation Loss of Lubricating Greases Over Wide-Temperature Range**. A weighed sample of grease in an evaporation cell is placed in a heating device maintained at the desired test temperature. Heated air is passed over the grease surface for $22\text{h} \pm 0.1\text{h}$. The loss in weight of the sample due to evaporation is determined.

Features

1. This tester adopts separate design, and the control part and the high temperature test bath part are divided into two units. It can be placed left and right, or it can be arranged up and down (to save the area of the worktop).
2. Adopts three sets of temperature controller to control the air temperature and aluminum bath temperature.
3. The test time can be easily set by a digital display timer for 22 hours.

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Total Power: 2500W
3. Test station: 2
4. Temperature range: 93~316 $^{\circ}\text{C} \pm 1^{\circ}\text{C}$
5. Flow rate: 2L/min



KN-5373 Carbon, Hydrogen and Nitrogen Elements Analyzer

Overview

KN-5373 Carbon, Hydrogen and Nitrogen Elements Analyzer conforms to **ASTM D5291 Standard Test Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Petroleum Products and Lubricants** and **ASTM D5373 Standard Test Methods for Determination of Carbon, Hydrogen and Nitrogen in Analysis Samples of Coal and Carbon in Analysis Samples of Coal and Coke**.

This test method A covers the determination of carbon in the range of 54.9% to 84.7%, hydrogen in the range of 3.26% to 5.08%, and nitrogen in the range of 0.57% to 1.76% in analysis samples of coal and of carbon in analysis samples of coke in the range of 86.6% to 97.9%.

Test Method B covers the determination of carbon in analysis samples of coal in the range of 57.7% to 84.0%, and carbon in analysis samples of coke in the range of 86.3% to 95.4%.

It is suitable for the determination of the carbon, hydrogen and nitrogen content of coal, coke, fuels and lubricants in power plants, coal mines, commodity inspection, environmental protection, geological prospecting, metallurgy, papermaking, chemical industry, scientific research, education and other departments.

Features

1. Be able to place 39 samples one time, 78 samples type is optional. No need manual operation after sampling. Be able to add, reduce or replace the sample during the test.
2. Horizontal type structure, be able to place the tester on the test bed for convenience operation.
3. Adopts PID temperature control, furnace chamber temperature accuracy can reach $\pm 1^{\circ}\text{C}$, constant temperature chamber and gas cylinder accuracy can reach $\pm 0.1^{\circ}\text{C}$.
4. Adopts absolute pressure sensor to monitor the entire gas path and detect the air tightness of the gas path and the furnace, infrared pool, thermal conductivity pool, and gas storage tank.
5. Adopts infrared spectroscopy to determine the carbon and hydrogen content, and adopts thermal conductivity method to determine the nitrogen content.
6. Fast test speed, high automation, and the test time for carbon, hydrogen, and nitrogen is about 4 minute.
7. During the test, it is able to select the Automatic Cooling After Test, no need any further operation after the test. The tester will power off and cool automatically after the test.
8. Test report is able to be edited as per the exact demands.
9. Be able to connect to the LMIS.

Technical parameters

1. Measuring range: C:0.005%~100%、H: 0.01%~60%、N: 0.008%~60%
2. Repeatability: C (Cad≤0.5%)、H (Had≤0.15%)、N (Nad≤0.08%)
3. Temperature control range: RT+10~1050℃
4. Accuracy: ±1℃
5. Sample weight: 80~100mg is recommended
6. Sample presentation: Automatic
7. Sample quantity: 39pcs/batch, be able to add/replace the sample during the test. Sample plate which can contain 78 kinds of samples is optional.
8. Single analysis time: around 4min
9. Carrier gas: Helium, Purity≥99.995%, Pressure:0.25±0.1MPa
10. Oxidant gas: Oxygen, when test Carbon and Hydrogen, purity≥99.5%,
when test Nitrogen, purity≥99.995%, pressure:0.25±0.1MPa
11. Power gas: Inert gas, no oil or water, pressure:0.29±0.1MPa
12. Power: ≤4.5kw
13. Placement mode: Horizontal type
14. Dimension: 690×740×720mm
15. Total weight: 105kg



KN-1319 Fluorescent Indicator Absorption Tester

Overview

KN-1319 Fluorescent Indicator Absorption Tester is suitable to the **ASTM D1319 Standard Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption**. It determinates hydrocarbon types over the concentration ranges 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.

Features

1. The vibrator of the instrument adopts electrical machine doing centrifugal vibration, shake regularly and noiseless
2. The tester adopts ultraviolet rays protector, safe and reliable, domestic initiative
3. The tester is equipped with two import absorption column, can do two groups of experiments, improve work efficiency
4. The tester is equipped with pressure gauge, easy to adjust pressure.
4. The measuring meter ruler and magnetic slider become one with the instrument. Easy to observe the record and difficult to be damaged.
5. Rational design with attractive appearance and easy operation.

Technical parameters

1. Rated Voltage: 220V $\pm$ 10% 50Hz
2. Electric agitator: 12V 1500 turns/min
3. 2 pieces of precision adsorption column: 1mmHg, O.D $\leq$ 0.5mm; length change $\leq$ 0.5mm
4. UV light source power: 40W
5. Ultraviolet wavelength: 365nm
6. Pressure precision: 0~0.16Mpa
7. Ambient requirements: Temperature: 10~40°C; Humidity $\leq$ 85%



KN-2276 Solid Particulate Pollutant Tester for Jet fuel

Overview

KN-2276 Solid Particulate Pollutant Tester for Jet Fuel conforms to the **ASTM D2276 Standard Test Method for Particulate Contaminant in Aviation Fuel by Line Sampling**. The tester provides a gravimetric measurement of the particulate matter present in a sample of aviation turbine fuel by line sampling. The objective is to minimize these contaminants to avoid filter plugging and other operational problem .It is used to test particulate contaminant in aviation turbine fuel using a field monitor.

Features

1. The filter unit of the instrument is made of glass sand core, and the experimental result is obvious.
2. The tester base is made of stainless steel, good corrosion resistance.
3. The tester display shown by pressure gauge, pressure regulator with needle valve control, easy and intuitive.
4. The tester comprises with vacuum pump which process small and light weight. low noise, easy to use, safe and reliable.
5. Reasonable design with attractive appearance and environment-friendly.

Technical parameters

1. Rated voltage:AC220V $\pm$ 10% 50Hz
2. Power:250W
3. Pressure display:0~ 0.1 MPa
4. Glass sand core filter:5L
5. Filter film sheet:0.8 μ m $\leq$ 0.1g
6. Limit negative pressure value: $\geq$ 0.09 MPa
7. Adjustment range:0.02MPa ~ 0.09MPa
8. Exhaust rate: $>$ 20L/min
9. Solvent bottle:500ml
10. Ambient requirements: Temperature:10~40°C;Humidity $\leq$ 85%



KN-1322 Smoke Point Tester for Kerosene

Overview

KN-1322 Smoke Point Tester for Kerosene conforms to the **ASTM D1322 Standard Test Method for Smoke Point of Kerosene**. The tester provides an indication of the relative smoke producing properties of kerosene in a diffusion flame. The smoke point is related to the hydrocarbon type composition of such fuels. Generally the more aromatic the fuel the smokier the flame. A high smoke point indicates a fuel of low smoke producing tendency.

Features

1. The instrument consists of bottom case, oil conservator stand, oil conservator, terrace, wick pipeline, ruler and smoke flue.
2. The oil conservator is composed by wick tube and air tube. The wick tube is tightened in the oil conservator. Then, install the oil conservator in the smoke point lamp.
3. The stroke adjustment range of the oil conservator lifting devices 0~10mm. Convenient and flexible to operate.
4. Wick pipeline and ruler compose the bottom case. The measuring range of the ruler is 0~50mm, easy to observe.
5. Reasonable design with safe and reliable operation, attractive appearance.

Technical parameters

1. Testing range: 0 ~ 50mm
2. Oil reservoir: 25ml
3. Oil reservoir rising and falling device: 0 ~ 10mm
4. Ambient requirement: temperature: 20 ~ 30°C; Humidity ≤ 80%



KN-1322A Automatic Smoke Point Tester for Kerosene

Overview

KN-1322A Automatic Smoke Point Tester for Kerosene conforms to the **ASTM D1322 Standard Test Method for Smoke Point of Kerosene**. The tester provides an indication of the relative smoke producing properties of kerosene in a diffusion flame. The smoke point is related to the hydrocarbon type composition of such fuels. Generally, the more aromatic the fuel the smokier the flame. A high smoke point indicates a fuel of low smoke producing tendency.

This tester adopts the cutting-edge [machine vision] technology in the international measurement and control field, and realizes the automatic completion of the smoke point determination of aviation coal.

The successful development of this instrument reduces the labor intensity of the operator, improves working efficiency, and greatly eliminates the individual physiological and system errors caused by adjusting the flame size and visually measuring the flame height, and the flame height measurement value is accurate to 0.1mm, which greatly improves the measurement accuracy, repeatability and reproducibility, making the data more real and reliable.

Features

1. Using a high-speed microcomputer, we independently researched and developed smoke point measurement software with all intellectual property rights, which realizes automatic control of the entire process of image acquisition, recognition, and calculation processing, with high accuracy and strong real-time performance.
2. Industrial-grade high-fidelity high-speed cameras are used to realize video image collection and transmission.
3. Imported high-precision barometer is used to measure the atmospheric pressure in real time, and automatically participate in the calculation of the smoke point value correction without manual input (automatic input or manual input can be selected). Really realize no manual intervention, one-key start, automatically complete the smoke point determination and print the test results.
4. The precise flame height adjustment system is adopted to automatically adjust the flame size, with an adjustment accuracy of 0.01mm, stable operation and good repeatability.
5. The 8.4-inch TFT high-definition color touch LCD screen is used to display the flame status in real time.
6. Full Chinese operation, exquisite UI human-computer interaction interface, intuitive and friendly. Menu-style buttons are easy to operate and cater to the usage habits of modern people.
7. Support Chinese and English input, convenient input of operator name, sample name, etc., support touch screen virtual keyboard, keyboard, mouse input operation, simple and flexible
8. Main operation steps: Chinese Mandarin voice prompt function, real-time broadcast, novel and

direct, promptly remind the operator to avoid operation errors and improve the success rate of determination.

9. The automatic ignition device is adopted to realize the automatic ignition of the wick without manual operation, which is safe and reliable.
10. Using a microcomputer to establish a complex mathematical model to realize the automatic judgment of the ideal flame characteristics of the digital image and the automatic calculation of the flame height to determine the smoke point value with an accuracy of $\pm 0.1\text{mm}$. It completely replaces the artificial naked eye, thus avoiding problems such as errors in smoke points caused by manual estimation and large data deviations. Make the smoke point determination of kerosene and jet fuel more accurate, and the objective truthfulness of the data is higher.
11. Gigabit network card (optional WiFi), RS232 serial interface, can be connected to the LIMS system, real-time upload, high-speed and reliable data.
12. Built-in micro thermal printer, specially designed for convenience, can print at the end of the measurement. Achieve rapid data viewing and paper storage of data, memos for reference, and worry-free traceability.

Technical parameters

1. Applicable standard: ASTM D1322
2. Resolution: $\pm 0.1\text{mm}$
3. Barometric pressure: automatic detection with a resolution of $\pm 0.01\text{Kpa}$
4. Measurement time: less than 10 minutes
5. Result storage: 2000 groups (can be expanded according to demand)
6. Network mode: Ethernet RJ45 (optional)
7. Print output: built-in micro printer (optional USB printer output)
8. Data output: USB $\times 3$, Ethernet $\times 1$, RS232 $\times 1$ (WiFi is optional)
9. Total power: $< 300\text{W}$
10. Power supply: 115~230V 50/60 Hz



KN-482 Ash Content for Petroleum Product

Overview

KN-482 Ash Content for Petroleum Product conforms to the **ASTM D482 Standard Test Method for Ash from Petroleum Products** and **ASTM D874 Standard Test Method for Sulfated Ash from Lubricating Oils and Additives**. It is used for determination of ash in the range 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 tester is limited to petroleum products that are free from added ash-forming additives, including certain phosphorus compounds.

Features

1. The inner furnace adopts sealed structure, and we adopts high temperature resistant lightweight refractory for the furnace mouth and furnace door.
2. The insulating layer between the inner furnace and the furnace shell adopts refractory fiber, expanded perlite products, there is trace amounts of heat on the outer shell, even if the temperature in the furnace rises to 775℃;
3. The furnace door adopts clip-on structure, only one action to close or open, conforms to quick take of the ASTM D482 standard;

Technical parameters

1. Rated voltage: AC220V±10% 50Hz
2. Heating power: 5000W
3. Temperature control mode: temperature controller
4. Temperature measurement mode: nickel-chromium——Nickel-silicon galvanic couple
5. Temperature control precision:±5℃
6. Temperature control range:100~1200℃
7. Ambient requirements:Temperature:5~40℃
8. Humidity≤85%

Package Information

1. Dimension: 500*340*220mm
2. Volume: 0.41m³
3. Weight: 125kg



KN-473 Sediment Extraction in Crude Oil and Fuel Oil

Overview

KN-473 Sediment extraction in Crude Oils and Fuel Oil, The tester conforms to the **ASTM D473** **Standard Test Method for Sediment in Crude Oils and Fuel Oils by the Extraction Method**. It is used for testing 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.

Features

1. Electric heating with uniform temperature
2. Standard plating on the cover, condenser pipe
3. Stainless steel basket, glass water receiver

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Power: 0~700W continuous adjustable
3. Temperature controlling mode: Solid state voltage regulator, stepless voltage regulation.
4. Adjustable display: AC 0~250V
5. Erlenmeyer flask: 2000ml
6. Ambient requirements: Temperature 10~40°C; Humidity $\leq$ 85%



KN-1881 Foaming Tendency Tester

Overview

KN-1881 Foaming Tendency Tester conforms to **ASTM D1881 Standard Test Method for Foaming Tendencies of Engine Coolants in Glassware**. This tester generally will distinguish coolants that have a tendency to foam excessively from those that are suitable for further evaluation to determine performance in actual service.

Features

1. Integrated design, easy to operate
2. Adopts automatic timing device, it can be set freely
3. Adopts quick water shut-off valve, convenience to replace the bath liquid
4. Test cup quick plug design, it features fast, stable and safe
5. Precise flow meter controls the flow rate, it is able to adjust at any time
6. Dedicated pump, it features stable air feed and no noise

Technical parameters

1. Rated voltage: AC220V±10%, 50Hz
2. Heating power: 2000W
3. Air flow rate: controlled by precise flow meter
4. Temperature range: Ambient ~ 99.9°C
5. Timing method: automatic, be able to set freely
6. Ambient temperature requirement: -10 ~ +40°C
7. Humidity: ≤85%



KN-892 Anti Foam Test for Lubricating Oil

Overview

KN-892 Anti Foam Test for Lubricating Oil conforms to **ASTM D892 Standard Test Method for Foaming Characteristics of Lubricating Oils**, the tester is used for testing 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.

Features

1. The digital display temperature controller features flexible operation and high precision.
2. The heating output adopts solid-state relay, contactless, sparkless, noiseless, long lifetime, safe and reliable.
3. The heater adopts stainless steel material. The heating rate is fast and the lifetime is long.
4. The tester is equipped with two holes, can do two groups of parallel sample experiments, improve work efficiency.
5. The tester is equipped with four groups of flow meters, convenient to observe the flow of experimental gas.
6. Rational design with attractive appearance and friendly to the environment.

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Power: 2500W
3. Temperature controlling mode: Digital Display
4. Temperature controlling point: 24°C, 93.5°C
5. Temperature controlling precision: $\pm$ 0.5°C
6. Sensor: Pt100
7. Hole of the bath: 2 holes
8. Agitation mode: electrical machine 1250 turns/min
9. Ambient requirements: Temperature 10~40°C; Humidity $\leq$ 85%



KN-892BZ Semi Automatic Anti Foam Test for Lubricating Oil

Overview

KN-892BZ Semi Automatic Anti Foam Test for Lubricating Oil conforms to **ASTM D892 Standard Test Method for Foaming Characteristics of Lubricating Oils**, the tester is used for testing 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.

Features

1. Adopts integrated structure, including three parts: the low temperature constant temperature part and its control part, and the high temperature constant temperature part and its control part. The low temperature constant temperature part is equipped with portable cooler.
2. After the constant temperature point has been set, the instrument will enter into constant temperature state automatically. The temperature controller is equipped with parameter correction function. If the displayed temperature deviates from the temperature measured by the thermometer, the required temperature can be achieved through correction.
3. The instrument has automatic timing and alarm function. When turn on the timing switch after reaches the constant temperature point, the timer will automatically time and start to blow at the same time. 5 minutes later, the air will be automatically turned off and kept static for 10 minutes. 10 minutes later, the instrument will alarm automatically to indicate that the current sample test is over.

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Heating power: 650W
3. Auxiliary heating power: 1000W
4. Cooling power: 500W
5. Air flow: 94 $\pm$ 5ml/ml, adjustable
6. Temperature control range: Ambient $\sim$ 99.9°C $\pm$ 0.5°C
7. Timer: 5min and 10min, accurate to second
8. Timing accuracy: 0.01% $\pm$ 0.05s (at 20°C)
9. Total power consumption $\leq$ 2700W



KN-6082 High-Temperature Foaming Characteristic Tester

Overview

KN-6082 High-temperature Foaming Characteristic Tester conforms to **ASTM D6082 Standard Test Method for High Temperature Foaming Characteristics of Lubricating Oils**, it is used to measure the tendency of oils to foam at high temperature can be serious problem in system such as high-speed gearing, high volume pumping, and splash lubrication. Foaming can cause inadequate lubrication, cavitation and loss of lubricant due to overflow.

Features

1. Imported stainless steel foam to guarantee the accurate result
2. Heat-resistant glass bath, transparent and safe
3. Precise flow meter
4. The tester equips air tower and air pump
5. KN-6082A equips double baths with 4 holes and 4 groups of flow meter

Technical parameters

1. Rated Voltage : AC220V $\pm$ 10% 50Hz
2. Power: 2000W
3. Timing method: Digital timer
4. Foam pump: Imported stainless steel
5. Temperature control point: 150°C $\pm$ 0.5°C
6. Sensor: Pt100
7. Bath stir: Motor stirring
8. Ambient requirement: temperature: 10-40°C; Humidity $\leq$ 85%



KN-130 Copper Strip Corrosion Tester

Overview

KN-130 Copper Strip Corrosion Tester conforms to the **ASTM D130 Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test**. This tester can determinate of the corrosiveness to copper of aviation gasoline, aviation turbine fuel, automotive gasoline, cleaners (Stoddard) solvent, kerosine, diesel fuel, distillate fuel oil, lubricating oil, and natural gasoline or other hydrocarbons having a vapor pressure no greater than 124 kPa (18 psi) at 37.8°C (930mmHg). It is a good laboratory special-purpose instrument in petroleum chemical industry, transportation, scientific research colleges and universities.

Features

1. The instrument could be conducted four-way experiments, greatly improving the test efficiency.
2. The instrument provides a wide range of water bath, to make more stable results.
3. Digital display water temperature, temperature control accuracy of $\pm 0.1^{\circ}\text{C}$, temperature range from room temperature to 100°C .
4. The instrument is simple with elegant structure.

Technical parameters

1. Rated voltage: AC 220V $\pm$ 10% 50Hz
2. Power: 1800W
3. Precision of control: $\pm 0.5^{\circ}\text{C}$
4. Ambient temperature: Temperature: $10 \sim 40^{\circ}\text{C}$; Humidity ≤ 85



KN-130J Metal Bath Copper Strip Corrosion Tester

Overview

KN-130J Metal Bath Copper Strip Corrosion Tester conforms to the **ASTM D130 Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test** and **ASTM D4048 Standard Test Method for Detection of Copper Corrosion from Lubricating Grease**. This tester is suitable for testing aviation gasoline, jet fuel, motor gasoline, natural gasoline, or other hydrocarbons with Reid vapor pressure not exceeding 124kPa (930mmHg), solvent oil, kerosene, diesel, distillate fuel oil, lubricating oil, grease, and other petroleum product.

Features

1. Metal bath test, 4 test stations, equipped with aluminum sleeve, be able to do 4 tests simultaneously, single test is available
2. 7 inch touch screen operation, easy to operate, be able to real time display the temperature curve
3. PID temperature controller
4. All cast aluminum design, same power heating rod to keep all test stations have the same temperature
5. Metal bath avoids the oil bath odour and pollution

Technical parameters

1. Rated voltage: AC220V±10%, 50Hz
2. Power:1000W
3. Temperature range: Ambient ~ 150℃
4. Temperature control mode: High precision PID digital display temperature controller
5. Temperature Accuracy: 0.1℃
6. Operation mode: Touch screen
7. With manual strip holder
8. Metal bath: All aluminum CNC, 4 test stations
9. Housing: Electrostatic spray, thickness is greater than 1.2mm
10. Ambient requirement: 0~40℃, Humidity≤85%



KN-1743 Corrosion Preventive Properties of Lubricating Greases

Overview

KN-1743 Corrosion Preventive Properties of Lubricating Greases conforms to **ASTM D1743 Standard Test Method for Determining Corrosion Preventive Properties of Lubricating Greases**. This test method differentiates the relative corrosion preventive capabilities of lubricating greases under the conditions of the test. New, cleaned, and lubricated bearings are run under a light thrust load for 60 ± 3 s to distribute the lubricant in a pattern that might be found in service. The bearings are exposed to water, then stored for 48 ± 0.5 h at $52 \pm 1^\circ\text{C}$ ($125 \pm 2^\circ\text{F}$) and 100% relative humidity. After cleaning, the bearing cups are examined for evidence of corrosion.

Accessory information

1	Bearing holder Single-row tapered roller bearing	
2	Plastic test jar O-ring	
3	Grease pack plunger Upper & Lower Flange	

Technical parameters

1. Rated voltage: AC220V $\pm$ 20V, 50Hz
2. Power: 2000W



KN-1838 LPG Copper Strip Corrosion

Overview

KN-1838 LPG Copper Strip Corrosion conforms to the **ASTM D1838 Standard Test Method for Copper Strip Corrosion by Liquefied Petroleum (LP) Gases**. Copper corrosion limits provide assurance that difficulties will not be experienced in deterioration of the copper and copper-alloy fittings and connections that are commonly used in many types of utilization, storage, and transportation equipment. This tester covers the detection of the presence of components in liquefied petroleum gases which can be corrosive to copper.

Features

1. Using digital display temperature controller, high accurate temperature control.
2. The tester comprises two pairs of experimental bombs, improves the experimental efficiency.
3. The tester is equipped with stainless steel bath, corrosion-resistant.
4. Appearance designs decently and beautifully.

Technical parameters

1. Rated voltage: AC 220V $\pm$ 10% 50Hz or 110V $\pm$ 10% 60Hz
2. Power: 2000W
3. Temperature: Digital display temperature controller
4. Temperature range: Room temperature ~ 90°C
5. Control precision: $\pm$ 0.5°C
6. Temperature sensor: Pt100 (Platinum resistor)
7. Bath holes: Two
8. Mixing method: Motor stirring
9. Ambient requirements: Temperature 10~40°C; Humidity $\leq$ 85%



KN-1384 Corrosion Test for Engine Coolants

Overview

KN-1384 Corrosion Test for Engine Coolants conforms to **ASTM D1384 Standard Test Method for Corrosion Test for Engine Coolants in Glassware**. It will generally distinguish between coolants that are definitely deleterious from the corrosion standpoint and those that are suitable for further evaluation. However, the results of this test method can not stand alone as evidence of satisfactory corrosion inhibition. The actual service value of an engine coolant formulation can be determined only by more comprehensive bench, dynamometer, and field tests.

Features

1. The tester adopts the most advanced self tuning temperature control system, it features digital display and precise temperature control
2. Heating system adopts metal aluminum plate structure, it features fast and even heating
3. Shunt accurate control the airflow
4. Equipped with Low Temperature Circulating Bath to keep the condensate water supply
5. Equipped with air pump, to keep the air inlet flow, it can do 6 groups of tests simultaneously

Technical parameters

1. Rated voltage: AC 220V $\pm$ 20, 50Hz
2. Heating rate: 0.4KW $\times$ 6
3. Temperature control range: Room temperature $\sim$ 200 $^{\circ}$ C
4. Accurate: $\pm$ 2 $^{\circ}$ C
5. Air flow rate: 100ml/min $\pm$ 10ml/min



KN-B117 Salt Spray Corrosion Test Chamber

Overview

Salt spray corrosion test box is a kind of environmental test, which is mainly used to simulate the Salt spray environment to evaluate the corrosion resistance of products or metal materials.

(1) The neutral salt spray test is one of the most widely used accelerated corrosion testing methods. It uses 5% sodium chloride solution, the solution pH value in the neutral range (6 ~ 7) as a spray solution. The test temperature was 35 degrees, and the salt spray settlement rate was between 1 and 2ml/80cm².h.

(2) Acetate spray test is to add some acetic acid in Sodium Chloride Solution in 5%.

(3) copper accelerated acetic acid salt spray test is a kind of rapid salt fog corrosion test abroad Newly developed test, the temperature is 50 DEG C, adding a small amount of copper salt and copper salt solution, strongly induced corrosion. It is about 8 times faster than the NSS test.

(4) Alternating salt spray test is a kind of comprehensive salt spray test.

Test Method

BS 3900 F12 (ISO 7253) British Salt Spray Test Method

ASTM B117 Salt Spray Test Method

Technical Parameters

1. Description: Inner box size: 500 x 600 x 450mm (W * D * H)
2. Experimental box temperature range: RT+10 C ~ 65 C
3. Saturated barrel temperature range: RT+10 to 70 DEG C
4. Humidity range: >95%RH
5. Temperature fluctuation: less than 0.5 DEG C
6. Temperature uniformity: less than or equal to 2 DEG C
7. The temperature deviation is less than 2 DEG C:
8. Salt spray settlement: 1 ~ 2mL/80cm² ~ H (average of more than 16 hours)
9. Spray mode: pneumatic, continuous, gap spray mode selection
10. Test methods: neutral salt spray test (NSS test), acetic salt spray test (AASS test), copper accelerated acetic acid salt spray test (CASS test)



KN-4340 Corrosion of Cast Aluminum Alloys in Engine Coolants

Overview

KN-4340 Corrosion of Cast Aluminum Alloys in Engine Coolants conforms to **ASTM D4340 Standard Test Method for Corrosion of Cast Aluminum Alloys in Engine Coolants Under Heat-Rejecting Conditions**. This tester covers a laboratory screening procedure for evaluating the effectiveness of engine coolants in combating corrosion of aluminum casting alloys under heat-transfer conditions that may be present in aluminum cylinder head engines.

Features

1. Separate design, convenient to inject and test
2. Accurate valve body, silicon-ring, no leaking
3. Equipped with polymethylmethacrylate shield
4. The tester comes with stopwatch, buzzer do the indication

Technical parameters

1. Rated voltage: AC 220V $\pm$ 10% 50Hz
2. Power: 300W (Continuously adjustable)
3. Pressure gauge: 0~0.4MPa
4. Timer: Digital timer: 0~999H
5. Ambient requirements: Temperature: 5 ~ 500°C; Humidity $\leq$ 85%



KN-2809 Tester for Cavitation Corrosion and Erosion-Corrosion Characteristics

Overview

KN-2809 Tester for Cavitation Corrosion and Erosion-Corrosion Characteristics conforms to **ASTM D2809 Standard Test Method for Cavitation Corrosion and Erosion-Corrosion Characteristics of Aluminum Pumps with Engine Coolants**. This test method can be used to distinguish between coolants that contribute to cavitation corrosion and erosion-corrosion of aluminum automotive water pumps and those that do not. It is not intended that a particular rating number, as determined from this test, will be equivalent to a certain number of miles in a vehicle test; however, limited correlation between bench and field service tests has been observed with single-phase coolants. Field tests under severe operating conditions should be conducted as the final test if the actual effect of the coolant on cavitation corrosion and erosion-corrosion is to be appraised. It is also possible, with proper control of the test variables, to determine the effect of pump design, materials of construction, and pump operating conditions on cavitation corrosion and erosion-corrosion damage.

Features

1. Motor, used for driving the cooling liquid circulation, connected to the water pump
2. Water pump, imported brand base on ASTM D2809 requirements
3. Vacuum pressure gauge: Digital display the real time vacuum degree of the pump inlet
4. Throttling valve, for adjusting the water pump flow rate
5. Heater, for heating the cooling liquid to the test temperature
6. Liquid storage tank, storing the cooling liquid for the pipeline system
7. Heat exchanger, for supplying the 35~38°C test temperature by heat exchanging of the cooling water.
8. Regulating valve, 3 valves for adjusting the vacuum degree and test pressure
9. Pressure gauge, display the real time pressure value
10. Expansion chamber, steam expansion device

Technical parameters

1. Applicable standard: ASTM D2809
2. Ambient requirements: Temperature 20~25°C, Relative Humidity <60%
3. Pump body rotate speed: 0~4600±100r/min
4. Fuse: 20A
5. Temperature control range <650°C
6. Temperature accuracy: ±0.1°C
7. Flow rate range: 0~20ml/min
8. Flow rate control accuracy: ±5%
9. Rated voltage: AC220V, 50Hz
10. Total power: 6.5KW



KN-665 Rusting Characteristics of Oils

Overview

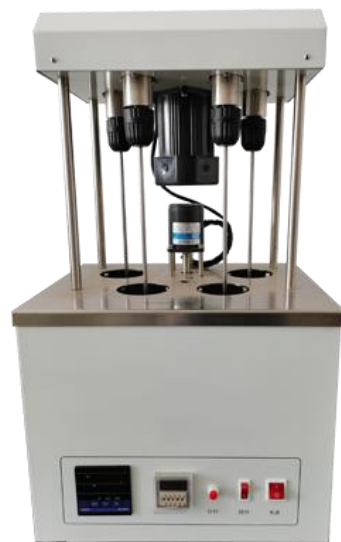
KN-665 Rusting Characteristics of Oils conforms to the **ASTM D665 Standard Test Method for Rust-Preventing Characteristics of Inhibited Mineral Oil in the Presence of Water**. This tester covers the evaluation of the ability of inhibited mineral oils, particularly steam-turbine oils, to aid in preventing the rusting of ferrous parts should water become mixed with the oil. This test method is also used for testing other oils, such as hydraulic oils and circulating oils. Provision is made in the procedure for testing heavier-than-water fluids.

Features

1. The tester adopts low noise and high pulling torque electrical machines, stirring well and rotate speed is accurate
2. The tester can proceed four groups of experiments at the same time, improves the testing efficiency observably and save more time.
3. The tester adopts electrical machine to stir the constant temperature bath, temperature controlling speed fast and well-distributed.
4. Digital display temperature controller, easy to operate. Temperature controlling precision is high.
5. The heating output adopts solid-state relay, contactless, sparkless, noiseless. Long life time, safe and reliable.
6. The heater adopts stainless steel material. The heating rate is fast and the life time is long.
7. Rational design with attractive appearance and safe operation.

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Heating power: 2100W
3. Temperature controlling mode: LCD
4. Temperature controlling point: 60°C $\pm$ 0.5°C
5. Sensor: Pt100 RTD
6. Bath hole: 4 holes
7. Sample agitation: 1000RPM $\pm$ 50RPM
8. Bath stirring: Electrical motor
9. Ambient requirements: Temperature 10~40°C; Humidity $\leq$ 85%



KN-566 Lubricating Grease Dropping Point Tester

Overview

KN-566 Lubricating Grease Dropping Point Tester conforms to the **ASTM D566 Standard Test Method for Dropping Point of Lubricating Grease**, the tester determinants the dropping point of lubricating grease, which is not recommended for use at bath temperatures above 288°C. For higher temperature's test. Our KN-2265 (ASTM D 2265) should be used.

Features

1. Output adopts solid state relay without contact, sparkle, noise and it has long operating life.
2. It can test two kinds of sample oil at the same time through the tube bracket.
3. Reasonable structure with beautiful shape and environment friendly.

Technical parameters

1. Power voltage: AC220V±10% 50Hz
2. Power: 0 ~ 800W, continuously adjustable
3. Temperature controller method: Solid-state voltage regulator stepless voltage regulation.
4. Stirring method: engine stirring 220V, 500 r/min
5. Glass bath: 800ml
6. Testing holes: double
7. Lighting: LED light source 220V
8. Ambient requirements: Temperature : 10 ~ 40°C humidity≤85%



KN-2265 High Temperature Dropping Point Tester

Overview

KN-2265 High Temperature Dropping Point Tester conforms to the **ASTM D2265 Standard Test Method for Dropping Point of Lubricating Grease Over Wide Temperature Range**. This tester covers the determination of the dropping point of lubricating grease and it tests dropping points of lubricating greases at temperatures of up to 400°C

Features

1. The tester adopts digital display temperature controller, which has high precision of temperature control. output adopts solid state relay without contact, sparkle and noise. It has long operating life and it is stable, safe and reliable.
2. Metal bath is made by alloy aluminum. It gets six holes and can test six groups of sample at the same time.
3. The tester equips with light so that user can observe the results of each holes.
4. Reasonable structure with easy operation, safe and reliable.

Technical parameters

1. Rated voltage: AC220V±10% 50Hz
2. Power: 750W
3. Temperature control mode: Digital display temperature controller
4. Test holes: Six
5. Light: 220V 8W
6. Ambient requirements: Temperature 10~40°C; Humidity≤85%



KN-2265Z Automatic High Temperature Dropping Point Tester

Overview

KN-2265Z Automatic High Temperature Dropping Point Tester conforms to the **ASTM D2265 Standard Test Method for Dropping Point of Lubricating Grease Over Wide Temperature Range**. This tester covers the determination of the dropping point of lubricating grease and it tests dropping points of lubricating greases at temperatures of up to 400°C.

Features

1. Fully automatic control experiment process, Friendly human-computer interaction interface with convenient operation
2. High-power heating module design with quick heating speed can greatly improve the detection efficiency
3. The tester equips automatic printing ,calculating and printing functions
4. The tester designs both indicating light and buzzer alarm functions, can implement human intervention as well.
5. Tube slot adopts unique groove design, convenient to pick up
6. The tester is made of well qualified stainless steel, beautiful structure with durable operation.
7. The tester is equipped with data interfaces, can be connected to information system to realize seamless joint directly.

Technical parameters

1. Power source: AC 220V±10% 50Hz
2. Power: 1500W
3. Detecting mode: Infrared scanning
4. Screen : LCD
5. Alarm mode: Audible and visual alarm system
6. Print mode: Thermo printer
7. Ambient requirements: temperature 10 ~ 40°C ; humidity≤85%



KN-70 Automatic Dropping Point, Melting Point and Softening Point Tester

Overview

KN-70 Automatic Dropping Point, Melting Point and Softening Point Tester perfectly combines high-precision temperature control technology and high-definition video camera technology, not only to provide users with accurate, stable, and reliable test results, but also to provide users with efficient and convenient test experience.

Features

1. HD video visual sample changes;
2. Fully automatic one-button automatic measurement;
3. Test two samples at a time;
4. Can print data directly through the printer;
5. Compliance with 21CFR Part 11, audit trail, Pharmacopoeia 2020 and electronic signature;
6. In line with national standards and international standards.

Applicable standard

ASTM D3104 Standard Test Method for Softening Point of Pitches (Mettler Softening Point Method)

ASTM D3461 Standard Test Method for Softening Point of Asphalt and Pitch (Mettler Cup-and-Ball Method)

ASTM D6090 Standard Test Method for Softening Point Resins (Mettler Cup and Ball Method)

ASTM D3954 Standard Test Method for Dropping Point of Waxes

ASTM D2265 Standard Test Method for Dropping Point of Lubricating Grease Over Wide Temperature Range

ASTM D566 Standard Test Method for Dropping Point of Lubricating Grease

ASTM D127 Standard Test Method for Drop Melting Point of Petroleum Wax, Including Petrolatum

ASTM D87 Standard Test Method for Melting Point of Petroleum Wax (Cooling Curve)

Technical parameters

1. Temperature range: Ambient~400°C
2. Temperature resolution: 0.01°C
3. Detection mode: Automatic (manual mode is available)
4. Heating rate: 0.1~20°C/min
5. Accuracy: $\pm 0.2^{\circ}\text{C}$ ($< 250^{\circ}\text{C}$), $\pm 0.5^{\circ}\text{C}$ ($> 250^{\circ}\text{C}$)
6. User management: 15
7. Display mode: 8.1 inch color LCD
8. Processing capacity: 2 per batch
9. Test program: 400 sets
10. Data interface: USD, RS232, network port
11. Comply with GLP specification: YES
12. Power supply: 220V, 50Hz, 120W
13. Storage: 64G
14. User management: Three level authority management
15. Compliant with 21CFR Part 11, audit trail: Yes
16. Printing method: WIFI serial printing
17. Export data format: PDF, Excel



KN-87 Petroleum Wax Melting Point Tester (Cooling Curve Method)

Overview

KN-87 Petroleum Wax Melting Point Tester (Cooling Curve Method) conforms to **ASTM D87 Standard Test Method for Melting Point of Petroleum Wax (Cooling Curve)**, it covers the determination of the melting point (cooling curve) of petroleum wax. It is unsuitable for waxes of the petrolatum group, microcrystalline waxes, or blends of such waxes with paraffin wax or scale wax.

Features

1. An integrated structure of water bath and air bath,
2. Equipped with an electronic timer in addition to the temperature control meter, which is easy to operate.

Technical parameters

1. Input power: AC 220V $\pm$ 10% 50Hz
2. Heating power: 93°C water bath 1KW
3. Temperature control range: room temperature ~ 100°C
4. Temperature control accuracy: $\leq \pm 1^\circ\text{C}$
5. Ambient temperature: room temperature around 25°C
6. Relative humidity: $\leq 85\%$



KN-87Z Automatic Petroleum Wax Melting Point Tester (Cooling Curve Method)

Overview

KN-87Z Automatic Petroleum Wax Melting Point Tester (Cooling Curve Method) conforms to **ASTM D87 Standard Test Method for Melting Point of Petroleum Wax (Cooling Curve)**, it covers the determination of the melting point (cooling curve) of petroleum wax. It is unsuitable for waxes of the petrolatum group, microcrystalline waxes, or blends of such waxes with paraffin wax or scale wax.

Features

1. With refrigeration system, 3 samples can be processed at a time;
2. One-key automatic detection function, effectively avoid human error;
3. PID precise temperature control;
4. Can record and playback the experiment process, not missing every detail;
5. In full compliance with the national standard and ISO oil melting point determination method

Technical parameters

1. Temperature display range: 0-100°C
2. Temperature control range: (RT -20)-100°C
3. Temperature resolution: 0.1°C
4. Heating gradient: 0.1°C-10°C/ minutes
5. Cooling rate: Semiconductor cooling
6. Temperature accuracy: $\pm 0.2^{\circ}\text{C}$ (<100°C)

7. Repeatability: Melting point repeatability is $\pm 0.1^{\circ}\text{C}$ at $0.1^{\circ}\text{C}/\text{Min}$
8. Detection method: Fully automatic (compatible with manual)
9. Video function: Photo and video
10. Data preservation: 1000
11. Storage: 32G
12. Display method: TFT high-definition true color screen
13. Computer interface: USB RS232 network port
14. Capillary can be used
 - OD:1.3mm, ID:1.1mm, Length:100mm (Single and double opening)
 - OD:4.0mm, ID:3.8mm, Length:800mm (Large capillary)
15. Processing capacity: 3 pcs per batch
16. Number of user management: 200
17. Video playback: YES
18. User Management: YES
19. Power supply: AC 220V 50/60Hz 120W
20. Instrument size: 400*280*330mm
21. Weight: 4.1kg



KN-938 Congealing Point of Petroleum Waxes and Petrolatum

Overview

KN-938 Congealing Point of Petroleum Waxes and Petrolatum conforms to **ASTM D938 Standard Test Method for Congealing Point of Petroleum Waxes, Including Petrolatum**. Congealing point is a wax property that is of interest to many petroleum wax consumers. The procedure described here measures the temperature at which a sample being cooled develops a “set” or resistance to flow. At that temperature, the wax may be at or close to the solid state, or it may be semisolid and quite unctuous, depending on the composition of the wax or petrolatum being tested. In the case of petrolatums, congealing property is associated with the formation of a gel structure as the sample cools.

A sample of wax is melted and a droplet is made to adhere to the bulb of a thermometer. Using a prewarmed flask as an air jacket, the droplet on the bulb is allowed to cool at a fixed rate until it congeals. The congealing point is observed as the temperature at which the droplet ceases to flow as the thermometer is turned.

Application scope

1. This test method is suitable for testing the freezing point of paraffin wax, including petrolatum.
2. The inch/pound mentioned in this standard is regarded as a standard unit, and the value in parentheses is for reference only.
3. This standard does not make recommendations for all related safety issues. Therefore, before using this standard, appropriate safety and health protection measures should be established and related systems and scope of application should be worked out.

Note 1: This method and D127 can choose one of them. The measured result is usually lower than the result obtained in D127-LP133, and the deviation varies with the type of petroleum wax.

Features

1. Metal bath heating samples, safe, environmentally friendly, no open flame;
2. The motor drives the sample to rotate in the horizontal axis direction to reduce human error;
3. The rotation speed can be adjusted according to requirements;
4. The blessing device can be operated very conveniently;
5. Microcomputer temperature controller, PID adjustment temperature control, PT100 temperature sensor, high accuracy;
6. Matching special thermometer and test tube plug;

Technical parameters

1. Applicable standard: ASTM D938
2. Heating method: metal bath heating
3. Temperature control method: digital display PID temperature controller
4. Rotation method: DC motor drive
5. Rotation speed: 2.5s/r
6. Power of the whole machine: 900W
7. Working power supply: AC220V 50Hz



KN-323 Reid Vapor Pressure Bath

Overview

KN-323 Reid Vapor Pressure Bath conforms to **ASTM D323 Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method)**. It used for testing the vapor pressure (Because the external atmospheric pressure is counteracted by the atmospheric pressure initially present in the vapor chamber, the Reid vapor pressure is an absolute pressure at 37.8°C (100°F) in kilopascals (pounds-force per square inch).

Features

1. Equipped with 0.25 grade precision pressure gauge
2. Equipped with a large lift circulating pump, the temperature field is stable

Technical parameters

1. Rated voltage: AC220V±10% 50Hz
2. Heating power: 1500W
3. Temperature controlling mode: digital display temperature control
4. Temperature controlling point: 37.8°C ±0.1°C
5. Temperature sensor: Pt100 (Platinum resistor)
6. Test station: 2
7. String mode: pump loop
8. Ambient requirements: Temperature: 5~40°C; Humidity ≤85%



KN-323Z Automatic Reid Vapor Pressure Bath

Overview

KN-323Z Automatic Reid Vapor Pressure Bath conforms to **ASTM D323 Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method)**. It used for testing the vapor pressure (Because the external atmospheric pressure is counteracted by the atmospheric pressure initially present in the vapor chamber, the Reid vapor pressure is an absolute pressure at 37.8°C (100°F) in kilopascals (pounds-force per square inch).

Summary of Test Method

1. The liquid chamber of the vapor pressure tester is filled with the chilled sample and connected to the vapor chamber that has been heated to 37.8°C (100°F) in a bath. The assembled tester is immersed in a bath at 37.8°C (100°F) until a constant pressure is observed. The reading, suitably corrected, is reported as the Reid vapor pressure.
2. All four procedures utilize liquid and vapor chambers of the same internal volume. Procedure B utilizes a semiautomatic tester immersed in a horizontal bath and rotated while attaining equilibrium. Either a Bourdon gauge or pressure transducer may be used with this procedure. Procedure C utilizes a liquid chamber with two valved openings. Procedure D requires more stringent limits on the ratio of the liquid and vapor chambers.

Technical parameters

1. Rated voltage: AC220V±10%
2. Power consumption: ≤1200W
3. Test bomb: Two
4. Bath temperature: 37.8°C
5. Accuracy: ±0.1°C
6. Heating power: 2000W
7. Stirring angle: 350 degree
8. Pressure range: 0~200kpa

Package Information

1. Dimension: 740*720*740mm
2. Volume: 0.4m³
3. Weight: 60kg



KN-5191 Tester for Vapor Pressure of Petroleum Products (Mini Method)

Overview

KN-5191 Tester for Vapor Pressure of Petroleum Products (Mini Method) conforms to **ASTM D5191 Standard Test Methods for Vapor Pressure of Petroleum Products (Mini Method)**. It is used to determine the total vapor pressure exerted in vacuum by air-containing, volatile, liquid petroleum products, including automotive spark-ignition fuels with or without oxygenates.

Features

1. Built-in computer, touch screen operation
2. Will figure out the results automatically, high efficiency and fast database for checking the saved results
3. Only 3ml sample is needed and about 7min for every test
4. The necessary accessories adopt the International famous brand to guarantee the performance and reliability
5. Tester is able to connect to LIMS system

Technical parameters

1. Pressure measuring range: 7~130Kpa, accurate to 0.1Kpa
2. Temperature control accuracy: $37.8 \pm 0.1^{\circ}\text{C}$
3. Gastight syringe: 5ml
4. Septum: Diameter: 10mm, Thickness: 3mm
5. Vacuum pump: Can reaches 1Pa vacuum degree



KN-2509 Timken Load Tester

Overview

KN-2509 Timken Load Tester is one of the most widely recognized testers for evaluating the load carrying capacity of extreme pressure lubricants. This tester evaluates fluid lubricants and greases containing extreme-pressure additives. Applicable *Standard: ASTM D2509-93 Standard Test Method for Measurement of Load-Carrying Capacity of Lubricating Grease (Timken Method)* and *ASTM D2782-94 Standard Test Method for Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)*.

Working conditions

1. At room temperature within 10-35 ° C, Relative humidity $\leq 80\%$;
2. the surrounding no vibration, no corrosive media and no strong magnetic field interference in the environment;
3. The fluctuation range of the supply voltage shall not exceed $\pm 10\%$ of the rated voltage;
4. Install horizontally on a solid basis.

Technical parameters

1. Max. test force: 5000N
2. Accuracy for test force: $\pm 1\%$
3. Max. friction force: 300N
4. Accuracy for friction force: $\pm 2\%$
5. Spindle speed range: 100~3000r/min
6. Spindle speed error: $\pm 2\%$
7. Spindle speed display range: 0-9999999
8. Time display range: 0~9999s or min
9. Test temperature: Ambient~300°C
10. Temperature control accuracy: $\pm 2\%$
11. Dimension: 1000*700*1470mm
12. Weight: 700kg



KN-2783Z Automatic Four Ball Wear Tester

Overview

KN-2783Z Automatic Four Ball Wear Tester is used to test the Wear Preventive (WP) and Extreme Pressure (EP) characteristics of greases and lubricating oils in sliding steel-on-steel applications. It conforms to the **ASTM D2783, ASTM D2266 and ASTM D4172 Standard Test Method for Wear Preventive Characteristics of Lubricating Fluid (Four-Ball Method)**. The tester adopts sliding friction, under the high point contact pressure, to evaluate the carrying capacity of the lubricant. It includes the maximum no seizure load PB, sintering load PD and composite wear value ZMZ three items indexes. The tested is also used for the long-time abrasion resistance tests, to measure the friction coefficient.

Features

1. The tester is used to evaluate the friction and wear performance of the end face, pin plate and other samples in the form of sliding friction at room temperature and high temperature.
2. Be able to evaluate the friction and wear performance of various metals, engineering plastics, ceramics and powder metallurgy and other new materials, determine the wear resistance of materials and material matching characteristics, and test under various parameters such as variable load, speed, friction pair, and test environment temperature.
3. The application of the test force is controlled by a hydraulic closed-loop servo system, and the test force is set by the operator on the computer interface.
4. The spindle speed, number of revolutions, test force, friction torque, friction pair temperature, test time and other parameters are controlled by the computer, which can collect test data in real time and draw the corresponding test curve, and can store, read, and print out test data or curves at will.
5. Equipped with total of 10 kinds of friction pairs, to meet different demands.
6. Computer and data processing system: embedded computer, industrial control module and corresponding measurement and control software, to do the whole process of control of the whole machine and the test process, software interface visualization, real-time control and display of various parameters, automatic recording and display of various kinds of curves, such as friction coefficient - time curve, temperature - time curve, test force - time curve, speed - time curve, etc.
7. Free software update if there is any updates

Technical parameters

1. Test force range (stepless adjustable) 50N~10000N, Error within $\pm 1\%$
2. Max friction force: 1000N $\pm 2\%$
3. Friction force torque measuring range: 0~15Nm, automatic display the saved value
4. Main spindle speed: 1~3000rpm ± 1 rpm, servo stepless adjustable
5. Temperature control range: Ambient~1000 $^{\circ}\text{C} \pm 2^{\circ}\text{C}$.
6. Test medium: Air, Oil, Water, Mud and Grinding Material etc.
7. Time range: 1s~9999min
8. Stop method: Manual/Automatic (Time, Revolutions, Torque, etc.)
9. Oil chamber stroke >45mm
10. Main spindle power: 3Kw
11. Net dimension: 1200*870*1700mm
12. Net weight: 850kg



KN-2783 Manual Four Ball Wear Tester

Overview

KN-2783 Manual Four Ball Wear Tester is used to test the Wear Preventive (WP) and Extreme Pressure (EP) characteristics of greases and lubricating oils in sliding steel-on-steel applications. It conforms to the **ASTM D2783, ASTM D2266 and ASTM D4172 Standard Test Method for Wear Preventive Characteristics of Lubricating Fluid (Four-Ball Method)**. The tester adopts sliding friction, under the high point contact pressure, to evaluate the carrying capacity of the lubricant. It includes the maximum nonseizure load PB, sintering load PD and composite wear value ZMZ three items indexes. The tested is also used for the long-time abrasion resistance tests, to measure the friction coefficient.

Features

1. Large screen panel operation.
2. Equipped with tool cabinet.

Technical parameters

1. Test force range (stepless): 60N-10kN
2. Test force display value relative error: $\pm 1\%$
3. Test force long-time-kept value error: $\pm 1\%$ F.S
4. Friction force measurement range: 0-300N
5. Friction force measurement error: $\pm 3\%$
6. Main axis rotate speed range (stepless): 200-2000r/min
7. Main axis rotate speed range error: ± 10 r/min
8. Friction pair temperature controlling range: Room temperature $\sim 200^{\circ}\text{C}$
9. Friction pair temperature controlling error: $\pm 2^{\circ}\text{C}$
10. Test time controlling range: 1 s-99 h
11. Main axis rotate speed controlling range: 1-9999999r
12. Net weight: About 400kg
13. Test steel ball: $\Phi 12.7\text{mm}$



KN-FZG Relative Scuffing Load Carrying Capacity Tester

Overview

KN-FZG Relative Scuffing Load Carrying Capacity Tester conforms to **ISO 14635-1 Gears – FZG test procedures—Part 1: FZG test method A/8, 3/90 for relative scuffing load-carrying capacity of oils** and **ISO 14635-2 – FZG test method A10/16,6R/90 for relative scuffing load-carrying capacity of lubricants with high EP performance**. The types of gear failures which may be influenced by the lubricant in use are scuffing, low-speed wear and the gear-surface fatigue phenomena known as micropitting and pitting. In the gear design process, these gear damages are taken into consideration by the use of specific lubricant and service-related characteristic values. For an accurate, field-related selection of these values, adequate lubricant test procedures are required. The FZG test procedures described in this and other parts of ISO 14635 can be regarded as tools for the determination of the lubricant-related characteristic values to be introduced into the load-carrying capacity calculation of gears.

FZG test method A/8, 3/90 for the relative scuffing load-carrying capacity of oils described in this part of ISO 14635 is typical for the majority of applications in industrial and marine gears. ISO 14635-2 will be related to the relative scuffing load-carrying capacity of oils of very high EP properties, as used for the lubrication of automotive driveline components.

Features & Functions (see Fig.1)

The tester contains the main host and the electric control cabinet, and the two parts are separate.

The main host adopts a dynamic closed-loop structure (or power flow closed structure), and the loading method adopts the method of hanging weights on the loading rod.

The main host is a horizontal structure and should be placed on a level ground. The lower part is the machine base. The upper plane of the base equipped with two gear cases. In the middle of the two gear cases are two sets of parallel rotating shafts and torsion shafts, as well as a loading clutch and a torque measuring clutch. The left one is the test gear case. A pair of high-precision test gears of different sizes are installed in the case. The left case cover and top cover of the test gear case can be opened to facilitate loading and unloading of the test gears. The right is the transmission gear case, and a pair of high-precision transmission gears of different sizes are also installed in the case. Each gear is

mounted on a different shaft in the form of key joint, and each shaft where the gear is mounted is supported by two pairs of deep groove ball bearings and mounted on the left and right gearboxes, on the right side of the transmission gearbox. It is the driving motor of the testing machine, with compact structure, high precision and stable performance.

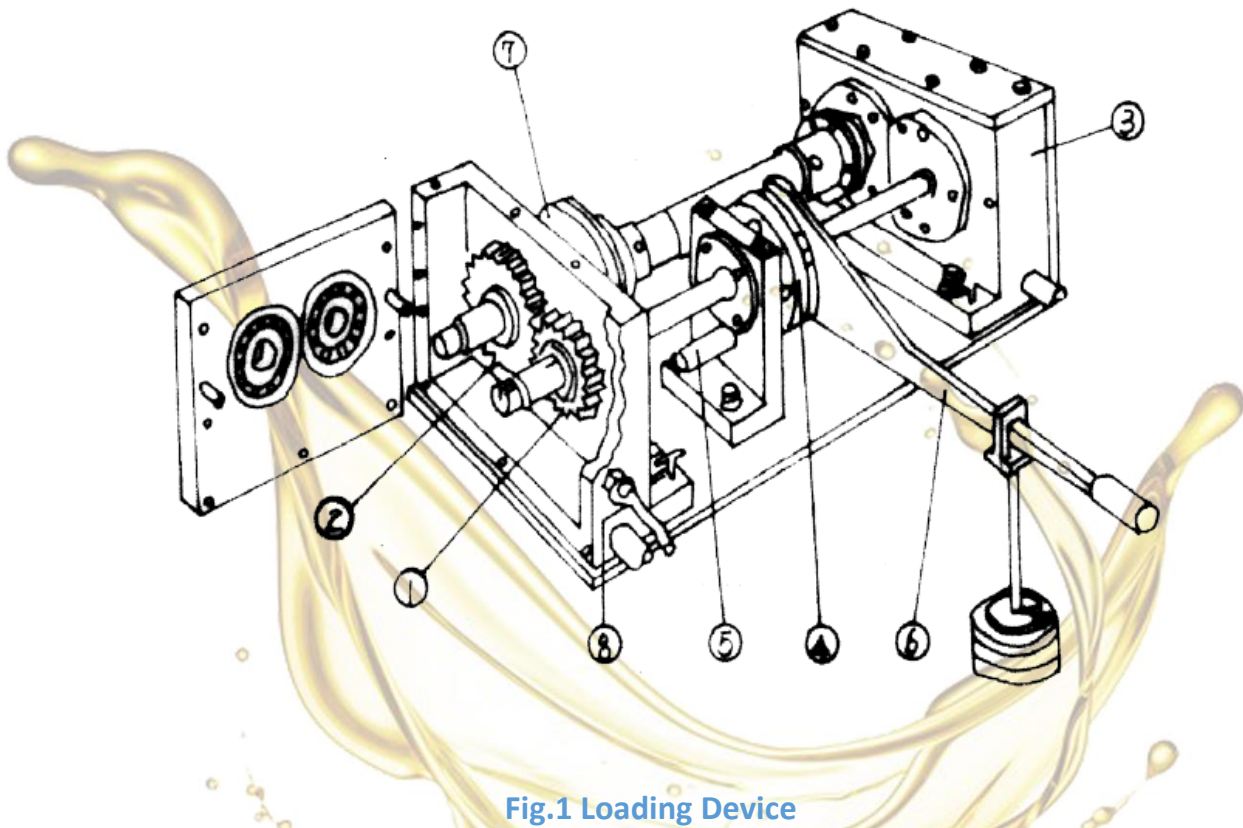


Fig.1 Loading Device

- | | |
|----------------------------|-----------------------------|
| 10. Small test gear | 14. Fixed pin |
| 11. Big test gear | 15. Lever arm with weights |
| 12. Transmission gear case | 16. Torque measuring clutch |
| 13. Loading clutch | 17. Temperature sensor |

Loading method, see Fig.1

The loading rod is hung on the sheave of the loading clutch. After adding weights, tighten the two sheaves on the loading clutch by tightening the nut of the loading clutch, then, remove the weights and the loading rod. The torque value can be read out on the torque measuring clutch.

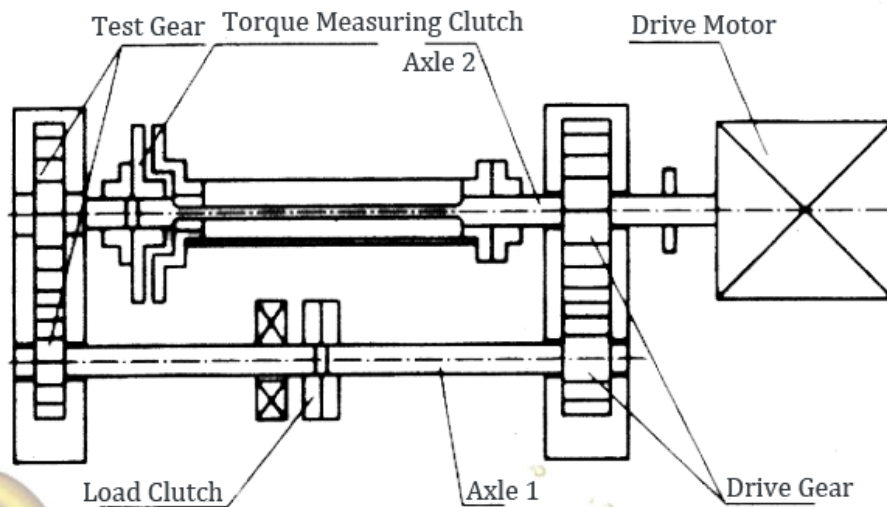


Fig.2 Transmission

The drive motor YD132M-4/2 is a two-speed motor, which drives the transmission gear through the shaft to transmit the torque to the test gear. The test gear is in a test gear case, which can contain different liquid test medium, and the test gear part is immersed in the test medium for testing.

Electric cabinet and control panel

The electric control cabinet has four parts, namely the control cabinet body, the control panel, the strong current system and the weak current system. Taking the control cabinet as the structural frame, the control panel above the cabinet is easy to operate, and the inside of the cabinet is equipped with a strong current system. There is a rear door of the control cabinet, and the internal system of the control cabinet can be seen by opening the door, which is convenient for installation, debugging and maintenance.

The control panel has three parts, namely upper, middle and lower parts, as shown in Fig.3. The lower part of the panel is the control switch and alarm. In the middle of the panel are heating, cooling and motor speed selection switches. The upper part of the panel is equipped with temperature controller, time controller and revolution controller. The time display and control unit can select the control time within the range of 1s~9999min. There is a **CLEAR** button below the control unit, which can clear the digital display window.

The number of revolutions display and control unit can select the control revolution speed in the range of 1~99999999.

The temperature controller can control the test oil temperature of the test gear case, and be able to control the opening and closing of the cooling water valve according to the temperature setting.



Fig.3 Electric cabinet and control panel

Torque measuring clutch

The torque measurement clutch device is shown in Fig.4, which mainly includes: small connecting flange (1), large connecting flange (2), torque shaft (3) inside the outer tube (4), indicating flange (5) with Vernier caliper scale (6) and scale (7) on the large connecting flange (2). After loading, the elastic shaft (3) in the closed-loop system of the tester is twisted and deformed, and the "torque" can be read out through the vernier caliper.

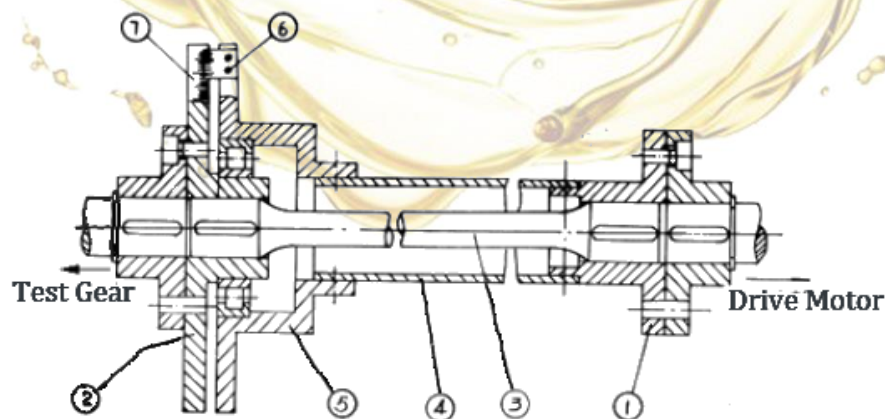


Fig.4 Torque measuring clutch

- | | |
|-----------------------------------|--------------------|
| 1. Small flange | caliper |
| 2. Big flange | 6. Vernier caliper |
| 3. Torsion bar | 7. Scale |
| 4. Outer tube | |
| 5. Indicating flange with vernier | |

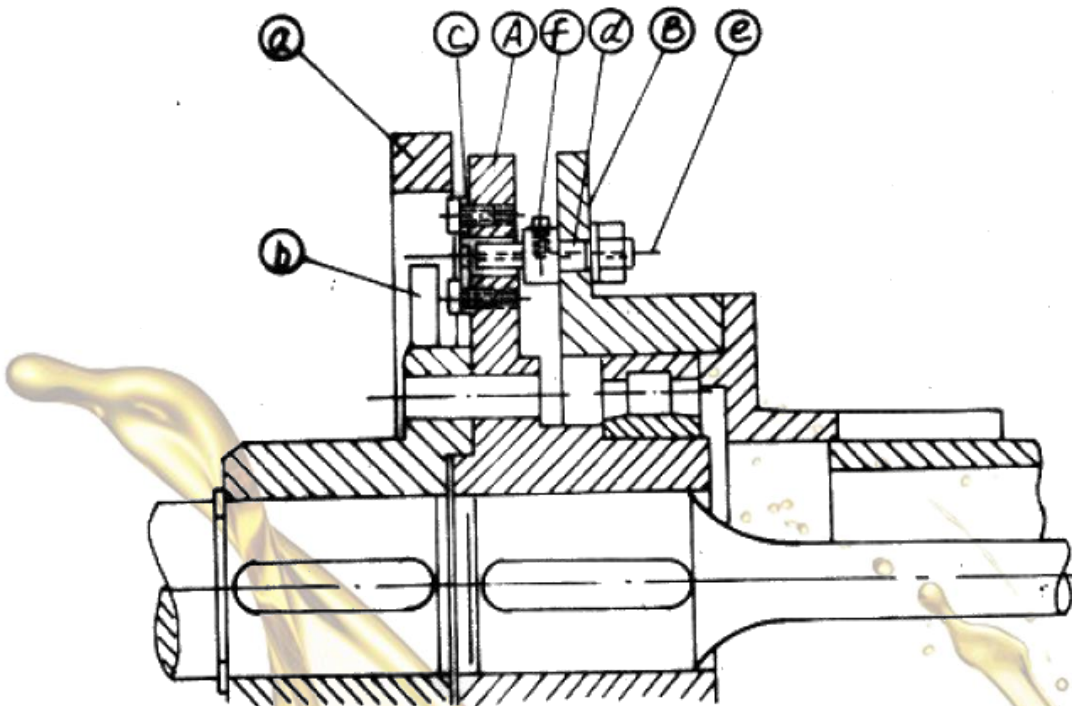


Fig.5 Gear tooth broken control element

This tester has the gear tooth broken control device, see Fig.5

During the test, if the gear is broken or the load on the gear increases abnormally, the overload automatic protection device will automatically stop the test.

The protection device includes Copper ring (a), flat spring (b), shear sheet (c), pinhole (d) and shear pin (e).

The copper ring (a) is mounted on the bottom plate of the testing machine, but it is insulated from the bottom plate of the testing machine. After loading, adjust the position of the pinhole on the groove of the torque measuring clutch (B), so that it is fixed in the appropriate position corresponding to the shear hole (d). In this position, the shear pin can pass through the shear plate and pinhole. While doing this work, press down the flat spring (b) with the needle (the flat spring is out of the copper ring) and hold the shear pin in place with the screw (f).

If the torque changes abnormally, the indicating flange (5) and the large flange on the torque measuring clutch will rotate relative to each other, thus shearing the shearing needle, the flat spring (b) immediately hits the copper ring (a) and closes A contact of the control circuit is opened, and the drive motor stops immediately.

Main technical parameters

1. Maximum torque: 1k.Nm
2. Maximum load class: Grade 13
3. Temperature accuracy: $\pm 2^{\circ}\text{C}$
4. Drive motor power: 6.5kW (8kW)
5. Revolution speed: 1450rpm / 2880rpm
6. Test gear case capacity: 1.25L (The part from the center line of the shaft to the bottom of the case)
7. Heating power: $0.5\text{kW} \times 3 = 1.5\text{kW}$
8. Test time control range: 1s~9999min
9. The number of revolution range: 9999999
10. Main host Dimension: 1390*750*1082mm
11. Control cabinet dimension: 510*510*1040mm
12. Test gear:
 - Modules: 4.5
 - Number of teeth: $Z_b=24$, $Z_s=16$
 - Modification coefficient: $X_b=-0.5$, $X_s=0.08532$
 - Engaging angle: $22^{\circ}26'$
 - Central moment: 91.5mm
 - Accuracy grade: 5

Standard Configuration

1. Main host: 1 set
2. Control cabinet: 1 set
3. Dedicated tools: 1 set
4. Lever arm and weights: 1 set
5. Oil spray source (optional)
6. Cooling system (optional)
7. A-type test gear (optional)



KN-6079 Lubricity Using the High-Frequency Reciprocating Rig (HFRR)

Overview

KN-6079 conforms to **ASTM D6079 Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR)**, used for the lubrication performance evaluation test of diesel engine fuel(including diesel fuel containing lubrication performance modifiers). The operation of the automatic constant temperature and humidity system is simple and easy, and the corresponding control area can be activated by clicking on the main control interface. No other operation steps are required. After the test is completed, the sampling data in the experimental process is closed and stored, and the operator's operation steps are reduced. Increased efficiency.

Working Conditions

1. In the range of room temperature $25 \pm 10^{\circ}\text{C}$, and well ventilated;
2. No corrosive medium around, no ferromagnetic dust;
3. The testing machine should be installed horizontally on a stable basis;
4. Use power supply: 220V/50Hz, the fluctuation range of the power supply voltage does not exceed $\pm 10\%$ of the rated voltage, and the frequency fluctuation should not exceed 2%;
5. No corrosive media around, no vibration and interference.

Technical parameters

1. Spindle reciprocating
 - i. Reciprocating frequency: 10~200Hz
 - ii. Reciprocating stroke: 0.01~2.5mm
 - iii. Accuracy: 0.001mm
2. Friction
 - i. Max friction: 30N
 - ii. Frictional indication relative error: 1%
3. Test force
 - i. Max loading force: 1000g
 - ii. Test force error: $\pm 1\text{g}$
4. Temperature
 - i. Heating temperature control range: $R_t \sim 200^{\circ}\text{C}$
 - ii. Temperature measurement accuracy: $\pm 1^{\circ}\text{C}$
5. Power: 1000W
6. Test machine time display and control range: 0.01~999999min



KN-5001 Ball-on-Cylinder Lubricity Evaluator (BOCLE)

Overview

KN-5001 Ball-on-Cylinder Lubricity Evaluator (BOCLE) conforms to **ASTM D5001 Standard Test Method for Measurement of Lubricity of Aviation Turbine Fuels by the Ball-on-Cylinder Lubricity Evaluator (BOCLE)**. The fluid under test is placed in a test reservoir in which atmospheric air is maintained at 10% relative humidity. A non-rotating steel ball is held in a vertically mounted chuck and forced against the outside diameter of an axially mounted cylindrical steel ring with an applied load. The test ring is rotated at a fixed speed while being partially immersed in the fluid reservoir. This maintains the ring in a wet condition and continuously transports the test fluid to the ball/ring interface. The wear scar generated on the test ball is a measure of the lubricating property of the fluid.

Features

1. Adopts PLC control system for fully automatic process.
2. Adopts semi-conductor for heating and cooling, it features short time cost and accurate temperature controlling
3. The gas relative humidity adjustment adopts a high-precision gas mass flow controller, which features fast adjustment and small drift, improving testing efficiency
4. Adopts touch screen operation to make all related parameters clear
5. Equipped with microscope and camera system, also adopts coaxial light illumination technology for binocular observation, with a clear and bright field of view. The long focal length objective lens makes it easy to take and place steel balls, and the electronic micrometer measures the size of wear spots accurately and quickly
6. Adopts the standard assembly to improve the test accuracy

Standard Operating Conditions

1. Fluid volume: 50 ± 1.0 ml
2. Fluid temperature: $25 \pm 1^\circ\text{C}$
3. Fluid pretreatment: 0.5L/min flowing through and 3.3L/min over the fluid for 15min
4. Cylinder rotational speed: 0~240rpm (when speed is 240rpm, error should be within 1rpm)
5. Maximum test force: 10N
6. Applied load: 1000g (500g weight)(± 1 g)
7. Test force display error: $\pm 0.5\%$
8. Test force display repetitive error: $\pm 0.5\%$
9. Conditioned air: $10\% \pm 0.2\%$, relative humidity at $25 \pm 1^\circ\text{C}$
10. Test duration: 30 ± 0.1 min
11. Relative humidity: (10 ± 0.2)



KN-3427 Air Release Value Tester

Overview

KN-3427 Air Release Value Tester conforms to the **ASTM D3427 standard Test Method for Air Release Properties of Petroleum Oils**. It is used to test the ability of turbine, hydraulic, and gear oils to separate entrained air. This tester 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. The significance of this test method has not been fully established. However, entrained air can cause sponginess and lack of sensitivity of the control of turbine and hydraulic systems. This test may not be suitable for ranking oils in applications where residence times are short and gas contents are high.

Features

1. The tester adopts digital display temperature meter, control temperature with high accuracy.
2. Digital timer alarm, easy to operate.
3. The tester adopts the pressure regulator valve, pressure gauge displays.
4. Decent and beautiful design.
5. The tester is equipped with densimeter

Technical parameters

1. Rated voltage: AC 220V±10% 50Hz
2. Power: 600W
3. Temperature: Digital display temperature controller
4. Temperature range: Room temperature ~ 100°C
5. Control precision: ±0.1°C
6. Temperature sensor: Pt100 (Platinum resistor)
7. Cycle mode: Pump cycle
8. Ambient requirements: Temperature 10~40°C; Humidity≤85%



KN-1816 Insulating Oil Dielectric Breakdown Tester

Overview

KN-1816 Insulating Oil Dielectric Breakdown Tester conforms to **ASTM D1816 Standard Test Method for Dielectric Breakdown Voltage of Insulating Oils of Petroleum Origin Using VDE Electrodes**, **ASTM D877 Standard Test Method for Dielectric Breakdown Voltage of Insulating Liquids Using Disk Electrodes** and **IEC 60156 Insulating Liquids—Determination of the Breakdown Voltage at Power Frequency**. Determination of the breakdown voltage at power frequency Oils that combine a high flashpoint with high dielectric strength have long been used as an insulating medium in transformers, switchgear and other electrical tester. To ensure that the dielectric strength of the oil does not deteriorate however, proper maintenance is essential, and the basis of proper maintenance is testing For many electric equipments used in power system and enterprises, inner insulation is mostly oil-insulated. Oil dielectric strength test is one of the essential routine tests.

Difference between three major standards

	ASTM D877	ASTM D1816	IEC 60156
Electrode type	Disk	VDE	Ball or VDE
Electrode gap	2.54mm	1 or 2mm	2.5mm
Stirring	None	Continuous with impeller	Optional with magnetic stirring bar
Voltage rise rate	3kV/s	0.5kV/s	2kV/s
Breakdown value	Mean of 5 measurements	Mean of 5 measurements	Mean of 5 measurements

Features

1. Large capacity single-chip microcomputer control, it features stable and reliable
2. Built-in wide range WDT to avoid dead halt
3. Multiple operations, standard operation and customized operation are both available
4. One-time casting special glass oil cup, which prevents the unexpected interference such as oil leakage
5. The unique high-voltage side sampling design of the tester allows the test value to enter the A/D converter directly, avoiding the error caused in the analog circuit and making the measurement result more accurate

6. Overcurrent, overvoltage, short circuit protection function, etc., and has strong anti-interference ability and good electromagnetic compatibility.
7. Portable type, for the convenient operation indoors and outdoors
8. Reliable, reproducible measurement, results across multiple measurements, thanks to short switch-off time $< 10 \mu\text{s}$

Technical parameters

1. Voltage booster capacity: 1.5kVA
2. Voltage boosting rate: 0.5kV/s, 1.0kV/s, 2.0kV/s, 3.0kV/s, 5.0kV/s, optional
3. Output voltage: 0~100kV
4. Power distortion rate $< 1\%$
5. Display mode: Big LCD display
6. Electrode gap: Standard 2.5mm
7. Dimension: 409*393*388mm
8. Weight: 29kg
9. Ambient temperature requirement: 0~40°C
10. Relative humidity $\leq 85\%$
11. Rated voltage: AC220V $\pm 10\%$, 50Hz $\pm 10\%$
12. Power consumption $< 200\text{W}$



KN-924 Automatic Transformer oil Tan Delta & Resistivity Tester

Overview

KN-924 Automatic Transformer oil Tan Delta & Resistivity Tester is based on **ASTM D924 Standard Test Method for Dissipation Factor (or Power Factor) and Relative Permittivity (Dielectric Constant) of Electrical Insulating Liquids** and **ASTM D1169 Standard Test Method for Specific Resistance (Resistivity) of Electrical Insulating Liquids** design and manufacture of high precision integrated testing instrument. Mainly used for measuring dielectric loss factor and the DC resistivity of oil liquid and insulating medium, the internal integration of the dielectric loss of oil cup, temperature control instrument, temperature sensor, dielectric loss test bridge, AC test power supply, standard capacitor, high resistance meter, high voltage DC source etc.. The instrument uses advanced measurement and control technology, complete automatic warming, temperature control, high-speed data sampling, operation, display, print and storage process. Advanced measurement principle and high digital technology, make your work more relaxed and convenient.

The instrument adopts digital technology, intelligent automatic measurement, equipped with a large screen color touch screen, full Chinese menu, each step has Chinese tips, test results can be printed, the operator does not need to be skilled in the use of professional training.

Features

1. High automation, heating, measuring dielectric loss, measuring resistivity can be completed once.
2. The three electrode type structure with an IEC 60247: 2004 standard, inter electrode spacing 2mm, can eliminate stray capacitance and leakage effect on the dielectric loss test results.
3. Instrument using medium frequency induction heating, PID temperature control algorithm. This heating mode has the advantages of non-contact, oil cup and heating body, uniform heating speed, convenient control, the temperature control in temperature within the preset range error.
4. Using advanced DSP and FFT technology to ensure data stability, accurate and reliable.
5. Internal standard capacitor for the SF6 charging three pole capacitor, dielectric loss and capacitance of the capacitor is not affected by ambient temperature, humidity, etc., so that the accuracy of the instrument after a long time to use is still guaranteed.
6. Large screen color touch screen, man-machine dialogue convenient, concise operation, clear.

7. With the lid off the high voltage, high voltage electrode cup short reminder, eliminate safety hazards, to ensure the normal operation of the safety of operating personnel and equipment.
8. With real-time clock, test date, time can be saved with the test results, display, print; equipment can display the ambient temperature, real-time detection of the test environment.
9. Automatic storage measurement data, can store 100 sets of measurement data.
10. Calibration function of empty electrode cup. The capacitance and dielectric loss factor of the empty electrode cup are measured to judge the cleaning and assembling condition of the empty electrode cup. The calibration data are saved automatically to facilitate the accurate calculation of relative capacitance and DC resistivity.
11. Adopts Peltier cooling function

Technical parameters

Parameters		Index	Parameters		Index
Measuring range	Capacitance	5pF ~ 200pF	Resolution	Capacitance	0.01pF
	Tan Delta	0.00001 ~ 100		Tan Delta	10 ⁻⁵
	Resistivity	2.5MΩm~20TΩm		Resistivity	0.001M
Accuracy	Capacitance	0.5%+1PF	Temperature accuracy		±0.5°C
	Tan Delta	±(1% readout+0.0001)	Temperature range		0~125°C
	Resistivity	±10% readout	AC Voltage		AC 0~2000V
Ambient temperature		0 ~ 40°C	DC Voltage		DC 0~500V
Rated Voltage		AC220V±10%	Relative humidity		< 80%RH
Power		100 W	Dimensions		420mm*380mm*385mm
			Weight		21Kg (without oil cup)



KN-6184 Oil Separation Tester for Grease

Overview

KN-6184 Oil Separation Tester for grease conforms to the **ASTM D6184 standard Test Method for Oil Separation from Lubricating Grease (Conical Sieve Method)**. The tester covers the determination of the tendency of lubricating grease to separate oil at an elevated temperature. This test method shall be conducted at 100°C for 30 h unless other conditions are required by the grease specification.

Features

1. The tester consists of beaker, steel mesh, covered beaker, hooking and other components.
2. The tester uses glass no mouth beaker, 200 ml, easy to observe, high thermo stability.
3. The tester adopts the stainless steel mesh, 60 mesh, with metal beam, easy to extract.
4. The tester is equipped with a roof, link with beaker closely, with very good heat preservation effect, in the center of the bottom cover with hook for hanging steel mesh, easy to operate.

Technical parameters

1. Stainless steel wire mesh: 60 mesh
2. Beaker: High-type, no mouth, 200ml
3. Beaker cover: Aluminum alloy
4. Ambient requirements: Temperature: 10~40°C; Humidity ≤ 85%



KN-1742 Tester for Oil Separation from Lubricating Grease

Overview

KN-1742 Tester for Oil Separation from Lubricating Grease conforms to **ASTM D1742 Standard Test Method for Oil Separation from Lubricating Grease During Storage**. This tester covers the determination of the tendency of a lubricating grease to separate oil during storage in both normally filled and partially filled containers, but it is not suitable for greases softer than NLG1 No.1 grade. The sample of grease, supported on a 75- μ m (No.200) sieve, is subjected to 1.72kPa (0.25psi) air pressure for 24h at 25°C (77°F). Any oil seepage that occurs drains into a beaker and is weighed.

Features

1. Digital pressure gauge displays the pressure value
2. High precision needle valve controls the pressure
3. Temperature value display: Digital display temperature controller
4. Totally enclosed compressor cooling with inner internal circulation.

Technical parameters

1. Test unit: 2
2. Temperature control: 25°C $\pm$ 1°C
3. Pressure range: 1.72kPa $\pm$ 0.07kPa
4. Sieve aperture: 75 μ m
5. Pressure display: Precision digital pressure gauge
6. Cooling method: Totally enclosed compressor cooling



KN-3948 Micro Separometer for Aviation Fuel

Overview

KN-3948 Micro Separometer for Aviation Fuel conforms to **ASTM D3948 Standard Test Method for Determining Water Separation Characteristics of Aviation Turbine Fuels by Portable Separometer**. A water/fuel sample emulsion is created in a syringe using a high-speed mixer. The emulsion is then expelled from the syringe at a programmed rate through a standard fiberglass coalesce and the effluent is analyzed for uncoalesced water by a light transmission measurement. The results are reported on a 0-to-100 scale to the nearest whole number. High ratings indicate the water is easily coalesced, implying that the fuel is relatively free of surfactant materials. A test can be performed in 5min to 10min.

Features

1. It can quickly and automatically detect the water separation characteristics of the sample.
2. Be able to select a variety of testing standards through setup methods
3. It features simple operation, automatic timing, and intuitive interface display.
4. The progress status can be visually displayed on the small screen during the whole test
5. Be able to save test sample data and query historical data.
6. The independent part of this tester is able to do the maintenance and operation.
7. It has instrument failure alarm and automatic protection of key components
8. Automatic monitoring the battery voltage and be able to charge it automatically.

Technical parameters

1. Measuring range: 50~100, Resolution: 1
2. Detection cycle: 5~10min
3. Power supply: Battery powered and compatible with AC and DC power supply
AC: 220V $\pm$ 10%, 50Hz $\pm$ 5%
DC: Built-in battery is able to support 25 tests independently
4. Stirrer revolving speed: 25000 $\pm$ 1000rpm
5. Sample temperature: 18~29°C
6. Structure: Portable box
7. Dimension: 470*380*170mm, Weight: $\leq$ 20kg
8. Maximum power dissipation: $\leq$ 200V



KN-3241 Jet Fuel Thermal Oxidation Stability Tester (JFTOT)

Overview

KN-3241 Jet Fuel Thermal Oxidation Stability Tester (JFTOT) conforms to **ASTM D3241 Standard Test Method for Thermal Oxidation Stability of Aviation Turbine Fuels (JFTOT Procedure)**. The test results are indicative of fuel performance during gas turbine operation and can be used to assess the level of deposits that form when liquid fuel contacts a heated surface that is at a specified temperature

Features

1. Fully meet standard ASTM-D3241
2. Touch screen operation interface. The entire measurement process does not require manual participation, it can dynamically display measurement curves and operating parameters.
3. Automatic error diagnosis and alarm to ensure the system can run normally
4. Automatic store historical data and experimental reports, review historical records at any time
5. High degree of automation, simple operation, diverse applications, safe and reliable, easy to maintain, Reduce average operation time by 40 minutes for operators to increase laboratory efficiency
6. Customizable measurement methods to meet different scientific research experiments
7. Sample sealing to reduce fuel exposure, Precise pump system with stable flow pressure

Technical parameters

1. Ambient temperature: 10~35°C
2. Air relative humidity≤85%
3. Power supply: 220V±10%, 50Hz±10%, 0.6kW
4. Sample: Jet fuel
5. Coolant flow rate: 38±8L/H
6. Temperature control range: 100~380°C, ±1°C
7. Differential pressure transmitter accuracy: level 0.075
8. Differential pressure display resolution: 0.1mm Hg
9. Sample flow rate: 3ml/min±0.3ml
10. System operation pressure: 3.45MPa±0.345MPa

Package Information

1. Dimension: 480*550*870mm
2. Volume: 0.23m³
3. Weight: 50kg



KN-217 Manual Cone Penetration for Petroleum Products

Overview

KN-217 Manual Cone Penetration for Petroleum Products conforms to **ASTM D217 Standard Test Methods for Cone Penetration of Lubricating Grease**. The tester is used for not only evaluating the consistency of lubricating greases over the full range of NLGI numbers from 000 to 6, but also evaluate the consistency of stiff greases having penetration numbers less than 85 and also testing waxes having a penetration of not greater than 250 unit (unit is 10-1mm).

Features

1. Both the needle and cone penetration value can be directly read through the LCD screen, it's visual and accurate.
2. The tester is equipped with flexible and speedy move model or micro move model for cone adjustment, easy to adjust.
3. Reasonable structure with beautiful shape and easy operation.
4. Equipped with a manual grease worker

Technical parameters

1. Rated voltage: AC220V $\pm$ 10% 50Hz
2. Timer controller: 0~60 seconds automatic timing
3. Measuring accuracy: 0.01mm
4. Standard slider: 47.5 $\pm$ 0.05g
5. Standard cone: 2.5 $\pm$ 0.05g
6. Ambient requirements: Temperature: 10~40°C; Humidity $\leq$ 85%
7. Applicable Standard: ASTM D217, D5, D1403 & D1321



KN-217Z Automatic Cone Penetration for Grease

Overview

KN-217Z Automatic Cone Penetration for Grease conforms to **ASTM D217 Standard Test Methods for Cone Penetration of Lubricating Grease**. The tester is used for not only evaluating the consistency of lubricating greases over the full range of NLGI numbers from 000 to 6, but also evaluate the consistency of stiff greases having penetration numbers less than 85 and also testing waxes having a penetration of not greater than 250 unit (unit is 10-1mm).

Features

1. Display adopts 7.0 inch 800*480 pixel TFT-LCD screen
2. The instrument operates with a capacitive touch screen, which has the advantages of no mechanical loss, dust and water discharge, anti-radio frequency interference, and long service life.
3. Historical data storage is stored in FLASH data storage, which can store 2010 historical data. The data can be saved for 10 years without loss and the stored data can not be changed
4. The printer can choose to use embeded thermal, stylus printer, printing quieter, fast and clear. The cone penetration detection adopts high-precision non-contact displacement detection technology to make the cone movement capture instantaneously, and completely avoids false detection and missed detection during the test.
5. With automatic lifting, automatic release, automatic measurement, automatic printing of test results, zero adjustment and other functions.
6. The internal mechanical parts are made of anti-corrosion, anti-rust and high-strength materials for longer service life.

Technical parameters

1. Measuring range: 0~62mm
2. Standard cone weight: 102.5±0.5g
3. Traction rod weight: 47.5±0.05g
4. Petroleum grease container: Diameter $\phi 100 \pm 0.6$ mm, Height ≥ 65 mm(ID)
5. Lube grease container: Diameter $\phi 76.2 \pm 0.6$ mm, Height ≥ 65 mm(ID)
6. Accuracy: 0.01mm
7. Release time: 55
8. Time control: Automatic
9. Repeatability ≤ 0.01 mm
10. Ambient temperature: 10~45℃
11. Ambient humidity $\leq 85\%$
12. Operation mode: Touch screen operation, easy to use
13. Power voltage: 220V±10%
14. Power frequency: 50Hz±10%
15. Consumption power: 100W
16. Dimension: 580mm*370mm*590mm (L*W*H)
17. Weight: 20kg



KN-217G Motorized Grease Worker

Overview

KN-217G Motorized Grease Worker conforms to **ASTM D217 Standard Test Methods for Cone Penetration of Lubricating Grease**. It is suitable for shearing the lubricating grease automatically. Mechanical Grease Workers - For "worked penetration" and "prolonged worked penetration" tests to determine consistency of lubricating greases. This grease worker consists of single or dual steel ASTM grease workers mounted on a sturdy base and driven by a powerful gear reduction motor and meets ASTM specifications for stroke length and rate. It is also equipped with a presetting electronic counter that automatically shuts off the drive motor after any desired number of strokes up to 99,999. Steel grease workers have threaded cup and cover, and steel plunger plate with shaft and handle that connects to eccentric cam on drive unit. Accessory dial thermometer inserts in plated vent cock. Spring loaded tightening clamps hold grease workers securely on base, and steel pins in base facilitate disassembly of grease workers after testing.

Penetration tests are performed on petroleum products to determine consistency and shear stability (lubricating greases) for design, quality control and identification purposes. A standard cone or needle is released from a penetrometer and allowed to drop freely into the sample for 5 seconds (or a different specified interval) at constant temperature. The depth of penetration of the cone or needle into the sample is measured in tenths of a millimeter by the penetrometer.

Features & Parameters

1. Motor: Horizontal single-phase capacitor starting motor. The rated voltage is 220V, the power is 370W, and the speed is 1400 rpm. It is connected with the turbo reducer through the coupling.
2. Coupling: A plum-shaped elastic coupling is used to connect the reducer and the motor.
3. Turbo reducer: double output shaft reducer. The transmission ratio is 25:1, and a pair of eccentric mechanisms are installed on the turbine shaft at both ends of the reducer
4. Worker: Installed on the frame on both sides of the reducer, driven by the motor through the coupling through the eccentric mechanism of the reducer, and works continuously at about 60 movements per minute.
5. Counting display: 5-inch color LCD touch screen. When selecting the number of computer relays, use the wave switch to arbitrarily set a number (time), when the number reaches the set value, it can drive the relay to work and cut off the motor power. This worker is a double-acting reciprocating test equipment. It consists of a motor coupling, a reducer, an eccentric mechanism, a worker and a machine base.
6. The computer real-time monitors the motor temperature and torque parameters, so as to protect the motor from damage.
7. It has the function of monitoring the ambient temperature. The screen will indicate a prompt, if the temperature exceeds the test range of 15-30°C.
8. Non-oil reduction gearbox



KN-217GS Motorized Grease Worker

Overview

KN-217GS Motorized Grease Worker conforms to **ASTM D217 Standard Test Methods for Cone Penetration of Lubricating Grease**. It is suitable for shearing the lubricating grease automatically. Mechanical Grease Workers - For "worked penetration" and "prolonged worked penetration" tests to determine consistency of lubricating greases. This grease worker consists of single or dual steel ASTM grease workers mounted on a sturdy base and driven by a powerful gear reduction motor and meets ASTM specifications for stroke length and rate. It is also equipped with a presetting electronic counter that automatically shuts off the drive motor after any desired number of strokes up to 99,999. Steel grease workers have threaded cup and cover, and steel plunger plate with shaft and handle that connects to eccentric cam on drive unit. Accessory dial thermometer inserts in plated vent cock. Spring loaded tightening clamps hold grease workers securely on base, and steel pins in base facilitate disassembly of grease workers after testing.

Penetration tests are performed on petroleum products to determine consistency and shear stability (lubricating greases) for design, quality control and identification purposes. A standard cone or needle is released from a penetrometer and allowed to drop freely into the sample for 5 seconds (or a different specified interval) at constant temperature. The depth of penetration of the cone or needle into the sample is measured in tenths of a millimeter by the penetrometer.

Features & Parameters

1. Motor: Horizontal single-phase capacitor starting motor. The rated voltage is 220V, the power is 370W, and the speed is 1400 rpm. It is connected with the turbo reducer through the coupling.
2. Coupling: A plum-shaped elastic coupling is used to connect the reducer and the motor.
3. Turbo reducer: double output shaft reducer. The transmission ratio is 25:1, and a pair of eccentric mechanisms are installed on the turbine shaft at both ends of the reducer.
4. Worker: Installed on the frame on both sides of the reducer, driven by the motor through the coupling through the eccentric mechanism of the reducer, and works continuously at about 60 movements per minute.
5. Counting display: Digital display counting device. When selecting the number of computer relays, use the wave switch to arbitrarily set a number (time), when the number reaches the set value, it can drive the relay to work and cut off the motor power. This worker is a double-acting reciprocating test equipment. It consists of a motor coupling, a reducer, an eccentric mechanism, a worker and a machine base.
6. The computer real-time monitors the motor temperature and torque parameters, so as to protect the motor from damage.
7. It has the function of monitoring the ambient temperature. The screen will indicate a prompt, if the temperature exceeds the test range of 15-30°C.



KN-1321Z Automatic Needle Penetration for Wax

Overview

KN-1321Z Automatic Needle Penetration for Wax conforms to **ASTM D1321 Standard Test Method for Needle Penetration of Petroleum Waxes**. This test method covers the empirical estimation of the consistency of waxes derived from petroleum by measurement of the extent of penetration of a standard needle. This test method is applicable to waxes having a penetration of not greater than 250.

Features

1. The tester is composed of laser detection system, electric lifting systems, LCD, thermostatic water bath and other parts, with integrated design;
2. Detection mode: Automatic detection of the penetration value, adopts laser non-contact detection, no need to manually adjust the tip of the needle to accurately place on the surface of the sample.
3. Laser sensor: Adopts imported laser components
4. LCD display, be able to set the test time, temperature base on the demands, also can do the automatic measurement, average value calculation and save the test results.
5. Electric lifting system, which can electronically adjust the lifting speed.
6. Adopts DC low-voltage locking device, safe and reliable.
7. The support is able to do self-lock at any time, also can firmly stop at any position
8. Equipped with a mechanism for manual release.
9. Thermostatic bath adopts digital display, be able to adjust the bath temperature, organic glass, both cooling and heating function are available.
10. Equipped with cold light source and amplifier for easy operation
11. Equipped with level screws and gradienter

Technical parameters

1. Measuring range: 0~600
2. Release stroke: over 60mm
3. Timing range: 1~90s, adjustable
4. Timing error $\leq 0.02s$
5. Stability: $\Delta u \leq 0.2$
6. Temperature control range: 23~35°C
7. Temperature accuracy: 0.05°C
8. Dimension:
Main host: 340*260*660mm (L*W*H)
Bath: 230*300*200mm (L*W*H)



KN-1831 Roll Stability Tester for Lubricating Grease

Overview

KN-1831 Roll stability Tester for Lubricating Grease conforms to **ASTM D1831 Standard Test Method for Roll Stability of Lubricating Grease**. Cone penetration of an approximately 50-g aliquot of lubricating grease is determined. The grease is then subjected to low shear at 20 to 35°C (68 to 95°F) for 2h±5min in a standard roll stability tester, before the cone penetration is again measured. The difference between the cone penetration before working and the cone penetration after is used as a measure of the effect to flow shear working on grease consistency. This tester is suitable to test the consistency change of the lubricating grease after working on the roller tester to judge the mechanical shear stability of the lubricating grease.

Features

1. Stainless steel roller $\Phi 90 \times 180$ mm 5kg
2. Idle roller is equipped with locating ring to make the roller work normally
3. The driving motor is installed on the bottom and keeps the rotate speed at 155 to 180r/min
4. Gear drive roller
5. Microcomputer temperature controller, digital display, precision $\pm 5^\circ\text{C}$ PT100 sensor
6. Digital timer, record the working time, equipped with buzzer alarm
7. Temperature controller operation instructions: room temperature to 180°C

Technical parameters

1. Applicable standard: ASTM D1831
2. Heating method: electric heating circle heats
3. Time method: digital timer
4. Temperature control range: room temperature to 180°C
5. Motor speed: 155 to 180r/min
6. Unit of work: 2 units
7. Rated voltage: AC220V/50Hz



KN-2158 Volatility and Residues in Liquefied Petroleum (LP) Gases Tester

Overview

KN-2158 Volatility and Residues in Liquefied Petroleum (LP) Gases Tester conforms to the **ASTM D2158 Standard Test Method for Residues in Liquefied Petroleum (LP) Gases** and **ASTM D1837 Standard Test Method for Volatility of Liquefied Petroleum (LP) Gases**. This tester covers the determination of extraneous materials weathering above 38°C that are present in liquefied petroleum gases. The extraneous materials will generally be dissolved in the LPG, but may have phase-separated in some instances.

Features

1. Digital display temperature controller with easy and flexible operation. Temperature controlling precision is high.
2. The heating output adopts solid-state relay, contactless, sparkless, noiseless and long life time.
3. The heater adopts stainless steel material. The heating rate is fast and the operation time is long.
4. The bath of the tester adopts stainless steel material, corrosion resisting and oxidation resisting. It is suitable to all kinds of mediums
5. The tester adopts compressor to do composite cooling. The cooling rate is fast. big depth with good stability.
6. Rational design with attractive appearance and friendly to the environment.

Technical Parameters

1. Rated voltage: 220V $\pm$ 10% 50Hz or 110V $\pm$ 10% 60Hz
2. Power: 2000W
3. Temperature controlling mode: digital display
4. Temperature of cooling bath: -55°C ~ 30°C $\pm$ 0.1°C
5. The temperature of bath: 38°C $\pm$ 0.1°C
6. Sensor: Pt100
7. Stirring mode: electrical motor stir
8. Ambient requirements: Temperature: 10~40°C; Humidity $\leq$ 85%



KN-1267 Vapor Pressure for Liquefied Petroleum Gases (LPG method)

Overview

KN-1267 Vapor Pressure for Liquefied Petroleum Gases (LPG method) conforms to **ASTM D1267 Standard Test Method for Gage Vapor Pressure of Liquefied Petroleum (LP) Gases (LP-Gas Method)**. The tester is used for testing the gage vapor pressures of liquefied petroleum gas products (Warning—Flammable gas. Harmful when inhaled.) at temperatures of 37.8°C (100°F) up to and including a test temperature of 70°C (158°F).

Features

1. Digital display temperature controller with easy and flexible operation. Temperature controlling precision is high.
2. The heating output adopts solid-state relay, which features contactless, sparkless, noiseless. Long life time with safe and reliable operation.
3. The heater adopts stainless steel material. The heating rate is fast and the lifetime is long.
4. The tester can proceed two groups of experiments at the same time, improves work efficiency.
5. The tester adopts pump loop to stir regularly and noiselessly. Bomb body is heated equably.
6. Rational design with attractive appearance and easy operation.

Technical parameters

1. Rated voltage: AC220V±10% 50Hz
2. Heating power: 2000W
3. Temperature controlling mode: digital display
4. Temperature controlling range: room temperature~90°C
5. Temperature controlling precision: ±0.1°C
6. Testing bomb: 2 bombs
7. Stirring mode: pump loop
8. Ambient requirements: Temperature:10~40°C; Humidity≤85%

Package Information

1. Dimension: 590*470*1170mm
2. Volume: 0.32m³
3. Weight: 63kg



KN-2420 LPG Hydrogen Sulfide Analyzer (Lead Acetate Method)

Overview

KN-2420 LPG Hydrogen Sulfide Analyzer (Lead Acetate Method) conform to the **ASTM D2420 Standard Test Method for Hydrogen Sulfide in Liquefied Petroleum (LP) Gases (Lead Acetate Method)**, This analyzer covers the detection of hydrogen sulfide in liquefied petroleum (LP) gases. The sensitivity of the test is about 4 mg/m³(0.15 to 0.2 grain of hydrogen sulfide per 100 ft³) of gas.

Features

1. All glassware are frosted ground joint
2. It equips with flow and LPG sampler
3. It adopts precise needle valve to control flow rate.

Technical parameters

1. Rated voltage:AC220V±10% 50Hz
2. Power:1000W
3. Measuring range: Room temperature~90℃
4. Temperature control accuracy:±2℃
5. Flow control: Needle valve adjustment, flow meter displays the flow



KN-7621 Tester for Hydrogen Sulfide in Fuel Oils

Overview

KN-7621 Tester for Hydrogen Sulfide in Fuel Oils conforms to **ASTM D7621 Standard Test Method for Determination of Hydrogen Sulfide in Fuel Oils by Rapid Liquid Phase Extraction**. A weighed test specimen is introduced into a heated test vessel containing a diluent base oil. Air is bubbled through the oil to extract the H₂S gas. The air with the extracted H₂S is passed, via a vapor phase processor (Procedure A only), to an H₂S specific electro-chemical detector enabling the H₂S content of the air to be measured and the amount in the liquid phase to be calculated in mg/kg/ The filter cartridge is not required for procedure B.

Features

1. The air flow rate is measured and controlled by a digital mass flow meter;
2. The tester is designed and manufactured in full accordance with the requirements of ASTM 7621 , IP570 and ISO 8217 testing standards
3. Microcomputer control, automatic measurement, and automatic calculation of results;
4. Semiconductor refrigeration gas phase processor with fast cooling speed;
5. KAYCAN fisher type glass reaction tube, easy to operate
6. Luer type sintered filter, filled with special adsorbent;
7. KAYCAN H₂S200 detection system, capable of direct reading
8. Quick screwing cap for sealing

Technical parameters

1. Measuring range: 0~250mg/kg H₂S
2. Ambient requirements: 15~30℃ , RH80%
3. Viscosity range: Up to 3000mm²/s
4. Detection mode: Electrochemistry sensor
5. Test time: 15min
6. Sample Volume: 1ml, 2ml, 5ml (depends on the H₂S concentration)
7. Dilute volume: 20ml
8. Rated voltage: AC220V±10V, 50Hz
9. Total power: 300W
10. Dimension: Main host: 260*500*380mm
VPP: 220*310*180mm
11. Net weight: 12kg



KN-SN Sulfur and Nitrogen Analyzer

Overview

KN-SN Sulfur and Nitrogen Analyzer conforms to ***ASTM D5453 Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence. ASTM D4629 Standard Test Method for Trace Nitrogen in Liquid Petroleum Hydrocarbons by Syringe/Inlet Oxidative Combustion and Chemiluminescence Detection*** and ***ASTM D5762 Standard Test Method for Nitrogen in Petroleum and Petroleum Products by Boat-Inlet Chemiluminescence.***

Features

1. Be able to get the result in two minutes with just one injection. fast, precise measurement.
2. Standard accessories : Printer + PC + Main host + Liquid Sampler
3. Optional accessories: Solid Sampler, Gas Sampler
4. Base on Windows(7、XP,Me,98) operation interface, easy and quick to operate. The operator can set all the parameters and condition choosing by a mouse. The computer manage the data collection, processing, storage and printing.
5. Adopts the most advanced ultraviolet lamp and other critical components to ensure the super high sensitivity and reliability.
6. Adopts the imported American Nafion pipe membrane dryer, good water removal to ensure the stability tester
7. The tester can establish and store the working curve; user can make the specimen analysis without establishing the working curve again.
8. By selecting the gas sample injector or the solid sample injector, the tester can make the analysis of gas, liquid and solid sample to meet various tests

Technical parameters

For Sulfur

1. Specimen species: liquid, solid and gas specimen
2. Measurement method: Ultraviolet fluorescence
3. Specimen sample size: solid sample size: 1~20mg
liquid sample size: 1~30μL
gas sample size: 1~10 mL
4. Measurement range: 0.2 mg/L~3%
5. Detection lower limit: 0.2 mg/L
6. Temperature control range: room temperature to 1100℃
7. Temperature control precision: 0.5%±2℃
8. Gas source requirement: Argon: above 99.995% ,Oxygen: above 99.99%, humidity<5%
9. Rated voltage: AC220V±22V 50Hz±0.5Hz
10. Power: 1500W

For Nitrogen

1. Rated voltage: AC220V±22V, 50Hz±0.5Hz
2. Power: 1500 W
3. Sample type: Liquid, Solid and Gas
4. Detection method: Chemiluminescence method (N)
5. Sample amount: Solid sample: 1-20mg, Liquid sample: 5-20μL, Gas sample: 1-25mL
6. Measuring range: 0.2 ~ 10000mg/L(There should do attenuation if the concentration is high,
7. low concentration gas sample can reach to 0.1ppm)
8. Temperature control accuracy: ±1℃
9. Air source requirement: High-purity Argon: Purity up to 99.98% , High-purity Oxygen: Purity up to 99.98%
10. Dimension: Main host: 305(W)×460(D)×400(H)mm,
11. Temperature control: 550(W)×460(D)×400(H)mm
12. Weight: Main host: 15kg, Temperature contro: 30kg



KN-1120 Boiling Point of Engine Coolants

Overview

KN-1120 Boiling Point of Engine Coolants Tester is designed and manufactured according to **ASTM**

D1120 Standard Test Method for Boiling Point of Engine Coolants, the tester covers the determination of the equilibrium boiling point of engine coolants. The equilibrium boiling point indicates the temperature at which the sample will start to boil in a cooling system under equilibrium conditions at atmospheric pressure.

Features

1. The tester consists of solid state voltage regulator, heating mantle and glassware.
2. The tester adopts solid state voltage regulator, stepless to change temperature, easy to accommodate temperature.
3. Voltage regulator outputs without contact, sparkle and noise and it is stable.
4. Voltmeter is used to show the voltage changed by the solid state voltage regulator, convenient to direct-view.

Technical parameters

1. Supply voltage: AC 220V $\pm$ 20% 50Hz
2. Heating power: 0~230W (Continuously adjustable)
3. Temperature control mode: Solid-state voltage regulator (Stepless)
4. Adjustable display: AC voltmeter 0~250V
5. Ambient requirement: temperature: 10~40°C; Humidity $\leq$ 85%



KN-611A Manual Aniline Point Tester

Overview

KN-611A Manual Aniline Point Tester conforms to **ASTM D611 Standard Test Methods for Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents**. It is mainly used for determination of the aniline point of petroleum products and hydrocarbon solvents, it also can be used for testing the mixed aniline point of petroleum products and hydrocarbon solvents having aniline points below the temperature at which aniline will crystallize from the aniline-sample mixture.

Features

1. This tester can test both heavy and light aniline point
2. Automatic heating, heat preservation, cooling, dimming, automatic display and store testing data.
3. The instrument is equipped with auto diagnosis and Self protection program.
4. The instrument can store 99 groups of tested data.
5. Also equipped with print port, RS-232C interface.
6. LCD can show following contents, date and time, oil batch No., test model, sample temperature, photolepsy and malfunction.

Technical parameters

1. Working power :AC220V±10%; 50Hz
2. Motor power: 6W
3. Heating power:2kW
4. Temperature controlling range: ambient~200℃
5. Temperature precision: less than 0.5℃
6. LCD: plasma VFD,5V

Package Information

1. Dimension: 660*400*470mm
2. Volume: 0.12m³
3. Weight: 13kg



KN-611Z Automatic Aniline Point Tester

Overview

KN-611Z Automatic Aniline Point Tester conforms to **ASTM D611 Standard Test Methods for Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents**. It is mainly used for determination of the aniline point of petroleum products and hydrocarbon solvents, also can be used for testing the mixed aniline point of petroleum products and hydrocarbon solvents having aniline points below the temperature at which aniline will crystallize from the aniline-sample mixture.

Features

1. 7-inch color LCD touch screen, stylish and beautiful. All English control interface is clear and intuitive.
2. Using imported photoelectric sensors make accurate test results and consistent repeatability.
3. Equips with over-temperature alarm function, when the sample temperature exceeds 170°C during the test, the buzzer will automatically alarm and stop the test.
4. Simple operation, one-key start, the test process is automatically completed.
5. The host adopts microprocessor program control, automatic heating, stirring, and identification of aniline points, automatic storage, automatic printing, and automatic shutdown at the end of the test.

Technical parameters

1. Applicable standard: ASTM D611
2. Temperature control range: room temperature~170°C
3. Temperature control accuracy: $\pm 0.1^{\circ}\text{C}$
4. Heating method: electric heating rod
5. Heating power: 60W
6. Stirring method: the motor drives the soft shaft to stir
7. Detection method: photoelectric sensor
8. Storage records: 200 records
9. Printing method: micro printer
10. Power supply: AC 220V $\pm$ 10% 50HZ



KN-971 Automatic Petroleum Oil Surface Tensiometer

Overview

KN-971 Automatic Petroleum Oil Surface Tensiometer conforms to **ASTM D971 Standard Test Method for Interfacial Tension of Oil Against Water by the Ring Method**. It can be used to replace chemical method with physical method, and can be used to measure the surface tension value of a variety of liquid quickly and accurately. KN-971 can also be separated from the use of the computer, built in LCD digital display and small printer, can be stand alone operation, can also be connected to the computer control to observe the dynamic changes in tension curve.

Features

1. Large color LCD display screen, English prompt, menu operation, fully automatic testing process
2. Automatic temperature compensation within 25°C to eliminate the influence temperature imposes on tension value.
3. Functions of auto correction, auto testing, calculation, results displaying, and storage under power off circumstance
4. Main body is equipped with hurricane globe, which lessens influence outside matters impose on testing results.
5. Automatic lift of the lift platform ensures a steady environment as well as high accuracy.
6. Tester program can be updated accordingly if related national standard revised.
7. Tester can work independently and can also realize network management via connection with laptops or microcomputers through USB interface.
8. Tester adopts enclosed magnetic pot type sensor and multi-point calibration of uniform space technology, which improves the repeatability and reproducibility of testing results.

Technical parameters

1. Rated Voltage: 220±10% 50Hz
2. Power: 45W
3. Testing Range: 0~200mN/m
4. Kinematic Velocity: 0.3~0.4mm/S
5. Sensitivity: 0.1mN/m
6. Accuracy: ±0.2mN/m
7. Working temperature: 10~40°C
8. Humidity ≤ 80%
9. Dimension: 185×310×380mm



KN-1404 Deleterious Particles Determination Tester

Overview

KN-1404 Deleterious Particles Determination Tester conforms to **ASTM D1404 Standard Test Method for Estimation of Deleterious Particles in Lubricating Grease**. It is used to detect and estimate deleterious particle contamination in lubricating greases and other semi-solids and heavy liquids. Grease fillers can be tested for abrasive contaminants by first mixing them into petrolatum or grease known to be free of deleterious particles. A small portion of the lubricating grease sample is placed between two clean, highly polished acrylic-plastic plates held rigidly and parallel in metal holders. A pressure of 200 psi [1.38 MPa] is applied, and one plate is rotated 30° relative to the other. Particles harder than the plastic and exceeding in size the distance between the plates will imbed in the plates and cause characteristic, arc-shaped scratches in the plates. The relative number of such solid particles can be estimated by counting the total number of arc-shaped scratches on the two plates.

Tester information

1. Conforms to ASTM D1404 specifications
2. Rotates plastic plate 30° against stationary plate while applying 200psi pressure. Includes body, test plate holders, loading screw, calibrated spring with scale for applying test load and removable cap assembly with milled slot and handle for rotating test plates. Constructed of stainless steel. Order plastic test plates separately.



KN-4870 Total Sediment in Residual Fuels

Overview

KN-4870 Total Sediment in Residual Fuels conforms to **ASTM D4870 Standard Test Method for Determination of Total Sediment in Residual Fuels**. This tester is used to test the total sediment up to 0.40% m/m for distillate fuel oils containing residual components and to 0.50% m/m in residual fuel oils having a maximum viscosity of 55cSt (mm²/s) at 100°C.

Features

1. Meets both Thermal Ageing and Chemical Aging procedures.
2. LCD display and button operation.
3. Be able to do two tests simultaneously or do parallel test, easy to operate
4. LCD timing system, up to 99h99m99s
5. Vacuum degree can reach 40Kpa±2Kpa, pressure gauge display and valve control
6. Chemical ageing method adopts metal bath, safe and green, two test stations
7. Tester adopts metal bath replacing the steam generator, safe, easy to operate

Technical parameters

1. Applicable standard: ASTM D4870
2. Ambient temperature: 0~45°C
3. Humidity≤80%
4. Display method: LCD
5. Temperature range: Ambient ~ 100°C±0.5°C
6. Vacuum pressure: Precision pressure gauge
7. Test station: Double
8. Power: 2000W



KN-511 Mechanical Impurities Tester

Overview

KN-511 Mechanical Impurities Tester conforms to **GB/T 511 Petroleum, Petroleum Products and Additives – Method for Determination of Mechanical Admixtures**. It applies to test the mechanical impurities of petroleum products and additives by using gravimetric method

Features

1. Adopts double glazing funnel recirculating constant temperature water bath, for more accurate result
2. Digital display temperature controller
3. Adopts solid state relay to do heating output, contactless, sparkles, noiseless. With long service life, safe and reliable
4. Pump loop, stirring regularly and noiseless
5. Be able to do two tests simultaneously.

Technical Parameters

1. Rated voltage: AC220V $\pm$ 10%, 50Hz
2. Heating power: 1000W
3. Temperature control mode: Digital display temperature controller
4. Temperature control range: Ambient~90°C
5. Temperature precision: 0.1°C
6. Stirring mode: Pump loop
7. Test station: Double



KN-1796 Oil Test Centrifuge

Overview

KN-1796 Oil Test Centrifuge conforms to the following ASTM standards, **ASTM D1290, ASTM D1796, ASTM D2709, ASTM D4007, ASTM D91 and ASTM D96**. This Oil Test Centrifuge is fully programmable allowing automatic configuration to the specified oil test parameters. A four place swing out rotor and universal bucket assembly accommodates low cost adaptors and cushions suitable for borosilicate glass centrifuge tubes of the types specified for oil testing. This Centrifuge describes the laboratory determination of water and sediment in crude oils by means of the centrifuge procedure.

Features

1. The machine adopts computer control, touch panel, LCD display, electronic locks, speed PMW control method, 12 programs can be stored, 19 levels and deceleration can be adjusted. Its features
2. Due to the unique of shock absorber, the anti-vibration effect is good.
3. The speed control adopt PID way, high precision can choose different raising and lowering speed time, Brushless motor make sure the machine working peacefully, to meet the requirements of the laboratory, it's no need to change carbon brush, and no dust pollution.
4. Automatic calculation RCF value; Have the point start function (short-term centrifugal);
5. Electronic locks security protection function; when the door does not cover well, the centrifuge can't work.

Technical parameters

Main host performance parameters

6. Max speed: 4000r/min
7. Max RCF: 3400xg Max capacity: 4×200ml
8. Speed accuracy: ± 10 r/min Temperature range: indoor $+10^{\circ}\text{C} \sim 70^{\circ}\text{C}$
9. Temperature control: $\pm 2^{\circ}\text{C}$
10. Time control: 1min~99min/inching
11. Power supply: AC220V 50Hz 15A Noise < 60dB(A)
12. Environmental requirement: $10^{\circ}\text{C} \sim 35^{\circ}\text{C}$
13. Relative humidity $\leq 85\%$
14. Dimension: 700mm*600mm*900mm
15. Weight: 130Kg

Rotor parameters

Rotor	Capacity	Max speed	Max RCF
NO.1	swing out rotor	36*10ml 4000rpm	3400xg
NO.2	swing out rotor	4*100ml 3000rpm	2062xg
NO.3	swing out rotor	4*200ml 3000rpm	2000xg



KN-5865 Automatic Calorimeter

Overview

KN-5865 Automatic Calorimeter conforms to **ASTM D240 Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter**, **ASTM D5865 Standard Test Method for Gross Calorific Value of Coal and Coke** and **ISO 1928 Solid mineral fuels — Determination of gross calorific value by the bomb calorimetric method, and calculation of net calorific value**. It is applicable in the industry such as electrical power, coal, papermaking, petrochemical, cement, farming, medical research, and instruction to measure the Calorific Value of combustible materials.

Features

1. Automated integration to realize one-button operation
2. Semi-conductor water refrigeration system
3. Automatically determinate the refrigerating capacity and balance the circulation system according to the caloric of previous time.
4. No need to measure water and adjust water temperature during the whole test
5. Advanced small oxygen filling instrument with low malfunction rate.
6. Automatic replacing water by connecting the drainpipe
7. Advanced USB technology, one computer can control 1-4 calorimeter buckets or other instruments, thus to make up synthesized testing instrument
8. Be able to link electronic scale and share data in long distance through network

Technical parameters

1. Calorimeter type: Isoperibol
2. Temperature range: 5~40℃
3. Temperature resolution: 0.0001℃
4. Precision (Precision mode): $RSD \leq 0.1\%$
5. Testing time (Precision mode): 8min
6. Rated voltage: 220V, 50Hz
7. Power $\leq 1.5KW$

Package Information

1. Dimension: 540*420*420mm
2. Volume: 0.1m³
3. Weight: 45kg



KN-240 Automated Oxygen Bomb Calorimeter

Overview

KN-240 Automated Oxygen Bomb Calorimeter conforms to **ASTM D240 Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter**, which is suitable for testing the gross calorific value and net calorific value of the petroleum products without water (gasoline, jet fuel, diesel oil and heavy oil, coke, coal gangue, brick, petroleum and other solids and liquid. It is widely applied in the areas of coal, metallurgy, petrochemical, quality inspection, environmental protection, steel, food, electricity, feed, paper, chemical, cement and brick, etc.

Features

1. It is controlled by a microcomputer; it can provide coal quality reports with data modification, tabulation, management and other functions. It has human-computer interaction and easy to learn.
2. Automatic water injection, drainage; no need to adjust the water temperature; just put the oxygen bomb into the cylinder, the instrument will automatically complete all the test.
3. It has unique water circulation system. The outside objects do not have any impact on the circulating water pump.
4. The calorimeter uses serial communication technology with low failure rate and loose requirements for use environment
5. 7 inches touched LCD screen, operation is easy and convenient
6. Automatically display and print test result
7. Restore 200 test data
8. We adopt good quality Imported temperature sensor
9. Mold processing, PP inner tube, prevent leakage well.

Technical parameters

1. Test materials: All solid materials and liquid fuels
2. Temperature precision: $\pm 0.0001^{\circ}\text{C}$
3. Calorific volume: Around 10500J
4. Outer water tank capacity: 40L
5. Inner water tank capacity: 2.5L
6. Test period: 15~18min, automatically return to menu after test
7. Sample weight: 0.9~1.1 gram
8. Max. Power: 120W
9. Rated voltage: $220\text{V} \pm 10\%$
10. Ambient temperature: $0 \sim 40^{\circ}\text{C}$
11. Relative humidity: $\leq 80\% \text{ RH}$
12. Instrument weight: 45kg



KN-4419 Low Temperature Differential Scanning Calorimeter

Overview

KN-4419 Low Temperature Differential Scanning Calorimeter conforms to **ASTM D4419 Standard Test Method for Measurement of Transition Temperatures of Petroleum Waxes by Differential Scanning Calorimetry (DSC)**. DSC is a convenient and rapid method for determining the temperature limits within which a wax undergoes during transitions. The highest temperature transition is a solid-liquid transition associated with complete melting; it can guide the choice of wax storage and application temperatures. The solid-solid temperature transition is related to the properties of the solid, that is, hardness and blocking temperature.

Instrument purpose:

Measure the physical and chemical changes related to heat, such as glass transition temperature, melting point, melting temperature, crystallization and crystallization heat, phase transition reaction heat, thermal stability of products, curing / cross linking, oxidation induction period, etc.

Features

1. The new fully enclosed metal furnace design structure greatly improves the resolution and resolution as well as better baseline stability.
2. Adopt professional alloy sensor, more corrosion resistance, oxidation resistance, high sensor sensitivity.
3. Perfect two-way atmosphere control system, precise control of purge gas flow, automatic switching of software settings, data directly recorded in the database.
4. With Cortex-M3 core arm controller, the operation speed is faster and the temperature control is more accurate.
5. USB two-way communication is adopted, which is more convenient to operate and supports the function of self recovery connection.
6. The 7-inch 24 bit color full-color LCD touch screen is used to display the status and data of the instrument in real time.
7. The instrument is equipped with standard materials, and users can calibrate each temperature section by themselves, so as to reduce the error of the instrument.
8. Intelligent software design, automatic drawing of the whole process of the instrument, software can realize various data processing, such as calculation of enthalpy, glass transition temperature, oxidation induction period, melting point and crystallization of substances, etc.

Technical parameters

1. DSC range: $0 \sim \pm 500\text{mW}$
2. Temperature range: $-40^{\circ}\text{C} \sim 600^{\circ}\text{C}$ Refrigeration by low temperature constant temperature device
3. Temperature resolution: 0.01°C
4. Heating rate: $0.1 \sim 80^{\circ}\text{C}/\text{min}$
5. Cooling rate: $0.1 \sim 50^{\circ}\text{C}/\text{min}$
6. Temperature repeatability: $\pm 0.1^{\circ}\text{C}$
7. DSC Noise: 0.01mW
8. DSC Resolution: 0.01mW
9. DSC accuracy: 0.01mW
10. DSC sensitivity: 0.1mW
11. Temperature control mode: heating, cooling, constant temperature, any combination of three modes for recycling
12. Curve scan: temperature rise scan
13. Atmosphere control: automatic switching of instrument
14. Gas flow: $0 \sim 200\text{mL}/\text{min}$
15. Gas pressure: 0.2MPa
16. Display mode: 24 bit color 7 inch LCD touch screen display
17. Data interface: standard USB interface
18. Parameter standard: equipped with reference material, with one button calibration function, user can self calibrate temperature and enthalpy
19. Working power supply: AC 220V 50Hz or customized
20. Power: 300W



KN-4406 Oil Particle Counter

Overview

KN-4406 Oil Liquid Particle Counter is a laboratory Instrument used to detect particle contaminants in liquids. It uses the principle of light blocking to detect and count the size of particles in liquids, thereby calculating the distribution and pollution situation of particles.

The Instrument is equipped with pressurized and vacuum devices, which can effectively extract high viscosity detection liquids and eliminate microbubbles in liquids and is widely used for the detection of particle contaminants in liquid medium such as hydraulic oil, lubricating oil, transformer insulation oil, gear oil, aviation kerosene, organic liquid or polymer solution.

Features

1. Adopts the photoresist (shading) method counting principle formulated by the International Hydraulic Standards Committee
2. High-precision laser sensor, it features wide test range, stable performance, low noise and high resolution
3. Adopts high-pressure syringe pump sampling method, the sampling volume can be set by actual demands, the injection speed is stable, and the sampling accuracy is high
4. The combination of positive and negative pressure injection system is able to do sample degassing, which is suitable for testing samples with different viscosities
5. Built-in pressure sensor, which can directly set the pressure value and automatically judge the air pressure in the chamber to ensure safety
6. The main host has a built-in air purification system to ensure that the test will not be polluted, with a high degree of integration, and to avoid secondary pollution caused by the air tightness of the air pump and the test system
7. Built-in multiple calibration curves, which can be compatible with all commonly used standards
8. Built-in GJB-420A, GJB-420B, NAS1638, GB/T14039, ISO4406, SAE4059cpc, SAE4059F, SAE749D, ISO17216, QC/T29104, JB/T9737, DLT432, HH005-2018, etc.
9. Customized test method is available, which can be named and do the grade judgement
10. Base on the demands, be able to set maximum 64 test channels simultaneously
11. Be able to do cleaning detection, the target cleaning requirement particle concentration can be set in advance, the cleaning status can be displayed in real time during the cleaning process, and it will automatically stop when the requirements are reached
12. Built-in viscosity, moisture and temperature sensor module provides viscosity, moisture content saturation and ppm value and temperature reference value while accurately measuring particle distribution (optional)
13. The particle size can be set arbitrarily, and nearly 10,000 particle sizes are built-in, which is convenient for particle size analysis
14. A variety of sampling containers such as standard sampling bottles or sampling cups can be used to meet the requirements of different fields
15. Full-featured 7-inch color touch screen operation, folding button design, simple and convenient operation
16. Manual, automatic, and half-count calibrations are available

17. Equipped with RS232 port, supports 485 communication, be able to connect to PC or laboratory platform for data processing
18. Massive data storage capacity and be able to print the test results, and can save the data into USB flash disk. Saved data can be output to flask disk directly
19. Be able to set up more than 5 accounts, and the operator permissions can be set separately

Technical parameters

1. Light source: semiconductor laser
2. Particle size range: $0.8\mu\text{m}$ ~ $600\mu\text{m}$ (calibrated according to ACFTD calibration $1\sim 100\mu\text{m}$ or ISO MTD calibration $4\sim 70\mu\text{m(c)}$)
3. Detection channel: $8\sim 64$ channels optional (default 64 channels), be able to set any particle sizes
4. Sensitivity: $0.8\mu\text{m}$ (ISO4402) or $3\mu\text{m}$ (c) (ISO11171)
5. Resolution: $<10\%$ (GB/T18854, ISO11171)
6. Repeatability: $\text{RSD}<2\%$
7. Viscosity of sample: $\leq 650\text{cSt}$ (excessive viscosity can be detected by heating or dilution method)
8. Sampling volume: $0.2\sim 6000\text{mL}$, interval 0.1mL
9. Sampling accuracy: better than $\pm 0.5\%$
10. Sampling speed: $5\sim 80\text{mL/min}$
11. Chamber: positive and negative chamber to achieve sample degassing and high viscosity sample detection
12. Maximum vacuum of chamber: -0.08Mpa
13. Maximum positive pressure in the chamber: 0.8Mpa
14. Maximum particle concentration: $12000\sim 40000$ particles/mL
15. Temperature (paid optional): Range: $1\sim 100^{\circ}\text{C}$, accuracy: 1°C
16. Water activity (paid optional): Range: $1\sim 100\%\text{RH}$, accuracy: $1\%\text{RH}$
17. Water content (paid optional): Range: $1\sim 360\text{ppm}$, accuracy: 1ppm
18. Detection sample temperature range: $0^{\circ}\text{C}\sim 80^{\circ}\text{C}$
19. Working temperature: $-20^{\circ}\text{C}\sim 60^{\circ}\text{C}$
20. Storage temperature: $-30^{\circ}\text{C}\sim 80^{\circ}\text{C}$
21. Power supply: $110\sim 245\text{V AC}$, $50/60\text{Hz}$, 70W
22. Main host dimension: $340\text{mm}\times 410\text{mm}\times 650\text{mm}$
23. Air pump size: $180\text{mm}\times 160\text{mm}\times 220\text{mm}$
24. Net weight of main host: $\geq 23\text{kg}$ Net weight of air pump: $\geq 5.5\text{kg}$



KN-4406A Portable Oil Particle Counter

Overview

KN-4406A Portable Oil Particle Counter design with Laser Extinction Technology, is design to measure the particles in the oil, which include hydraulic oil, lubricating oil, transformer oil, insulating oil, turbine oil, gear oil, engine oil, kerosene and so on. It can be used in aviation, spaceflight, electric power, petroleum, chemical industry, transportation, port, metallurgy, machinery, automobile manufacturing and other fields. It also can be used to measure the particles in organic liquid and polymer solution.

Features

1. Use laser shading principle which International Hydraulic Standards Committee specified
2. Strict sensor, large test range, stable function, low noise and high resolution
3. With the advanced sampling system of high precision injector, sample volume can be set free, stable sampling speed and strict sampling precision
4. Can be used in laboratory or field measurement, can built-in pressure relief device for online measurement
5. Can connect with pressure dome to degassing and measure high viscosity samples
6. Many sampling containers can be used such as standard sampling bottles, sampling cups, also can direct access to the high pressure system, to meet the requirements of different industries
7. There are 4 useful standards such as GJB 420, NAS1638, ISO4406, SAE4059E and so on. It also can self-set standards, we also can set all the standards that user specified
8. The sizes can be set freely in the range of the calibration curves
9. With data analysis system, grand the pollution class, test data save and data printout
10. Large color LCD touch screen and user-friendly operation
11. RS232 interface, can get to computer or Lab platforms
12. Built-in lithium batteries, can use to charge for instrument operation without 220V power source

Technical Parameters

1. Optical source: laser
2. Size range: 0.8 μ m-500 μ m
3. Channel number: 8
4. Resolution: <10%
5. Repeatability: RSD<2%
6. Dynamic viscosity: $\leq$ 350 cSt
7. Sampling volume: 0.2-1000ml
8. Sampling precision: $\pm$ 1%
9. Sampling speed range: 5ml/min-80ml/min
10. Pressure range: High pressure 5-420bar, Low 0-6bar
11. Negative pressure: $\leq$ 0.08Mpa
12. Positive pressure: $\leq$ 0.8Mpa
13. Coincidence error limit: 10000 particles/ml
14. Battery capacity: 5200mA
15. Power: AC110V~220V $\pm$ 10%,50Hz



KN-4406B Portable Liquid Particle Counter

Overview

KN-4406B Portable Liquid Particle Counter is designed based on the principle of light blockage method, which is specially used for fast detection of oil contamination level on site. It has the advantages of small volume, light weight, fast detection speed, high precision, good repeatability, and can work under extremely harsh conditions such as high temperature and high pressure. Built-in micro water sensor and temperature sensor, so it can detect water content and temperature as well as pollution degree in oil. It can be widely used in aerospace, petrochemical, transportation ports, iron and steel metallurgy, automobile manufacturing and other fields of hydraulic oil, lubricating oil, transformer oil (insulation oil), turbine oil, gear oil, engine oil and other oil detection.

Features

1. The principle of light blockage method, the use of high-precision laser sensor, small size, high precision, stable performance.
2. It is suitable for laboratory or on-site detection, and can also be used for on-line high pressure measurement with pressure-reducing device to realize real-time detection of oil particle contamination.
3. Built-in calibration function. It can be calibrated according to ISO4402 and other standards.
4. Built-in data analysis system. It can automatically determine the sample grade according to the standard, and has the function of automatic data processing and printing.
5. The alarm level can be set arbitrarily, and the alarm prompt will be given when the limit is exceeded to realize pollution or cleanliness detection.
6. The alarm level can be set arbitrarily, and the alarm prompt will be given when the limit is exceeded to realize pollution or cleanliness detection.
7. External pressure chamber can be connected to form positive pressure or negative pressure, to achieve high viscosity sample detection and sample degassing.
8. Washing mode according to volume or time, convenient for users to use and maintain.
9. English and Chinese can be switched.
10. Super large storage, optionally stored in the internal or external storage devices of the instrument.
11. Embedded design, high strength shell, easy to carry, suitable for all kinds of construction machinery.

Technical parameters

1. Light source: semiconductor laser
2. Range of viscosity: $\leq 100\text{cSt}$ (Air pressure chamber is optional for higher viscosity)
3. Range of flow rate: 5 ~ 60 mL/min (The typical value is 30mL/min)
4. Pressure range for online testing: 0.1 ~ 0.6Mpa (the maximum pressure can reach 42 MPa when the decompression device is selected)
5. Range of sample temperature: 0~80°C
6. Size range: 1 μm ~ 500 μm (depending on the type of sensor)
7. Sensitivity: 1 μm /4 μm (c)
8. Standards: GJB420B、SAE4059F-CPC、ISO4406、GB/T14039、GJB420A、NAS1638/SAE4059F、GOST17216
9. Range of volume: 1 ~ 999mL
10. Accuracy: ± 0.5 levels of contamination
11. Range of test interval: 1s ~ 24h
12. Coincidence deviation limit: 40,000 p/ml
13. Data storage: provides 1000 groups of data storage space, and support U disk storage
14. Range of water activity: 1 ~ 1aw($\pm 0.05\text{aw}$)
15. Range of water content: 1 ~ 360ppm($\pm 10\%$)
16. Interface: USB interface, power interface
17. Protection grade: IP67 (protection box)
18. Operating temperature: -20 ~ 60°C
19. Power supply: AC220V $\pm 10\%$; 50/60Hz; DC 12V
20. Weight: 5.5 kg
21. Volume: 400 mm $\times$ 305 mm $\times$ 170 mm



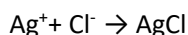
KN-3230 Salt Content of Crude Oil Tester

Overview

KN-3230 Salt Content of Crude Oil Tester conforms to **ASTM D3230 Standard Test Method for Salts in Crude Oil (Electrometric Method)**, it is suitable for the approximate chloride (salts) concentration in crude oil. The range of concentration covered is 0 to 500mg/kg or 0 to 150lb/1000bbl as chloride concentration/volume of crude oil. KN-3230 is suitable for measuring the salt content to detect the total halide value of which the range is 0.002~0.02%(weight) in the crude oil, reduced oil, cracking oil residue and fuel oil, it is also suitable for estimating the seawater pollution situation of the used team turbine oil and bunker fuel oil.

Working Principle

In the presence of polar solvent, the crude oil is heated. Use water to extract the salt of it. After centrifugal separation, inject some sample with a certain concentration into the cell. The Cl^- and Ag^+ react as follow:



Electrolytic anode electroproduce titrant Ag^+ to supplement the wasting Ag^+ , till the concentration of the titrant return to previous concentration, measure the electric quantity of supplement the wasting Ag^+ , According to Faraday's law to get the salt content of the sample

$$W = \frac{M \times Q}{n \times F}$$

W---- Precipitated substance weight

M----Molecular weight or Atomic weight

Q----Electric quantity

n----Electron transfer number of electrode reaction

F----Faraday constant 96500

Technical parameters

1. Measuring range:
Salt content: 0.2~10000mgNaCl/L
Inorganic chloridion: 0.1ppm~percentage composition
2. Measuring accuracy:
 $\leq 1\text{mg/L}$ Absolute deviation: $\pm 0.2\text{mg/L}$
 $> 1\text{mg/L}$ Relative deviation: $\pm 10\%$
3. Sample volume: $1\text{g} \pm 0.2\text{g}$



KN-6138 EMCOR Grease Testing Machine

Overview

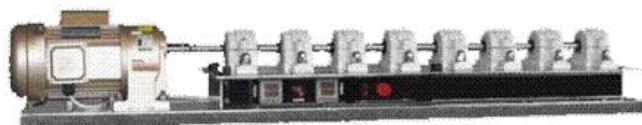
KN-6138 EMCOR Grease Testing Machine conforms to **ASTM D6138 Standard Test Method for Determination of Corrosion-Preventive Properties of Lubricating Greases Under Dynamic Wet Conditions (Emcor Test)**. It covers the determination of corrosion-preventive properties of greases using grease-lubricated ball bearings under dynamic wet conditions.

Features

1. Standard test bearing, 30×72×19mm
2. Observe the bearing via a retroreflector without zoom function, convenient to operate
3. Large torque motor, drive is unobstructed
4. Digital display working time and stop time
5. After the test is done, the motor will be turned off automatically
6. Be able to do fixed and dynamic test

Technical parameters

1. Applicable standard: ASTM D6138
2. Rotation: by AC motor drive
3. Rotation speed: 80~85r/min
4. Timing method: digital timer
5. On/off: As per the setting
6. Rated voltage: 220V, 50Hz
7. Power: 600W



KN-2624 Digital Conductivity Meter

Overview

KN-2624 is designed by **ASTM D2624 Standard Test Methods for Electrical Conductivity of Aviation and Distillate Fuels**, which covers the determination of the electrical conductivity of aviation and distillate fuels with and without a static dissipater 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).

Features

This tester adopts single chip microcomputer photoelectric isolation technology, stability and repeatability is good, with short polarization, long sampling time, high accuracy, possesses with functions of temperature measurement. Conductivity detection is mainly used for light oil products, also can be used in the detection of fuel additive environmental protection Configuration: temperature measuring probe, conductivity pool, detector. Conductivity value: measuring range 1-2000 pS/m, resolution: 1 pS/m

Technical parameters

1. Conductivity test
 - 1) Range: 0~1999 pS/m
 - 2) Resolution: 1pS/m
 - 3)Accuracy: <2%±1 pS/m
 - 4) Measurement error: less than request of ASTM D2624
 - 5)Ambient temperature: 0℃~40℃
 - 6) Relative humidity: ≤85%RH
 - 7) Power: 9V
 - 8) Dimension: 80 × 140 × 35(mm)
 - 9) Calibration value: Certificate value± 2 pS/m
2. Temperature test
 - 1)Temperature range: -50℃~50℃
 - 2)Resolution: 0.1℃
 - 3)Accuracy:< 1℃

Package Information

1. Dimension: 200*150*130mm
2. Volume: 0.12m³
3. Weight:5kg



KN-LAB 131 Portable Octane and Cetane Tester

Overview

KN-LAB 131 Portable Octane and Cetane Tester adopts International advanced integrated circuit technology and Precision inductive components, its various performance and indicators all reached or overreached the domestic advanced level. It can be fast, convenient, precise to test the octane value of the gasoline without any damage of the sample. Suitable for the laboratory, also can be used in field test, instrument adopts artificial intelligence technology, strong function and easy to use.

Working Environment

1. The instrument got a portable special designed box can test the engine fuel in oil field or laboratory under the conditions of measurement the Instrument's working conditions and index range mainly includes:
2. Working temperature (environment temperature): $-5^{\circ}\text{C}\sim+30^{\circ}\text{C}$
3. Relative humidity: 80% ($\leq 25^{\circ}\text{C}$)
4. Atmospheric pressure: 84~106 KPa
5. Power supply: DC (AA)6V

Features

1. It is Suitable for measuring motor gasoline's octane value
2. Varieties of product inspection mode has been set into the instrument: such as, gasoline, octane value mode, General diesel mode, blended diesel mode, Methanol gasoline mode, Ethanol gasoline mode, stone brain gasoline mode, aromatic gasoline mode and the other five customer mode; diesel cetane value mode, general diesel mod, biodiesel mode and the other five customer mode.
3. The instrument got automatic proof function, the correction feature, can use standard oil to pursue one point, two point, three point correction, can automatically revise the system error.
4. The instrument is equipped with temperature adjustment function can regulate the octane value according to certain problems

5. The instrument got EL backlit display, it's Convenient for using in dark situation
6. The instrument got directive function of the dump energy, which Can display battery's left energy
7. The instrument possesses automatic sleep; Auto power-off and some other kinds of power saving function; can be connected to the micro printer (manufacturer's designated model) to print measurement report directly.
8. The measured data can be storage management and printed.
9. The instrument is small, portable, and got high reliability, suitable for the harsh operating environment, resistance to vibration, impact and electromagnetic interference.
10. It can display measuring time

Technical Parameters Features

- The instrument got a portable special designed box can test the engine fuel in oil field or laboratory under the conditions of measurement the instrument's working conditions and index range 2.mainly includes:
 1. Working temperature (environment temperature): $-5^{\circ}\text{C} \sim +30^{\circ}\text{C}$
 2. Relative humidity: $80\% (\leq 25^{\circ}\text{C})$
 3. Atmospheric pressure: $84 - 106\text{KPa}$
 4. Power supply: DC (AA) 6V
 5. KN-LAB 132 Portable cetane analyzer for diesel
 6. KN-LAB133 portable octane analyzer for gasoline



KN-300R Octane Number of Spark-Ignition Engine Fuel

Overview

KN-300R Octane Number of Spark Ignition Engine Fuel conforms to **ASTM D2699 Standard Test Method for Research Octane Number of Spark-Ignition Engine Fuel** and **ASTM D2700 Standard Test Method for Motor Octane Number of Spark-Ignition Engine Fuel**. It covers the quantitative determination of the knock rating of liquid spark-ignition engine fuel in terms of Research O.N., including fuels that contain up to 25% v/V of ethanol and the quantitative determination of the knock rating of liquid spark.

Features

1. Standard detonation meter , supports multiple operating methods.
2. DW engine, meeting standard requirement, and easy to maintain.
3. 4 sample tanks, and one of which can be fitted with a cooling jacket.
4. Detonation sensor can be interchangeable without debugging.
5. Using a precision displacement sensor to measure the compression ratio.The engine phase be measured accurately by a rotary encoder.
6. With a special plug-in modular controller, stable and reliable, and can be connected to LIMS.
7. The software supports English and Russian, is designed according to standard operating procedure s

Technical parameters

1. Range of measurement: 40~120.
2. Inner diameter of cylinder: 82.55mm.
3. Piston stroke: 114.3mm.
4. Range of compression ratio: 4:1~18:1.
5. Rotate speed of engine: 900±9r/min(Mon),600±6r/min(Mon)
6. Power: 8.0kw



Safety & Health

1. The machinery and moving parts of the machine are provided with interlocking limit protection, the safety signs are clear and complete, and the emergency stop button is set on the operation panel.
2. This machine is equipped with silencing device to effectively eliminate the noise during operation.
3. When the machine is installed, the exhaust gas of the engine shall be discharged after treatment.

Technical parameters

Inner Diameter of Cylinder		82.55mm	Piston Stroke	114.3mm	Range of Compression Ratio		4:1~18:1
Engine speed	MON	900±9r/min		Valve clearance	Intake	0.20mm	
	RON	600 ±6r/min			Exhaust	0.25mm	
Intake Air Temperature	MON	38℃, ±2.0℃		Spark plug gap		0.50mm	
	RON	52℃, ±1.0℃		Cylinder Jacket Coolant Temperature		100±1℃	
Ignition advance	MON	24±0.1° (ε=5.5)		Lubricating oil pressure		172~207kPa	
	RON	13°		Lubricating oil Temperature		57±8℃	
Mixture temperature		141~163℃, ±1℃		Crankcase pressure		-0.245~-1.470kPa	
Intake air humidity		3.56~7.12g Vapor/kg dry air		Engine Cycling Water Temperature		≤Ambient +10℃	
Repeatability	MON	≤0.3/M (85~90)		Reproducibility	Mon	≤1.1/M (85~95)	
	RON	≤0.2/R (85~95)			Ron	≤0.7/R (90~100)	
Machine weight		1000KG		Installation dimension (W*D*H)		1600*720*1700mm	
Power Source		3P~380VAC±10%, 50Hz, 9.5kW, and can be modified according to the user's power specifications.					



KN-600T Cetane Number of Diesel Fuel Oil

Overview

KN-600T Cetane Number of Diesel Fuel Oil conforms to **ASTM D613 Standard Test Method for Cetane Number of Diesel Fuel Oil**. The cetane number of a diesel fuel oil is determined by comparing its combustion characteristics in a test engine with those for blends of reference fuels of known cetane number under standard operating conditions. This is accomplished using the bracketing handwheel procedure which varies the compression ratio (handwheel reading) for the sample and each of two bracketing reference fuels to obtain a specific ignition delay permitting interpolation of cetane number in terms of handwheel reading.

Features

1. Strictly conforms to ASTM D613 standard requirements, the main host is an indirect injection diesel engine which is standard single-cylinder, four-stroke and variable compression ratio.
2. Adopts special DD-CFR integral indirect injection diesel engine, which meets CFR standards, and the lubrication pipeline is fully built-in, no need routine maintenance.
3. Strictly follow the standard requirements, the high-performance fuel injection pump and single-hole fuel injection nozzle are adopted, and the fuel injection opening pressure and fuel injection mist meet the standard requirements.
4. The professional combustion sensor is designed according to industry standards, stable and reliable.
5. Precise valve for adjusting the injection speed to meet the standard requirements.
6. Automatic precision measurement of cylinder displacement (equivalent to handwheel reading), real-time precision compression ratio reading, the cetane number of the oil sample to be measured can be directly got at the end of the test, and the test result can be output by the panel printer.
7. The control system adopts a modular dedicated controller, which enhances reliability and makes daily maintenance, maintenance and fault handling easy and convenient.
8. Adopts the console and adjustable touch screen operation, which greatly facilitates the operation, the CNManager® software operation interface is highly integrated, various real-time status monitoring information will be displayed, the combustion signal trend curve will be displayed in real time, and the software operation prompt is timely and clear.
9. The CNManager® will guide the operator to finish the test step by step, easy and convenient.
10. Automatically record the start-up and operating time, and be able to give corresponding maintenance prompt in time
11. Equipped with independent circulating water system, and the injector is equipped a dedicated temperature controller to meet all the standard requirements.
12. The diesel engine adopts double balance structure design to reduce the vibration and noise
13. The mechanical and moving parts of the system are limited interlock and other hardware protection, the emergency stop button is set on the operation panel, the software operation interface has eye-catching safety tips, and the safety identification mark is clear and complete.
14. Equipped with an anechoic device to effectively eliminate the noise during operation and ensure the quiet of the laboratory

15. The instrument specially treats the exhaust emissions of the engine to meet the emission standards, and also ensures the good environment of the laboratory.

Technical parameters

1. Pneumatic cylinder inner diameter	3.25 inch (82.55mm)
2. Piston stroke	4.5 inch (114.3mm)
3. Compression ratio range	8:1~36:1
4. Engine speed	900 ± 9r/min
5. Oil atomizer flow rate	13.0 ± 0.2ml/min
6. Oil atomizer BTDC	13° ± 0.2°
7. Oil atomizer cooling temperature	38 ± 2°C
8. Ignition lag angle	13° ± 0.2°
9. Injection opening pressure	10.30 ± 0.34MPa
10. Lubrication pressure	172 ~ 207Kpa
11. Lube oil temperature	57 ± 8°C
12. Cylinder jacket cooling temperature	100 ± 2°C
13. Air inlet temperature	66 ± 0.5°C
14. Circulating water temperature	≤ room temperature + 5°C
15. Total max power	10.0KW
16. Dimension	1450*720*1750mm
17. Total weight	1000kg

Average cetane number

40
44
48
52
56

Repeatability Accuracy

0.8
0.9
0.9
0.9
1.0

Repeatability Accuracy

2.8
3.3
3.8
4.3
4.8



KN-5185 ICP for Used Lube Oils

Overview

In the daily work and production process, some special components are often protected, so it is necessary to regularly monitor the accumulation of wear particles on these components, which is often the analysis of metal elements in oil, based on the composition of metal components. And the accumulation rate in the oil can accurately determine the failure cycle of the machine components. In addition, lubricating oil also needs to monitor its foreign contamination components (such as metal elements brought in by dust and dirt). Determining the content of wear metal in the lubricant can accurately understand the operating status and performance of the equipment. The metal contained in the oil shows the severity of the wear of the parts, which is very important for the maintenance of the equipment and the evaluation of the working performance. Monitoring methods for the determination of trace metals in lubricating oils as a component of wear are particularly important.

Table 1, Main Technical Parameters of KN-5185

High Frequency Generator	
Working Frequency	27.12MHz
Stability	<0.05%
Output power	800W~1600W
Stability	≤0.05%
Matching Method	Automatic
Scanning Spectrometer	
Light Path	Czerny turner
Focal Length	1000mm
Raster Specification	Ion-etched holographic grating, engraved line density 3600L/mm or 2400L/mm, scribed area (80*110)mm
Line Dispersion Reciprocal	0.26nm/m
Resolution	≤0.008nm (3600 wire grating)
	≤0.015nm (2400 wire grating)
Main Host Parameters	
Scanning Wavelength Range	195nm~500nm (3600L/mm wire grating)
	195nm~800nm (2400L/mm wire grating)
Repeatability	RSD≤1.5%
Stability	RSD≤2.0%

Test Part

Abrasion Elements in Lube Oils

- CONOSTAN Dedicated Diluent for ICP
- Pipette, 0~5ml
- Electronic balance, 0.0001

Working Condition Requirements

- High frequency generator: 27.12MHz, 0.7mm quartz torch with center channel, high frequency power 1200W, plasma gas flow 15L / min, auxiliary gas flow 0.99L / min, carrier gas flow 0.35L / min, oxygen flow rate 50ml / min , The temperature of the atomizing chamber is -20 ° C, and the speed of the peristaltic pump is 3ml / min.

Test method

- After the tester is automatically ignited and the parameters are set according to the working conditions of the tester, the diluent is directly sucked into the mist chamber through the nebulizer and enters the plasma. After the tester is stable, measure the blank solution, standard solution and diluted sample solution at one time. The content of each element in the final sample can be directly obtained. The linear relationship of the elements was determined according to the experimental method. At the same time, the blank solution was measured 10 times for each element. The standard deviation of the measured value was divided by the slope of the curve as the method detection limit. As can be seen from the table below, the fitting coefficient of the elemental working curve is higher than 0.999, indicating that the linear relationship is good within the linear range of the working curve. Because the working parameters of the tester are optimized, the test conditions of the elements are optimized to improve the accuracy of the test results.

ICP Repeatability of 16 Elements in Lubricants

Element	RSD	Element	RSD
Vanadium (V)	1.45%	Cadmium (Cd)	2.58%
Cuprum (Cu)	0.76%	Nikel (Ni)	2.78%
Argentum (Ag)	0.91%	Ferrum (Fe)	1.46%
Titanium (Ti)	1.35%	Silicium (Si)	1.70%
Barium (Ba)	1.48%	Manganese (Mg)	1.22%
Calcium (Ca)	1.31%	Chromium (Cr)	1.10%
Zinc (Zn)	1.65%	Magnesium (Mg)	1.93%
Plumbum (Pb)	2.46%	Phosphorus (P)	2.36%

Results of GBW (E) 130129-Lubricant Metal Content Spectral Analysis Standard Materials (mg / kg)

Element	Standard volume	Result	Recovery rate	Element	Standard volume	Result	Recovery rate
Vanadium (V)	100	98.04	98.00%	Cadmium (Cd)	100	104.91	104.90%
Cuprum (Cu)	100	112.57	112.60%	Nikel (Ni)	100	106.5	106.50%
Argentum (Ag)	100	102.21	102.20%	Ferrum (Fe)	100	104.84	104.80%
Titanium (Ti)	100	102.11	102.10%	Silicium (Si)	100	91.78	91.80%
Barium (Ba)	100	118.62	118.60%	Manganese (Mg)	100	106.09	106.10%
Calcium (Ca)	100	88.54	88.50%	Chromium (Cr)	100	99.31	99.30%
Zinc (Zn)	100	110.57	110.60%	Magnesium (Mg)	100	112.43	112.40%
Plumbum (Pb)	100	108.39	108.40%	Phosphorus (P)	100	97.81	97.80%

Applicable Standard: ASTM D5185 Standard Test Method for Multielement Determination of Used and Unused Lubricating Oils and Base Oils by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES)

Conclusion

The ICP method is used to directly determine the 16 kinds of wear elements in lubricating oil. The relative digestion method has higher accuracy and better reproducibility. KN-5185 has the characteristics of low cost, fast speed and high accuracy. The determination of 16 types of wear elements in lubricating oil can fully meet the demands in the petrochemical industry.

Test Report Comparison					
Sample Name		Diesel Engine Oil			
Receiving Date		Jan, 2 nd ,2020	Test Date		Jan, 8 th ,2020
Description		Viscous Oil Sample			
Test Requirement					
Test Component		Ca	Mg	P	Zn
Reference					
Standard		ASTM D5185	Standard Sample		X-21 Mixed Sample
Humidity		≤ 70%	Temperature		25 °C
Test Process					
Weigh a certain amount of sample into a 100ml volumetric flask, add the internal standard solution, dilute to the mark with blank oil, shake well, and wait for measurement					
KN-5185 ICP			Perkin Elmer Optima 3300 ICP-OES		
Test item	Unit	Result	Test item	Unit	Result
Ca	mg/kg	4179.1	Ca	mg/kg	4225.7
Mg	mg/kg	22.06	Mg	mg/kg	21.501
P	mg/kg	1064.3	P	mg/kg	1026.2
Zn	mg/kg	1133.1	Zn	mg/kg	1133.1



KN-4951 ICP for Unused Lube Oils

Overview

The iron, manganese, phosphorus, zinc, calcium, magnesium and other elements in lubricating oil samples directly determine the quality of the product and the degree of impact on the environment. The traditional test method uses acid digestion to destroy the organic components in the sample and transform it into the test is performed after the aqueous solution. This method has many disadvantages such as long operation time, many reagents and consumables, easy contamination or loss of elements, poor accuracy of test results, and environmental pollution. This method uses the organic solvent dilution method to determine the various elements in unused lubricating oil samples. The determination method is simple, fast, and has strong operability. The repeatability and stability of the results obtained can fully meet the daily analysis requirements.

Table 1, Main Technical Parameters of KN-4951

High Frequency Generator	
Working Frequency	27.12MHz
Stability	<0.05%
Output power	800W~1600W
Stability	≤0.05%
Matching Method	Automatic
Scanning Spectrometer	
Light Path	Czerny turner
Focal Length	1000mm
Raster Specification	Ion-etched holographic grating, engraved line density 3600L/mm or 2400L/mm, scribed area (80*110)mm
Line Dispersion Reciprocal	0.26nm/m
Resolution	≤0.008nm (3600 wire grating)
	≤0.015nm (2400 wire grating)
Main Host Parameters	
Scanning Wavelength Range	195nm~500nm (3600L/mm wire grating)
	195nm~800nm (2400L/mm wire grating)
Repeatability	RSD≤1.5%
Stability	RSD≤2.0%

Abrasion Elements in Lube Oils

- CONOSTAN Dedicated Diluent for ICP
- CONOSTAN Co standard liquid
- CONOSTAN S-21 mixed standard oil
- Pipette, 0~5ml
- Electronic balance, 0.0001g

Working Condition Requirements

- High frequency generator: 27.12MHz, 0.7mm quartz torch with center channel, high frequency power 1200W, plasma gas flow 15L / min, auxiliary gas flow 0.99L / min, carrier gas flow 0.35L / min, oxygen flow rate 50ml / min , The temperature of the atomizing chamber is -20 ° C, and the speed of the peristaltic pump is 3ml / min.

Sample Treatment

- After the lubricating oil sample is sampled by the weighing method, the diluent is directly used to make the volume to the mark. The internal standard calibration method is used in the test process to eliminate the difference of the sample matrix.

Test Method

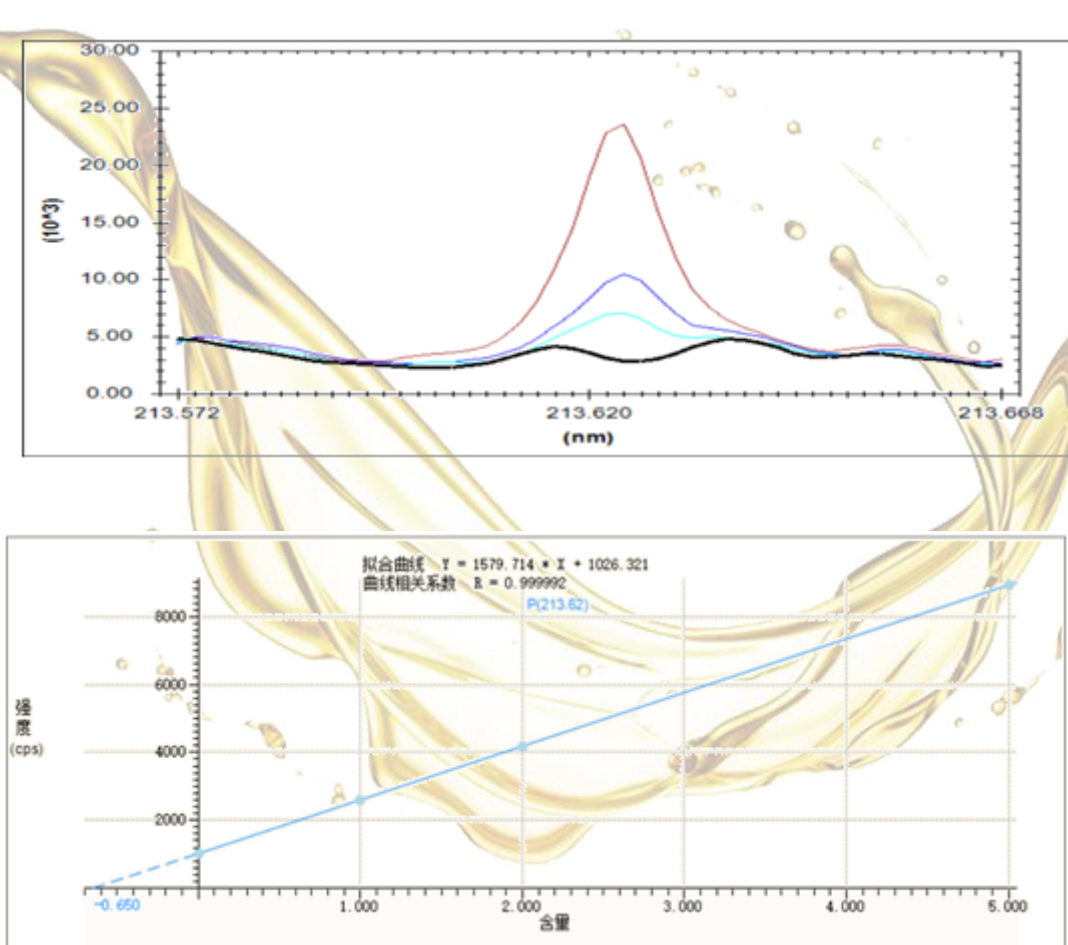
- After the tester is automatically ignited and the parameters are set according to the working conditions of the tester, the diluent is directly sucked into the mist chamber through the nebulizer and enters the plasma. After the tester is stable, measure the blank solution, standard solution and diluted sample solution at one time. The content of each element in the final sample can be directly obtained. The linear relationship of the elements was determined according to the experimental method. At the same time, the blank solution was measured 10 times for each element. The standard deviation of the measured value was divided by the slope of the curve as the method detection limit. As can be seen from the table below, the fitting coefficient of the elemental working curve is higher than 0.999, indicating that the linear relationship is good within the linear range of the working curve. Because the working parameters of the tester are optimized, the test conditions of the elements are optimized to improve the accuracy of the test results.

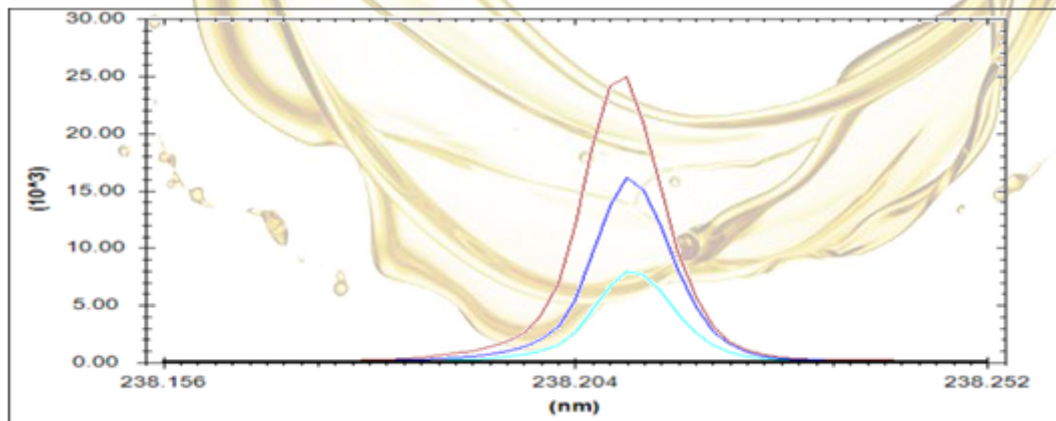
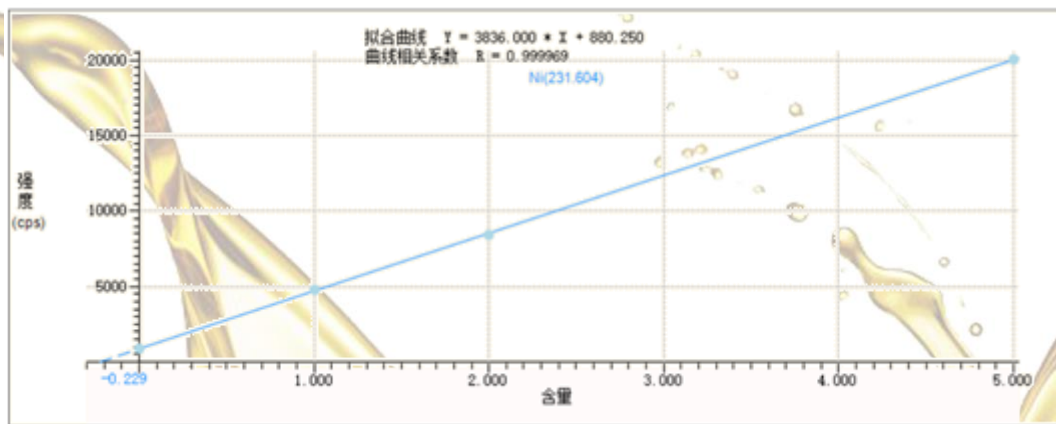
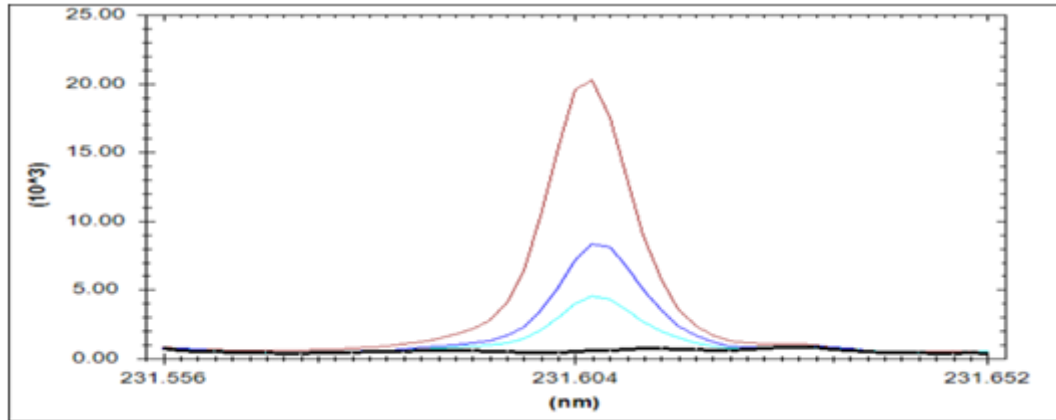
Applicable Standard: *ASTM D4951 Standard Test Method for Determination of Additive Elements in Lubricating Oils by Inductively Coupled Plasma Atomic Emission Spectrometry*

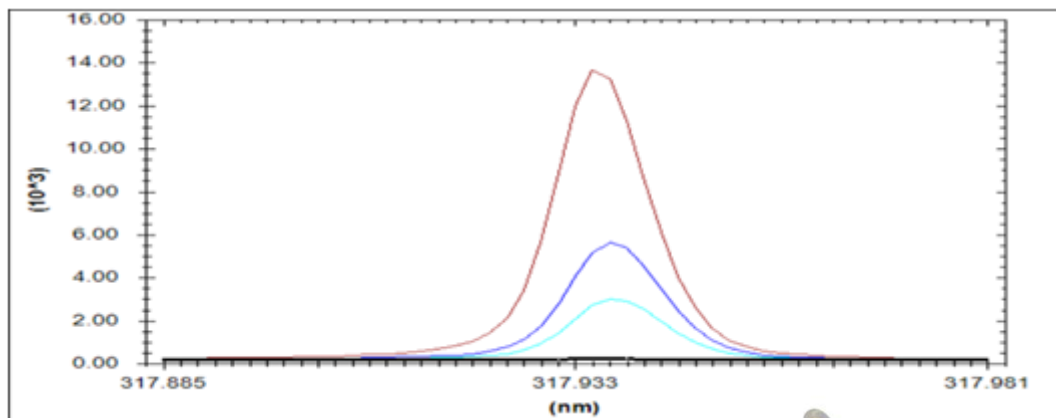
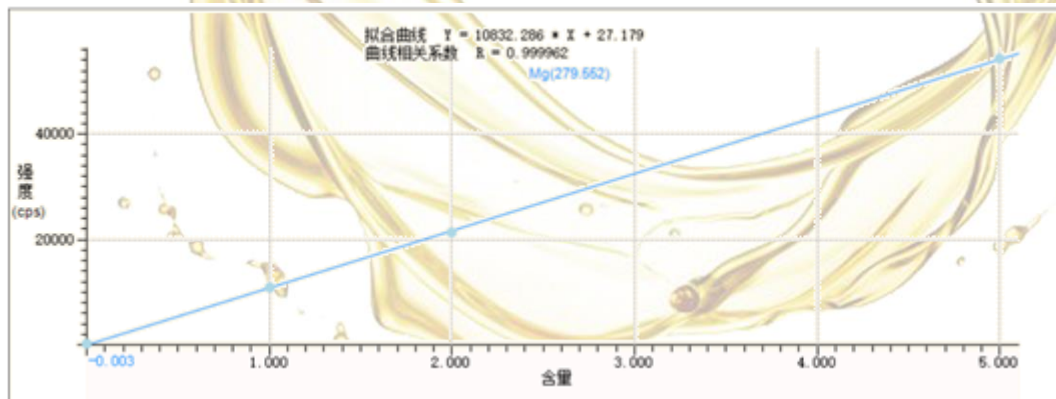
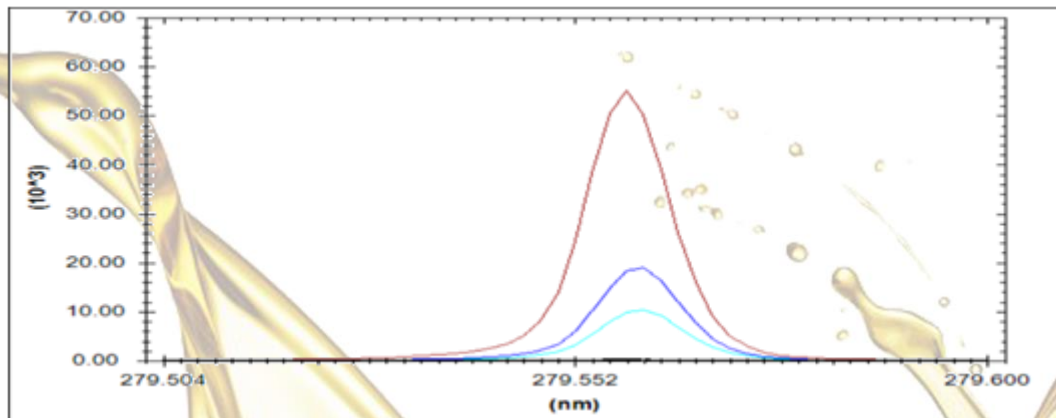
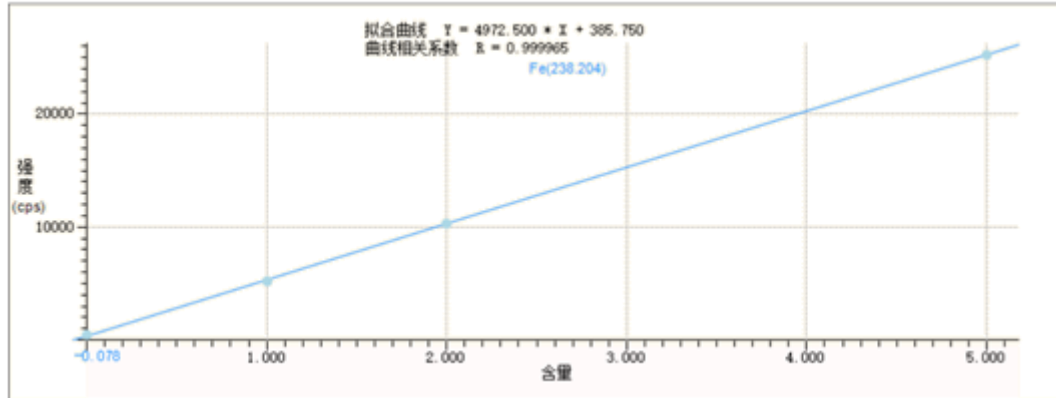
Test Report Comparison				
Sample Name	Diesel Engine Oil			
Receiving Date	Jan, 2 nd ,2020	Test Date		Jan, 8 th ,2020
Description	Viscous Oil Sample			
Test Requirement				
Test Component	Ca	Mg	P	Zn
Reference				
Standard	ASTM D5185	Standard Sample		X-21 Mixed Sample
Humidity	≤ 70%	Temperature		25 °C

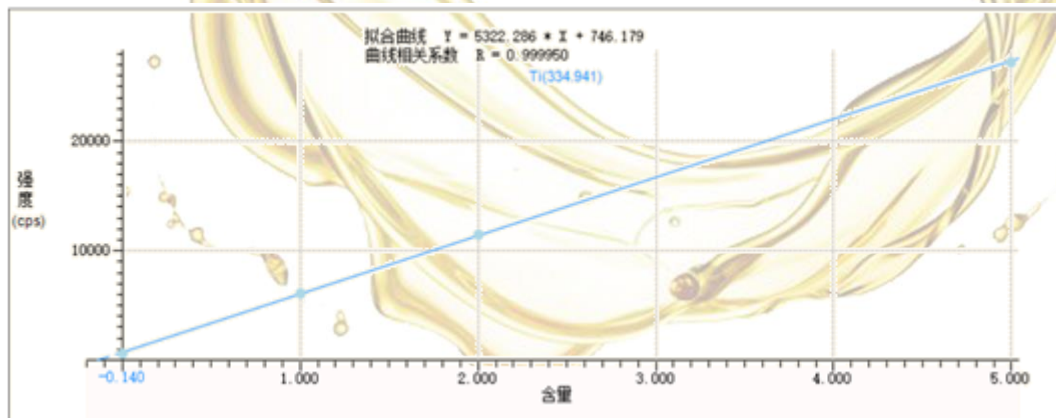
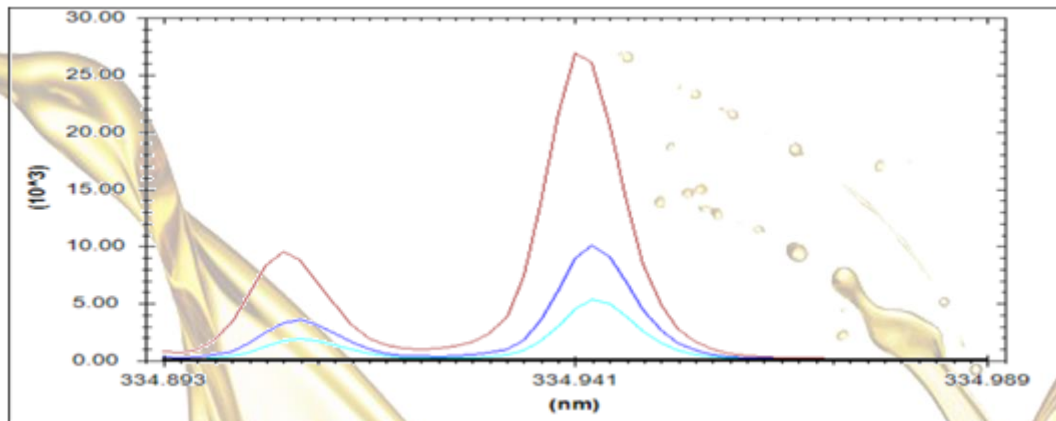
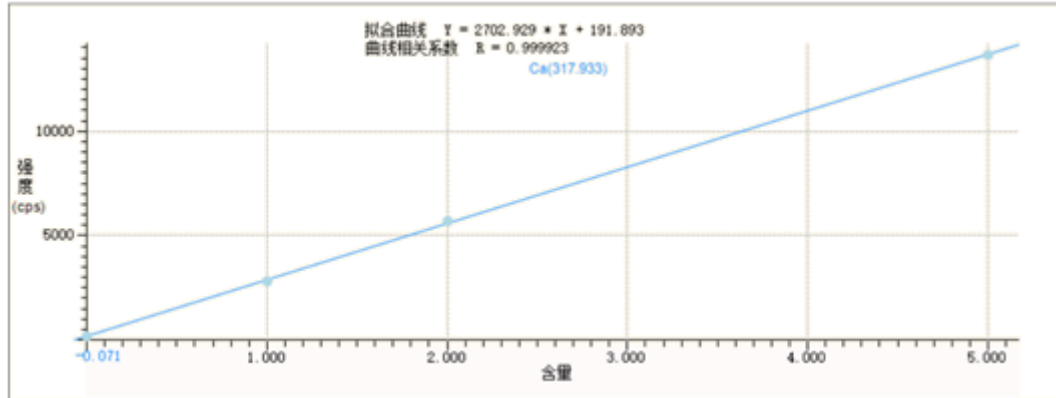
Test Process			
Weigh a certain amount of sample into a 100ml volumetric flask, add the internal standard solution, dilute to the mark with blank oil, shake well, and wait for measurement			
Brand	Perkin Lemer ICP Avio200	Agilent ICP5110	KN-4951 ICP
Test item	Result	Result	Result
Ca	4225.7ppm	4415.1ppm	4135.8ppm
Mg	21.5ppm	15.8ppm	29.1ppm
P	1026.2ppm	1048.3ppm	1164.3ppm
Zn	1133.1ppm	1117.6ppm	1131.2ppm

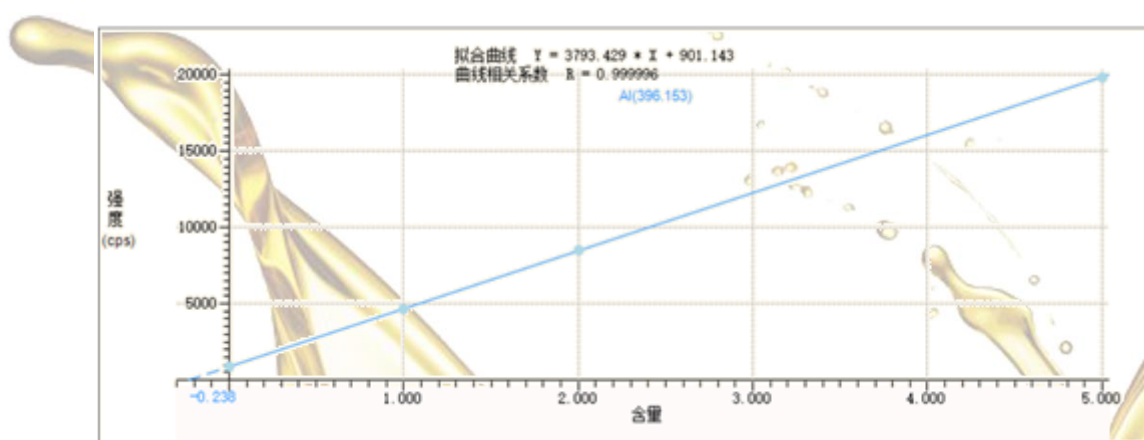
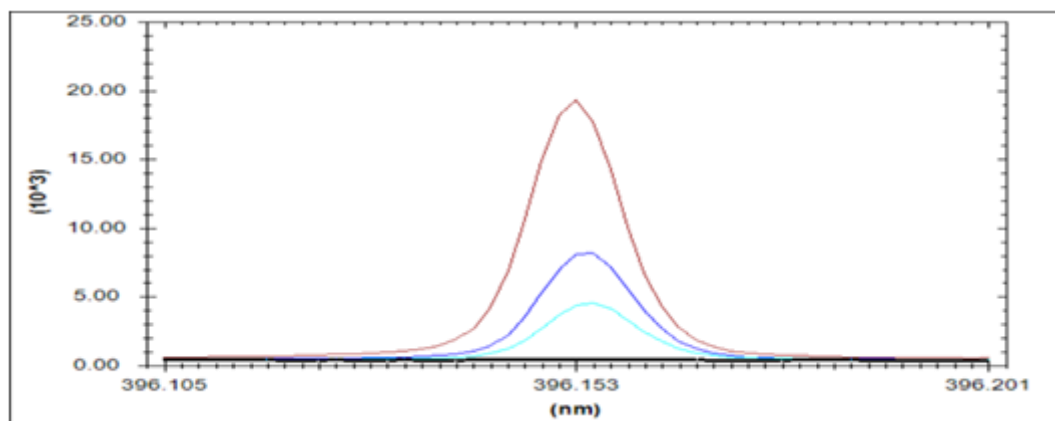
Typical element spectrum and curve











Conclusion

The relative digestion method for direct determination of multiple elements in gasoline and lubricating oil by ICP has higher accuracy and better reproducibility, which not only greatly saves the time of sample digestion and reduces the environmental pollution caused by acid, but also poses a great impact on operators. The technical level requirements are greatly reduced, and it can be promoted and used in the petrochemical industry. KN-4951 has the characteristics of low test cost, fast test speed, and high accuracy of the method. It can directly determine multiple elements in gasoline and lubricant samples, which can fully meet the test requirements of different customers in the petrochemical industry.



KN-7111 ICP for Trace Elements in Middle Distillate Fuels

Overview

KN-7111 Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) covers the determination of selected elements in middle distillate fuels. The concentration range of this test is approximately 0.1 to 2.0 mg/kg. The test may be used for concentrations outside of this range; however, the precision statements may not be applicable. Middle distillate fuels covered in this test method have all distillation fractions contained within the boiling range of 150 to 390°C. This includes, but is not limited to, diesel fuels and aviation turbine fuels.

Instrument advantage

1. There are more than 70 kinds of elements can be tested.
2. Simultaneous testing of multiple elements, all elements are tested at the same time with one sample injection.
3. Fast analysis speed, about 5 elements per minute, and the fastest test speed can reach 10 elements per minute.
4. The detection limit is low, and most elements can reach ppb level.
5. The linear range is wide, up to 5-6 orders of magnitude, and high and low content can be tested at the same time without changing the standard curve.
6. Less chemical interference and more accurate test results.

Performance characteristics

Safe and reliable solid-state RF power supply

The radio frequency power supply used in the instrument has small size, high output efficiency, stable output power, and various safety protection functions such as water circuit, air circuit and overload, which greatly improves the safety of the instrument and reduces the failure rate of the instrument.

High degree automation

The instrument has a very high degree of automation, besides the power switch, all operations are completed by software. Intelligent software can provide real-time feedback and information prompts for various operations in real time.

Automatic ignition

The software can achieve fully automatic one-key ignition, and all parameter setting changes are automatically completed. With advanced automatic matching technology, the ignition success rate is high and the operation is simple.

High-precision airflow control system

The plasma gas, auxiliary gas, and carrier gas in the instrument work are all controlled by a high-precision mass flow controller (MFC). The flow rate is continuously adjustable and the output air flow is highly accurate, ensuring the accuracy of the test data.

Table 1, Main Technical Parameters of KN-7111

High Frequency Generator	
Working Frequency	27.12MHz
Stability	< 0.05%
Output power	800W~1600W
Stability	≤0.05%
Matching Method	Automatic
Scanning Spectrometer	
Light Path	Czerny turner
Focal Length	1000mm
Raster Specification	Ion-etched holographic grating, engraved line density 3600L/mm or 2400L/mm, scribed area (80*110)mm
Line Dispersion Reciprocal	0.26nm/m
Resolution	≤0.008nm (3600 wire grating)
	≤0.015nm (2400 wire grating)
Main Host Parameters	
Scanning Wavelength Range	195nm~500nm (3600L/mm wire grating)
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Working Condition Requirements

- High frequency generator: 27.12MHz, 0.7mm quartz torch with center channel, high frequency power 1200W, plasma gas flow 15L / min, auxiliary gas flow 0.99L / min, carrier gas flow 0.35L / min, oxygen flow rate 50ml / min , The temperature of the atomizing chamber is -20 ° C, and the speed of the peristaltic pump is 3ml / min.

Sample Treatment

- After the lubricating oil sample is sampled by the weighing method, the diluent is directly used to make the volume to the mark. The internal standard calibration method is used in the test process to eliminate the difference of the sample matrix.

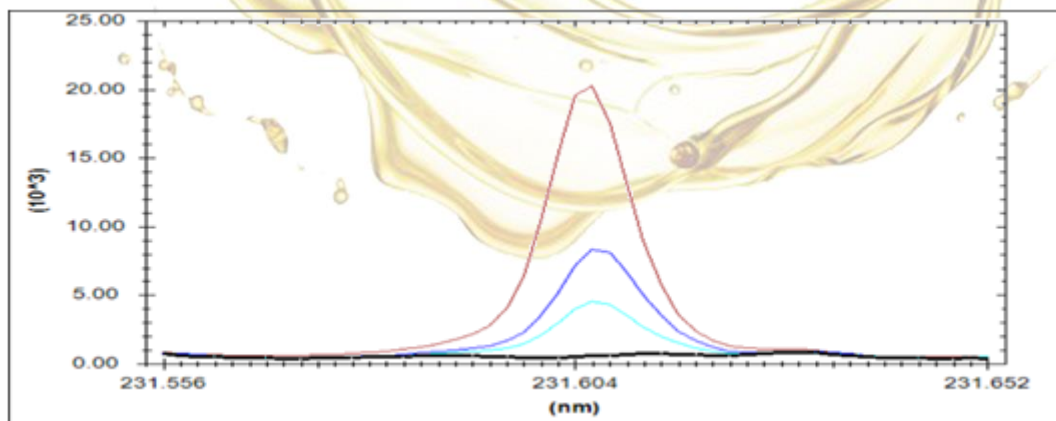
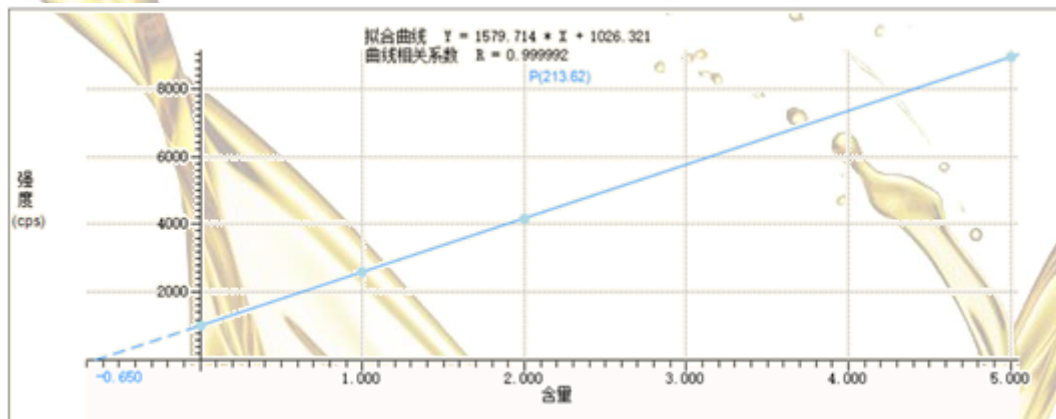
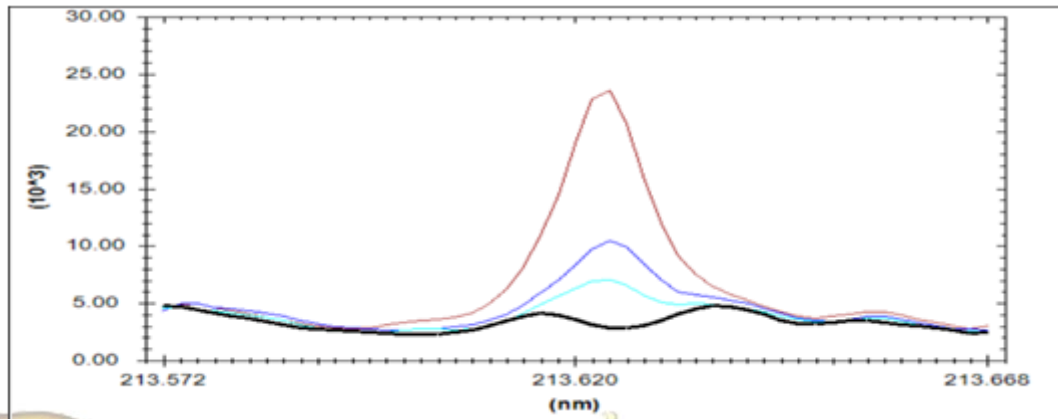
Test Method

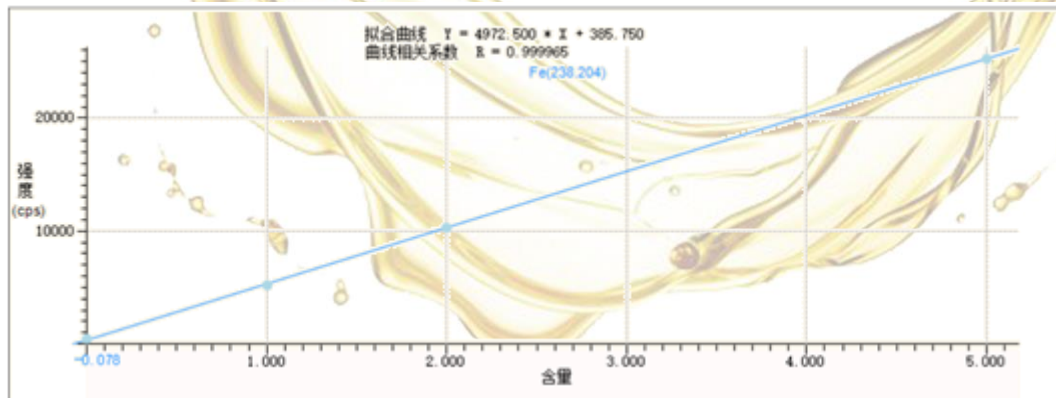
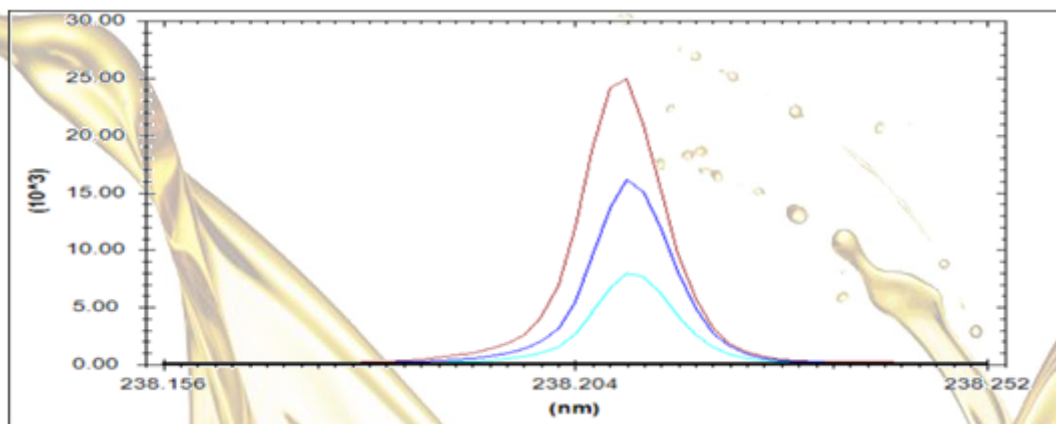
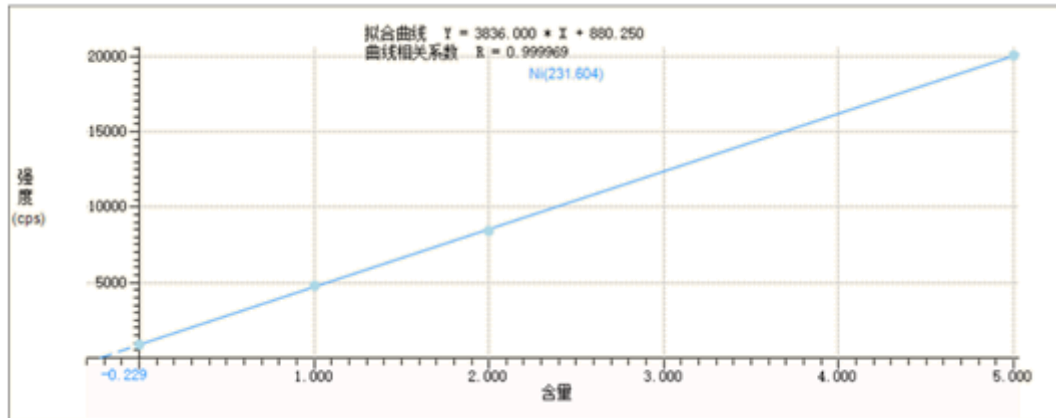
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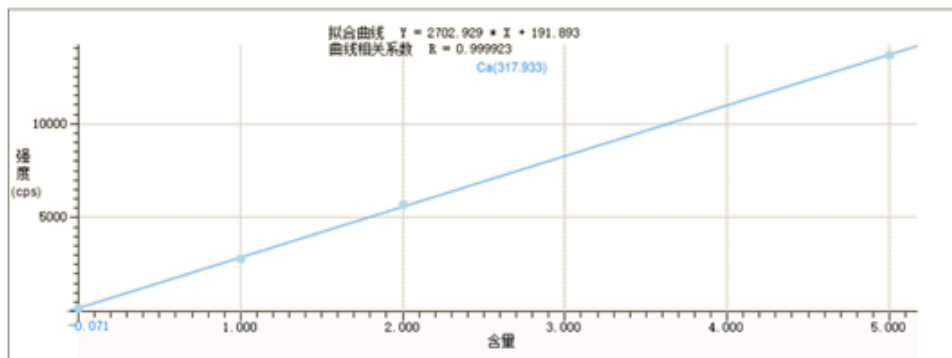
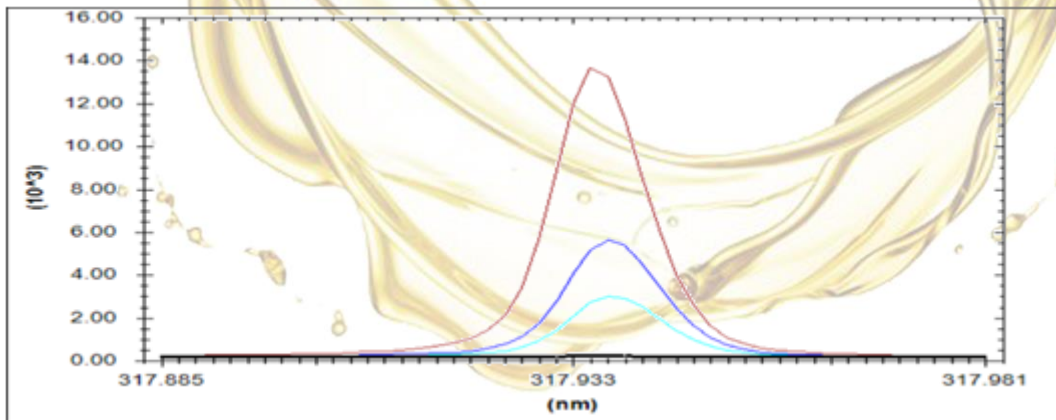
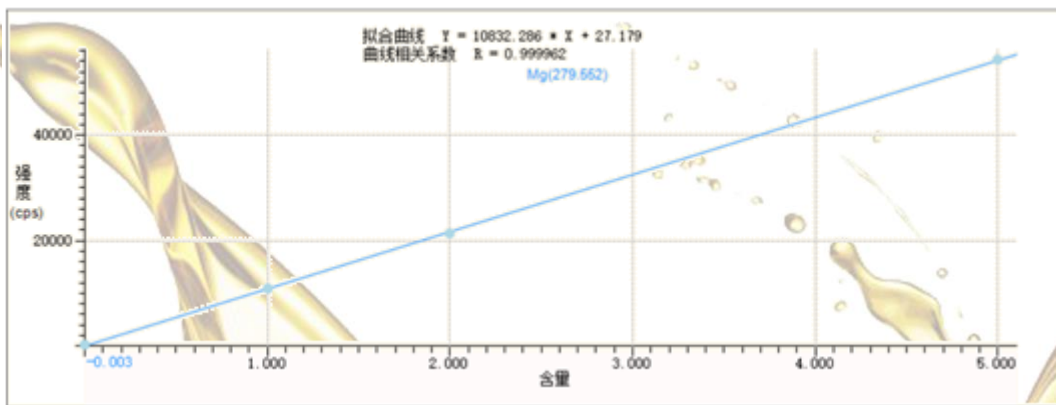
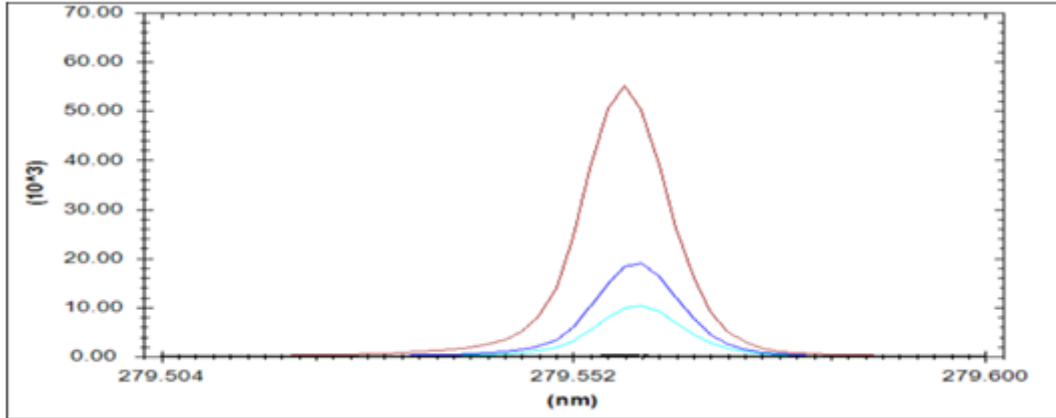
Applicable Standard: *ASTM D7111 Standard Test Method for Determination of Trace Elements in Middle Distillate Fuels by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES)*

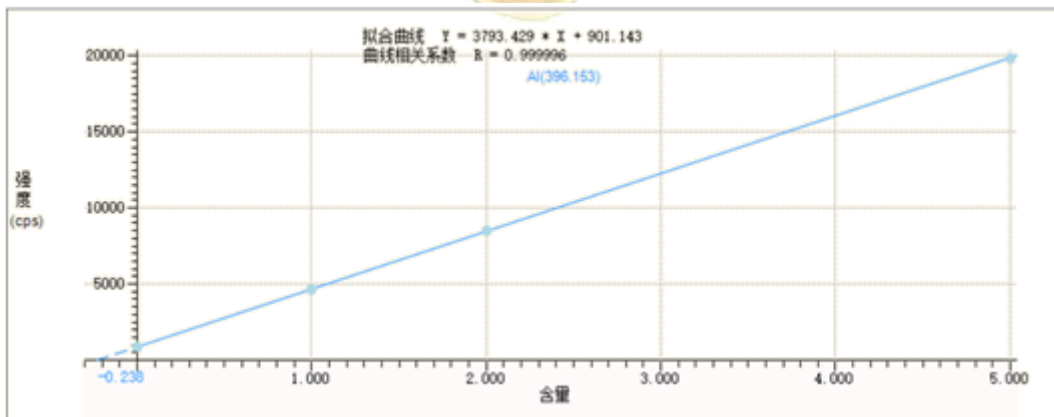
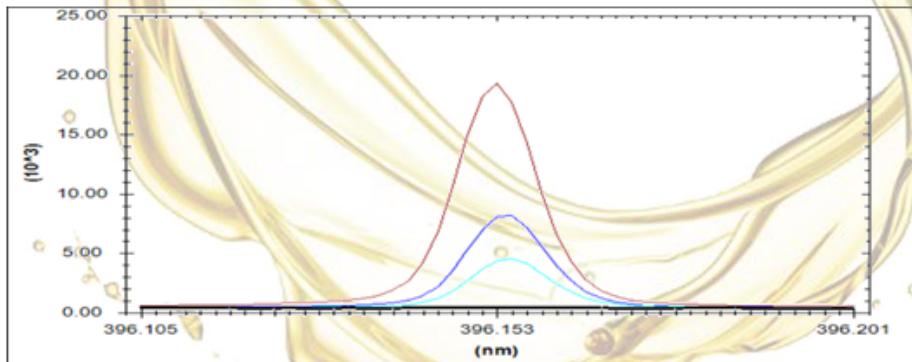
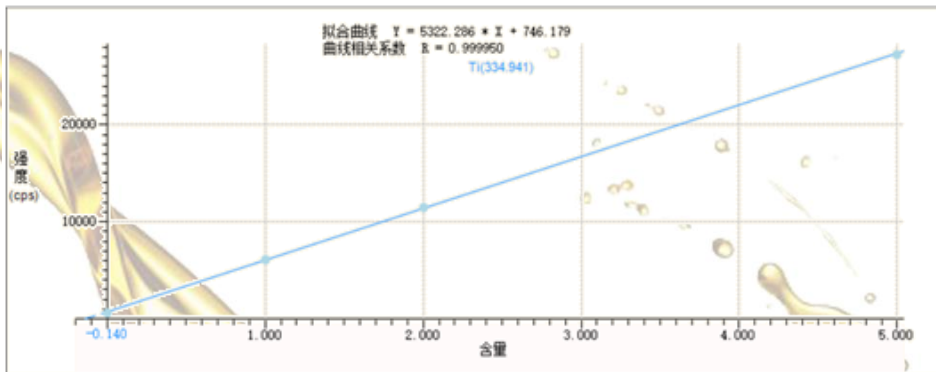
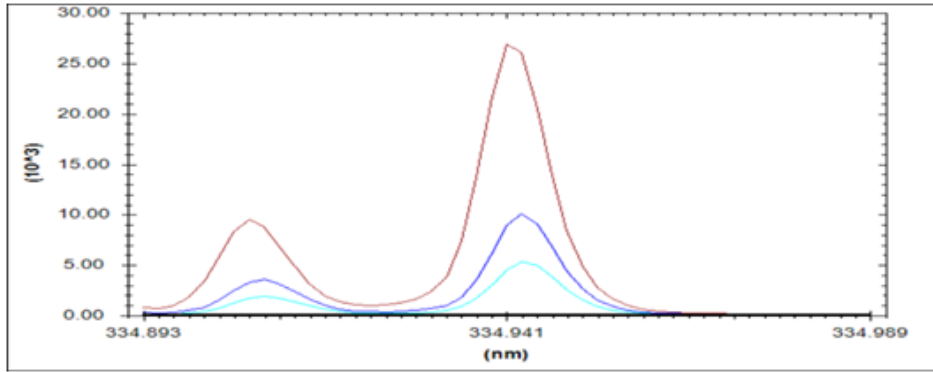
Test Report Comparison				
Sample Name	Diesel Engine Oil			
Receiving Date	Jan, 2 nd ,2020	Test Date		Jan, 8 th ,2020
Description	Viscous Oil Sample			
Test Requirement				
Test Component	Ca	Mg	P	Zn
Reference				
Standard	ASTM D5185	Standard Sample		X-21 Mixed Sample
Humidity	≤70%	Temperature		25°C
Test Process				
Weigh a certain amount of sample into a 100ml volumetric flask, add the internal standard solution, dilute to the mark with blank oil, shake well, and wait for measurement				
Brand	Perkin Lemer ICP Avio200	Agilent ICP5110		KN-4951 ICP
Test item	Result	Result		Result
Ca	4225.7ppm	4415.1ppm		4135.8ppm
Mg	21.5ppm	15.8ppm		29.1ppm
P	1026.2ppm	1048.3ppm		1164.3ppm
Zn	1133.1ppm	1117.6ppm		1131.2ppm

Typical element spectrum and curve



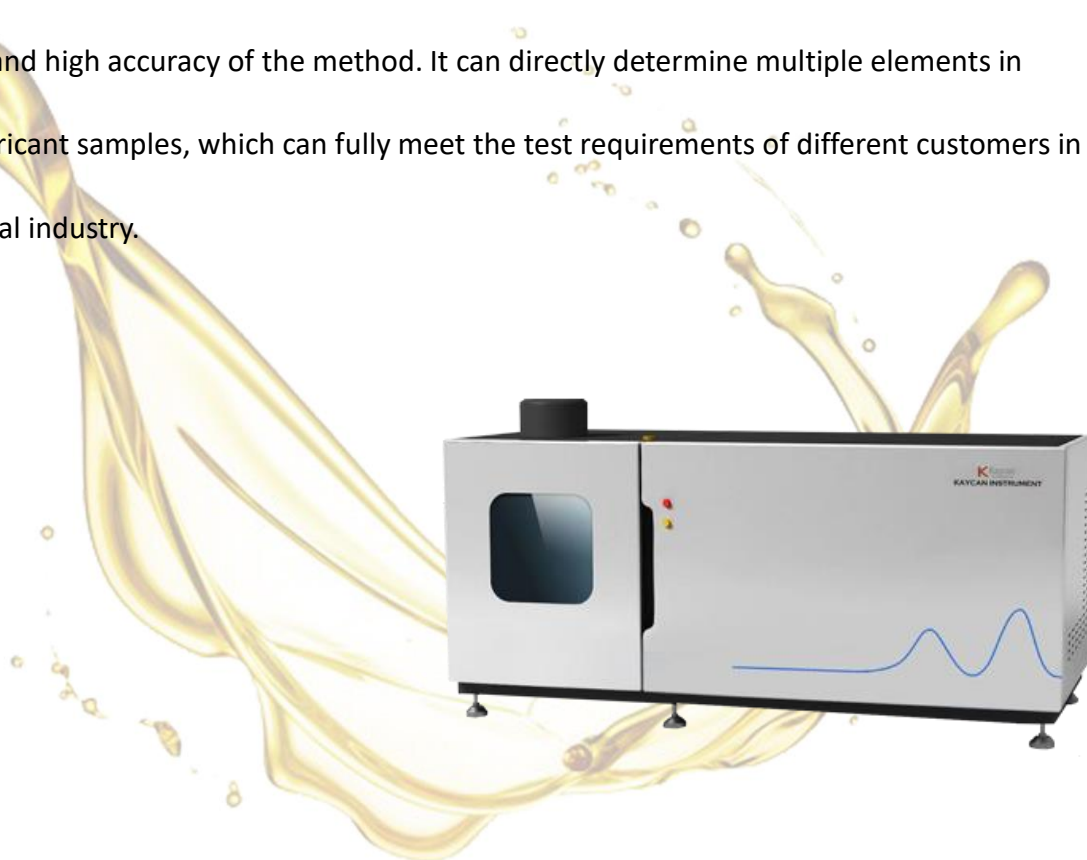






Conclusion

The relative digestion method for direct determination of multiple elements in gasoline and lubricating oil by ICP has higher accuracy and better reproducibility, which not only greatly saves the time of sample digestion and reduces the environmental pollution caused by acid, but also poses a great impact on operators. The technical level requirements are greatly reduced, and it can be promoted and used in the petrochemical industry. KN-7111 has the characteristics of low test cost, fast test speed, and high accuracy of the method. It can directly determine multiple elements in gasoline and lubricant samples, which can fully meet the test requirements of different customers in the petrochemical industry.



KN-14538 ICP for Biodiesel (B100)

Overview

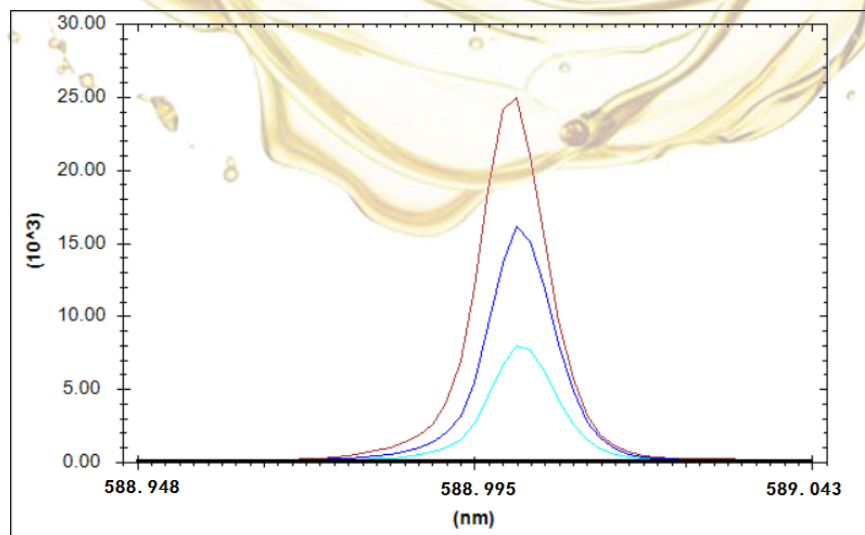
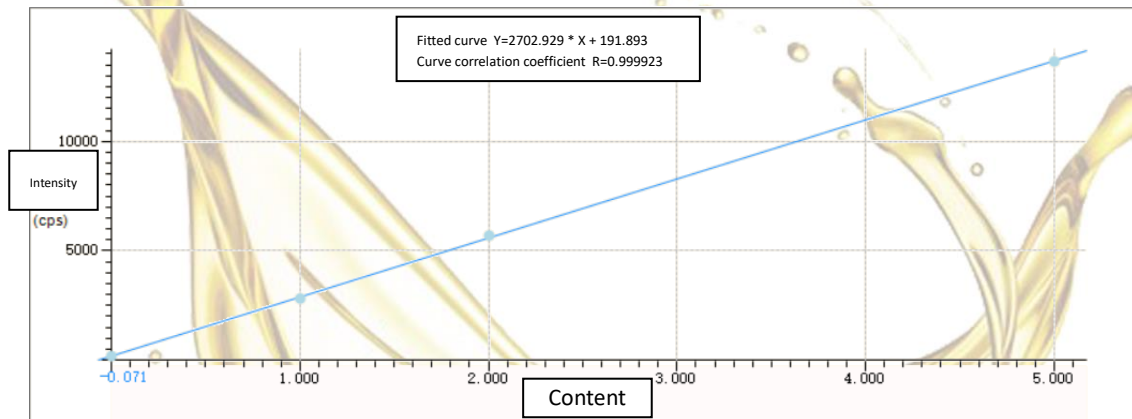
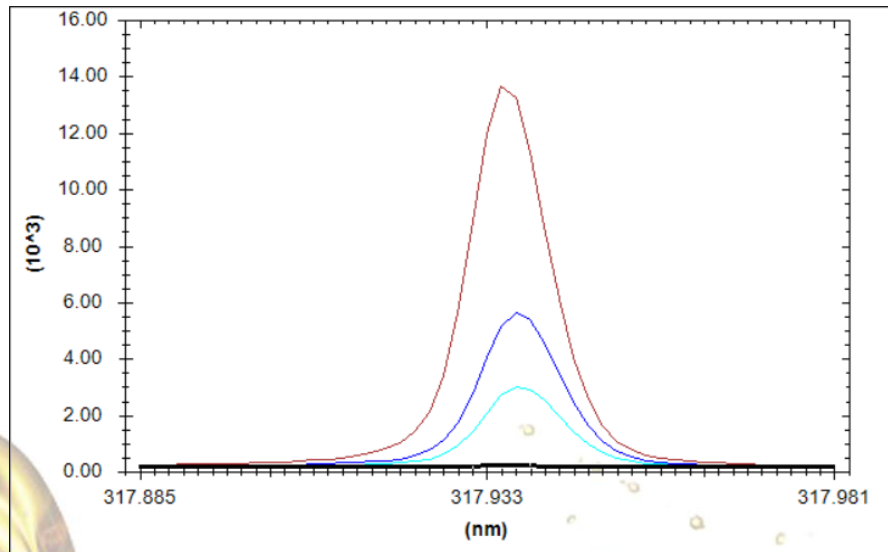
KN-14583 conforms to **EN14538 Fat and oil derivatives - Fatty acid methyl ester (FAME) - Determination of Ca, K, Mg and Na content by optical emission spectral analysis with inductively coupled plasma (ICP OES)**. Elemental composition of biodiesel is required for product quality-control, auto-engine life, emissions control, and researching appropriate additives. The use of microwave assisted acid digestion reaction system to prepare neat biodiesel (B100) samples in an aqueous medium for simultaneous inductively coupled plasma optical emission spectrometer (ICP-OES) analyses is reported. Biodiesel produced by transesterification reaction was subjected to the test method using calibration standards prepared in an aqueous medium. Significant correlation for the spiked B100 samples, instrument detection limits, accuracy, and precision data showed that elemental concentrations can easily be determined within the specified limits. The method avoids switching any of the ICP-OES accessories required for high organic loads. This method is most appropriately devised for biodiesel analysis than petrochemicals analysis.

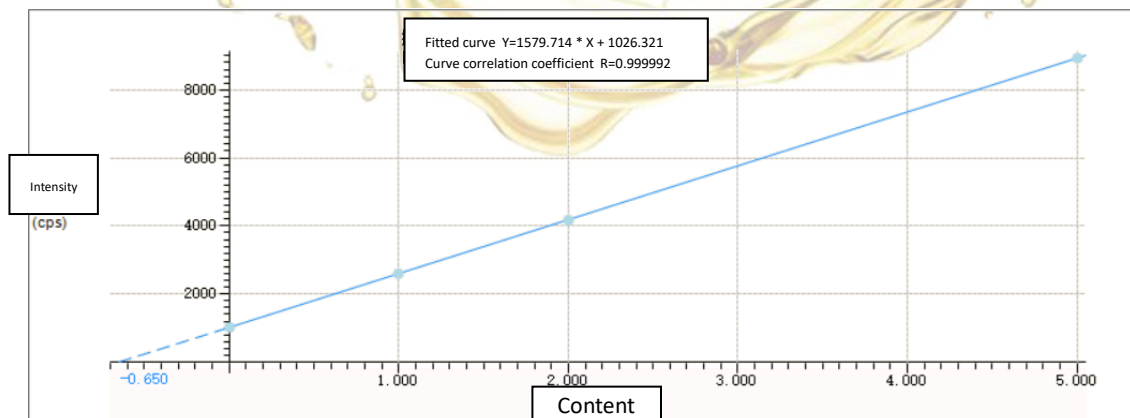
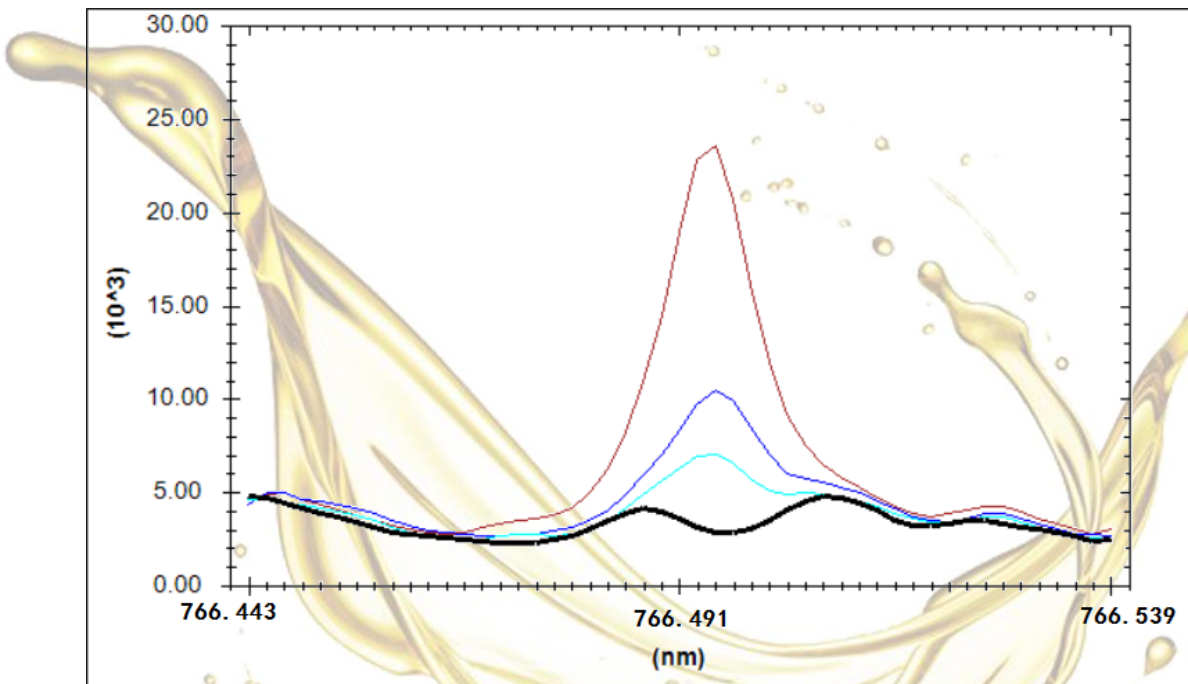
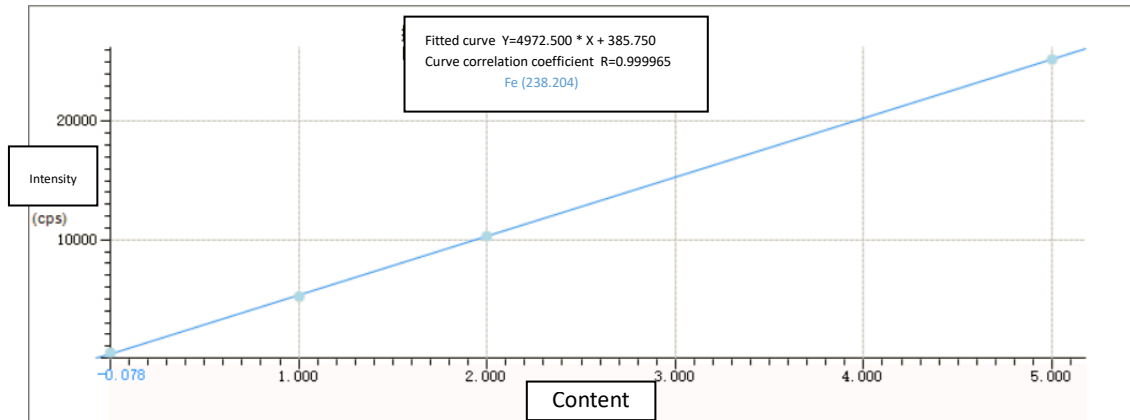
Table 1, Main Technical Parameters of KN-14538

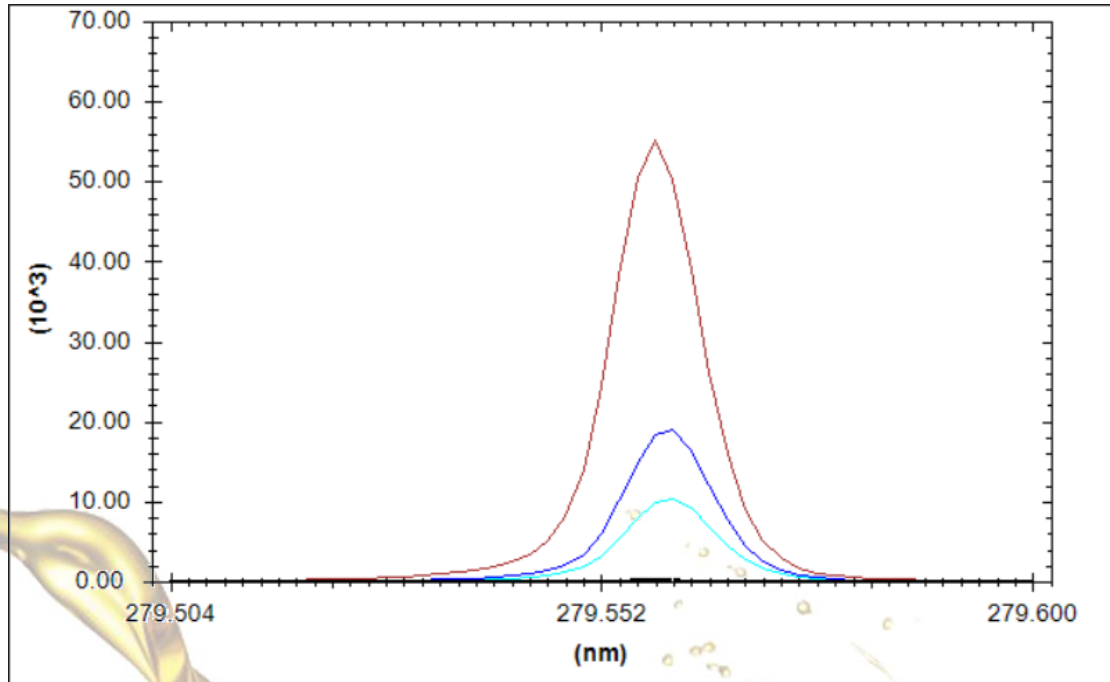
High Frequency Generator	
Working Frequency	27.12MHz
Stability	<0.05%
Output power	800W~1600W
Stability	≤0.05%
Matching Method	Automatic
Scanning Spectrometer	
Light Path	Czerny turner
Focal Length	1000mm
Raster Specification	Ion-etched holographic grating, engraved line density 3600L/mm or 2400L/mm, scribed area (80*110)mm
Line Dispersion Reciprocal	0.26nm/m
Resolution	≤0.008nm (3600 wire grating)
	≤0.015nm (2400 wire grating)
Main Host Parameters	
Scanning Wavelength Range	195nm~500nm (3600L/mm wire grating)
	195nm~800nm (2400L/mm wire grating)
Repeatability	RSD≤1.5%
Stability	RSD≤2.0%



Typical element spectrum and curve







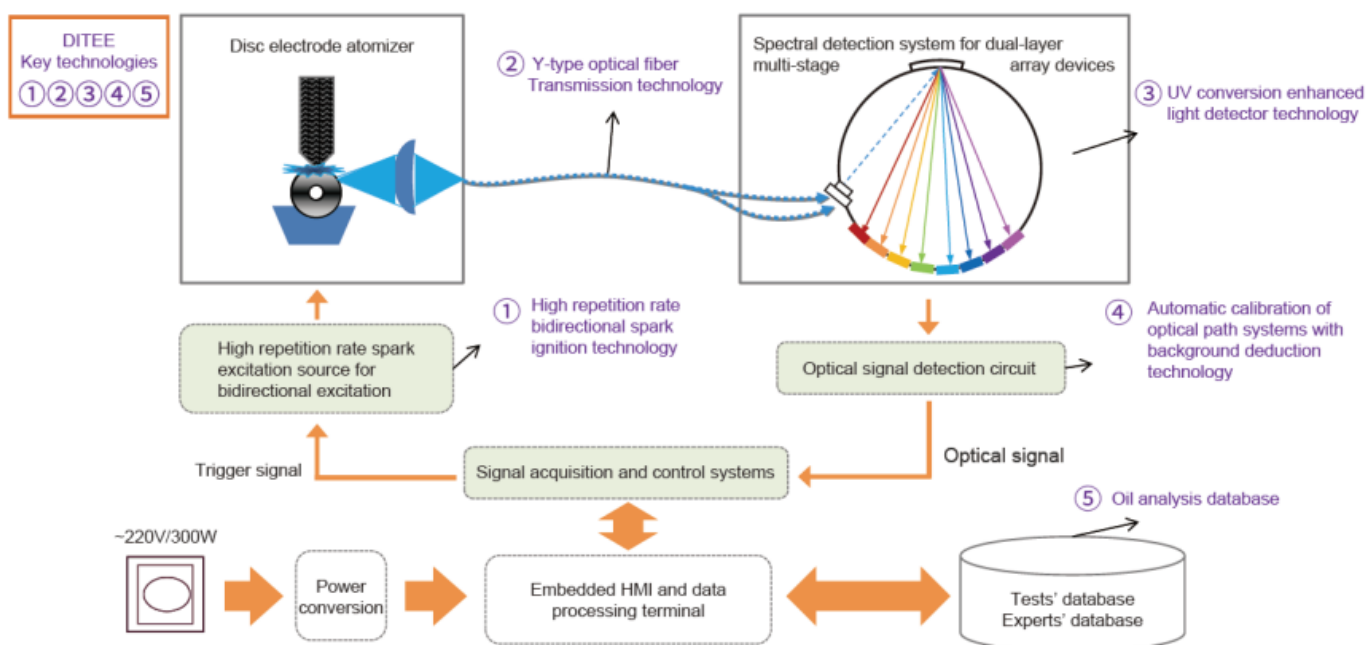
KN-6595 Rotary Disc Electrode Atomic Emission Spectrometer (RDE-AES)

Overview

KN-6595 Rotary Disc Electrode Atomic Emission Spectrometer (RDE -AES) which is capable of directly testing the contents of various metallic elements in liquid samples, such as lubricating oil, hydraulic oil, fuel oil, and etc., and finishing the analysis of various elements with a single injection with a single injection within 2 minutes. No sample pretreatments, auxiliary gas or cooling water is needed before and during the instrument is operating. Because of the strong adaptability to the environment, this instrument can be operated in warship or in the field. The instrument conforms to the **ASTM D6595 Standard Test Method for Determination of Wear Metals and Contaminants in Used Lubricating Oils or Used Hydraulic Fluids by Rotating Disc Electrode Atomic Emission Spectrometry** and **ASTM D6728 Standard Test Method for Determination of Contaminants in Gas Turbine and Diesel Engine Fuel by Rotating Disc Electrode Atomic Emission Spectrometry**.

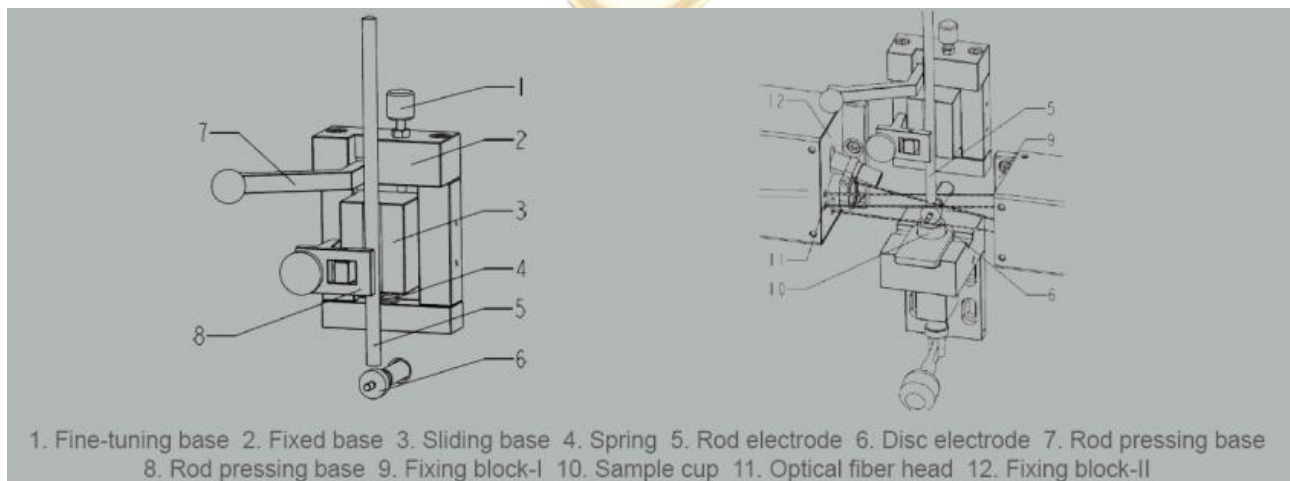
The instrument can be widely used in fields of oil quality monitoring for large equipment, such as aircrafts, warships, high-speed railways, engineering machinery, and etc. It can be applied to the monitoring of mechanical wear and fault diagnosis analysis. It is commonly applied to the field of metallic elements analysis in oil.

Technical principle

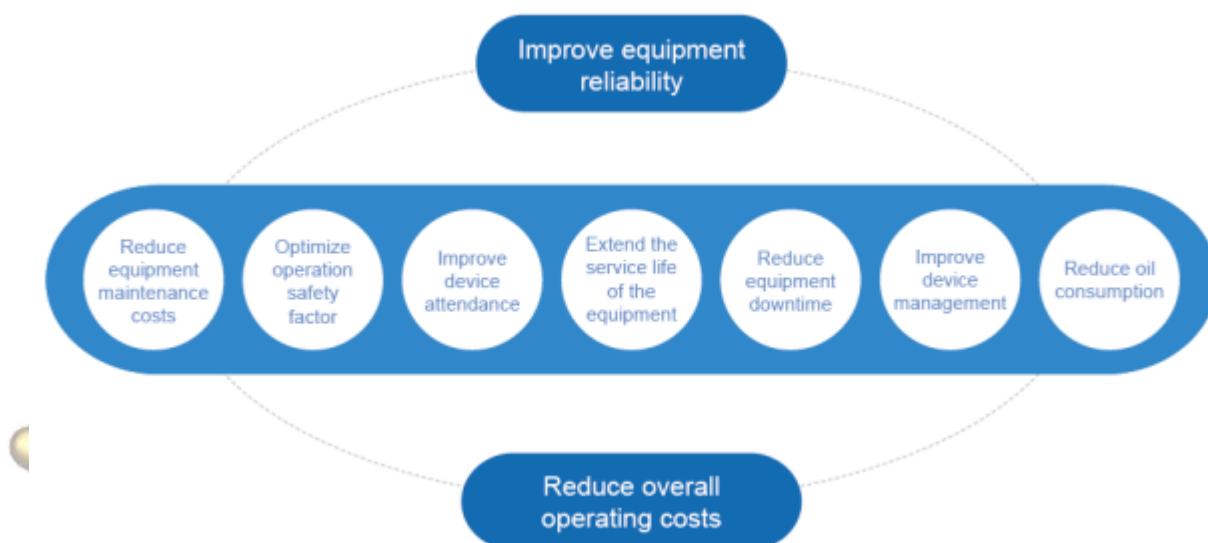


Oil Analysis Spectrometer is Mainly Composed of Excitation System, Optical System and Readout System

1. The arc or spark generated by the discharge of the excitation system directly acts on the oil sample to be tested, and the outer electrons of the element are excited to generate characteristic spectral lines. The graphite disk electrode continuously rotates to bring the oil between the counter electrodes. There is a huge potential difference between the graphite disk electrode and the rod electrode. When the potential difference between the electrodes reaches the discharge state, a high voltage discharge occurs at the gap between the counter electrodes, generating an arc or spark, providing an instantaneous high temperature, which makes the oil sample on the disk electrode burn, and the oil sample will be burned, vaporized and plasma-ized. The instantaneous high temperature in the discharge gap, can fully excite various elements in the oil sample and produces many stable emission spectra. The spectral signal is flexibly introduced into the Roland circle spectroscopic system through the UV optical fiber.
2. The optical system uses the grating on the Roland circle to collect and split the characteristic spectral lines of the excited elements (the larger the focal length is, the more grating lines are available; and the higher the resolution is, the better the spectroscopic effect will be); the detector receives and photo-electrically converts all characteristic spectral lines.
3. The readout system periodically reads the charges on the detector and converts them to digital signals, including the intensity of the characteristic spectral lines of elements, because the intensity is proportional to the element concentration, the readout system uses the external standard method to analyze, process and output the data to obtain the content of the detected elements.



Monitoring Significance

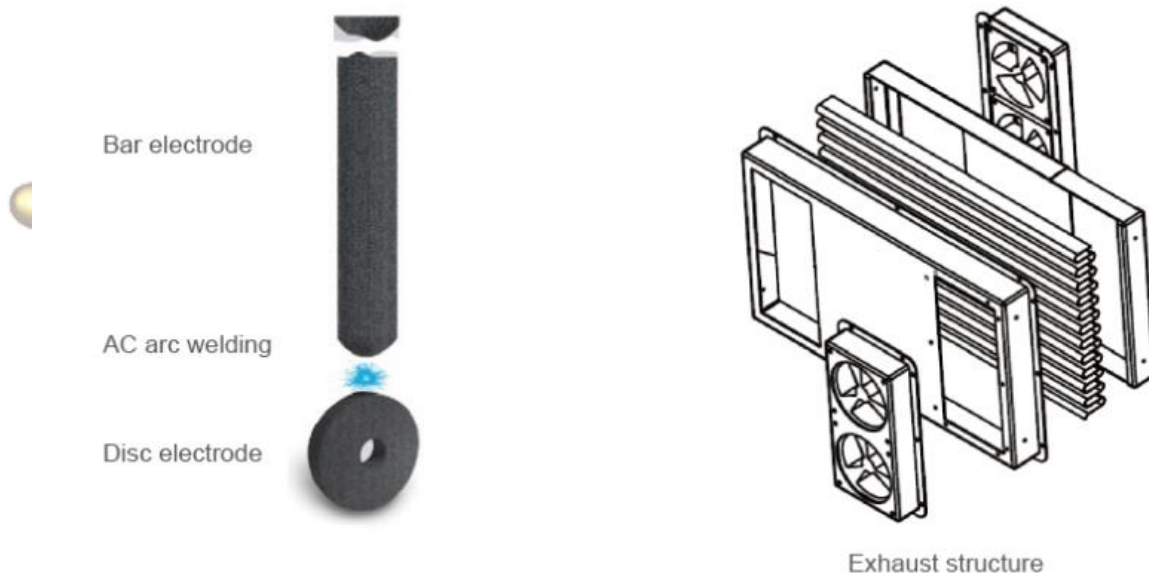


Features

The oil analysis spectrometers have been used for a long time, the oil monitoring equipment is not only widely recognized by various military customers, industrial customers and commercial oil laboratories, but also a reliable and effective oil monitoring technology; it can not only realized the condition monitoring of key-oil-equipment, but also be used for the quality control of oil products.

1. Equipped with scanner, be able to scan the bar code of the sample instead of inputting the corresponding sample information
2. Due to the intergrated design of the shaft, no need to do the alignment if no faults (no displacement)
3. Due to the wavelength differences, we equipped with two optical fibers, right one for measure the lithium, calcium and sodium, whith the left side is for measuring the rest elements
4. Operator is also able to create the application base on the real demands by himself, no need to be authorized by the manufacturer
5. It is suitable for the simultaneous determination of multiple elements of various metal elements, such as wear metals, pollutants and additives in oils
6. The standard configuration simultaneously determines 24 elements, including Ag, Al, Ba, Ca, Cd, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Si, Sn, Ti, V, Zn and Bi. Detection channels can be flexibly increased according to different needs, when adding analysis target elements, no hardware changes are required.
7. Built-in working curve
8. It is needless to pretreat the samples, direct injection, ~40s for a single test, the testing-time is adjustable, the results will be obtained after only one measurement.
9. Low cost of use, the consumable materials includes only the standard graphite disc electrodes, bar electrodes, sample cups.
10. Uses not ceramic but spectrally pure graphite material as the disc electrode.
11. Using concentrated optical fiber to ensure the resolution of the instrument.

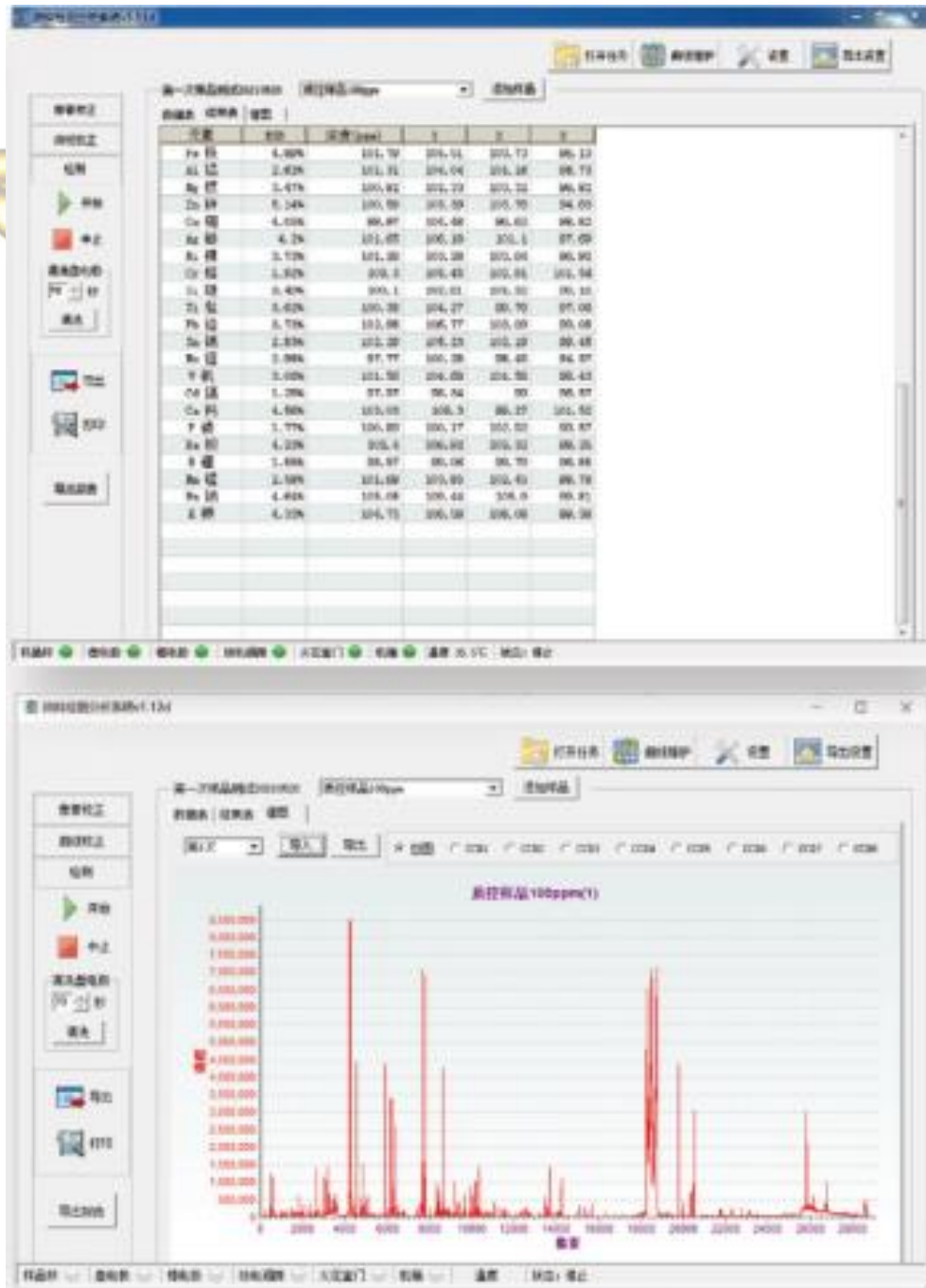
12. The light chamber is equipped with a closed isolation heat exchanger to effectively prevent dust, water mist and oil mist from invading.
13. It includes exhaust structure, prevention of cross-contamination.
14. Neither argon gas nor cooling water is needed.
15. Integrated fully closed frame structure design, impact resistance, deformation resistance;



Software

Expert spectral analysis software is not only easy to be operated, but also includes the following functions:

1. The detection is done with the press of a button
2. With the built-in working curve, it can work normally after simple calibration with standard reference oil
3. Dynamic drift correction to improve the stability of the optical system
4. It has export and automatic storage functions
5. Automatic pixel calibration (spectral tracing)
6. Working curve correction
7. Reference line setting
8. Spectral lines were automatically selected



Measuring range

No.	Name	Symbol	Range (ppm)
1	Aluminum	Al	0~1000
2	Barium	Ba	0~6000
3	Boron	B	0~1000
4	Cadmium	Cd	0~1000
5	Calcium	Ca	0~6000
6	Chromium	Cr	0~1000
7	Copper	Cu	0~1000
8	Iron	Fe	0~1000
9	Lead	Pb	0~1000
10	Magnesium	Mg	0~6000
11	Manganese	Mn	0~1000
12	Molybdenum	Mo	0~1000
13	Nickel	Ni	0~1000
14	Phosphorus	P	0~6000
15	Silicon	Si	0~1000
16	Silver	Ag	0~1000
17	Sodium	Na	0~6000
18	Tin	Sn	0~1000
19	Titanium	Ti	0~1000
20	Vanadium	V	0~1000
21	Zinc	Zn	0~6000
22	Potassium	K	0~1000
23	Lithium	Li	0~1000
24	Antimony	Sb	0~1000

Technical parameters

Optical system

1. Optical system: Pashen-Runge, Roland circle optical structure, Roland focal length: 500mm
2. High-performance holographic diffraction grating, Grating notching 2700L/mm
3. Optical resolution: 0.006nm
4. Spectral range: 190-900nm
5. Double chamber system:

Short wave chamber wavelength: 190~470nm

Long wave chamber wavelength: 470~900nm

6. Both Roland circle and the host machine are equipped with a constant temperature system to maintain constant temperature independently, $40\pm 1^{\circ}\text{C}$; the constant temperature is adjustable, which is effectively suitable for too high or too low environment temperature condition

Detector

1. Cluster optical fiber signal transmission dual-layer, multi-CCD detection spectrum system
2. The linear array of multiple CCDS is arranged in a Roland circular shape, which realizes continuous and simultaneous detection of the whole band, and facilitates later development of other elements
3. High performance CCD detector, each CCD with 3648 pixels
4. Ultraviolet band spectral enhancement detection technology, enhances the ultraviolet band light intensity, and prolongs the life

Excitation light source

1. Bidirectional high performance excitation light source, 14000V ignition pulse, digital discharge parameter setting, digital pulse generator, digital offline pulse control
2. Dual-phase zero-crossing signal detection technology, avoiding high-voltage spark electromagnetic compatibility interference, and improving voltage stability

Excitation chamber

1. Rod electrode holder for automatic adjustment of electrode pole distance device, ensure that the height of electrode spacing is consistent for all measurements
2. The excitation room has a visual window, which can visualize the whole excitation process
3. Complete safety monitoring and protection functions, including excitation chamber door safety lock, sample cup, disc electrode, rod electrode, spark gap sensing monitoring device (laser light source automatic position-ing), with safety alarm and automatic flameout function, so as to ensure user safety.
4. Semi-permeable cutoff to prevent oil sputtering contamination and filter stray light.
5. Aluminum fire extinguishing device, to prevent volatile sample ablation to produce flames.

Computer system

1. Operating system: Instrument control and data management software based on Windows platform
2. External connection of the control computer

Power Supply and Environment Requirements

1. Power: 220V $\pm$ 10%, 50/60Hz, AC power, Built-in pressure stabilizing device, no special grounding device is required
2. Power consumption: $\leq$ 1kw Fusing current: 16A
3. The range of operating temperature: -40 $\sim$ 50 $^{\circ}$ C
4. The variation allowance of the maximum temperature: $\pm$ 5 $^{\circ}$ C/h
5. Operating humidity: 0 $\sim$ 90%, no condensation
6. Working altitude: $\leq$ 7000m

Size and Weight

1. Size: 740mm(length) X560mm(width) X360mm(height)
2. Weight: 69kg



KN-3237 Atomic Absorption Spectrophotometer

Overview

KN-3237 AAS for testing lead in gasoline conforms to **ASTM D3237 Standard Test Method for Lead in Gasoline by Atomic Absorption Spectroscopy**. This AAS covers the determination of the total lead content of gasoline within the concentration range of 0.010 to 0.10 g of lead/U.S. gal (2.5 to 25 mg/L). This tester compensates for variations in gasoline composition and is independent of lead alkyl type.

The products include the flame, graphite furnace and hydride generation system, which can be equipped with various accessories, flexible configuration program can meet different customer demand. KN-3237 atomic absorption spectrometer can be used for analysis of complex samples, full automatic multifunctional, various analysis methods can automatically switch, unmanned automatic analysis.

Features

1. High precision automatic optical system
1800 / mm reticle (dispersion rate) large area grating monochromator, a new type self collimation, all lenses are quartz coating, the detection range and the stability of optical broad to ensure the precision of analysis. Automatic 6 socket configuration six independent lamp power supply, can be respectively preheating
2. Polymer spray chamber
Polymer materials corrosion spray chamber, acid and alkali resistance, including hydrofluoric acid, either organic or inorganic solution can be the highest sensitivity and stability
3. Titanium burner
Titanium burner, the optional 50mm and 100mm burner, air cooling pre mixed type, corrosion resistant, resistant to high salt, greatly improve the analysis efficiency and accuracy of the flame
4. Automatic analysis
It can automatically accomplish safety ignition, extinction and switching, reliable structure, low fault rate, thus ensuring the sensitivity and reproducibility of the flame method. The light source system six lamp automatic conversion, can be directly used high performance hollow cathode lamp, improve the sensitivity analysis of the flame, the automatic adjustment of the power supply parameters and the beam position, automatic wavelength scanning and searching peak
5. Software function
High intelligent software, powerful function, friendly interface English operation. Automatic instruments and additional control, flame, graphite furnace operating mode can be switched automatically, automatic optimization, automatic dilution; mouse operation, automatic setup menu data and correction method
6. Graphite furnace temperature control
Gas dual temperature control inside and outside, 20 order linear or nonlinear heating, to ensure that the measured elements has the highest sensitivity; furnace enriched up to 20 times, the longitudinal optically monitoring the graphite tube wall temperature, maximum temperature to 3000 degrees centigrade.
7. High technology index
KN-3237 atomic absorption spectrophotometer elements test sensitivity meet international

best level, sensitivity of less than or equal to $0.015\mu\text{g/mL}/1\%$; baseline drift is less than $0.003\text{Abs}/30\text{m}$, the stability is better than $0.005\text{Abs}/4\text{h}$

8. Background correction system

Using deuterium hollow cathode lamp advanced and self absorption background deduction of background correction, to eliminate the interference of molecular absorption of low content determination, reducing the noise emission of deuterium lamp and prolongs the service life, has excellent stability. Deuterium lamp background signal for 1A, background correction ability > 50 times

9. Intelligent analysis

Great intelligence, humanized design, flame and graphite furnace atomizer automatic switching, automatic optimization of graphite furnace atomizer, automatically set the flame height adjustment, automatic ignition, automatic optimization of the horizontal position, system automatically sets the gas flow. In the case of power failure, misoperation, acetylene leakage, the system will automatically start the safety protection function

10. Automatic sampler

Integrative design of graphite furnace, using high precision syringe, lowest in $0.5\mu\text{l}$ samples, with intelligent online dilution and concentration function.

Technical parameters

Mainframe

1. Light Source: ≤ 6 lamps automatic turret, automatic alignment
2. Power Supply: 110/220V (+5% ~ -10%), 60/50Hz; 5000VA
3. Lamp Current: pulsed power supply
4. Optical System: large 1800 /mm grating ruling, full closed optical system
5. Wavelength Range : 180nm-900nm
6. Automatically peak find a key optical optimization function
7. Wavelength Accuracy: $\leq 0.15\text{nm}$
8. Wavelength Repeatability: $\pm 0.1\text{nm}$
9. Spectral Bandwidth: 0nm, 0.2nm, 0.4nm, 1.0nm, 2.0nm (5 steps with automatic changeover)
10. Baseline Stability: $\leq \pm 0.002\text{A}/30\text{ min}$ (Static), $\leq \pm 0.005\text{A}/30\text{min}$ (Dynamic)
11. Absorbance Range: 0-4A

Flame Analytical System

1. Flame Analytical System
2. Detector: imported photomultiplier tube
3. Burner Head: full titanium combustion head, 50mm or 100mm general combustion head

4. Atomization Chamber: polymer explosion-proof spray chamber
5. Nebulizer: atomizer efficient glass atomizer, can also be customized
6. Ignition Type: microcomputer control, automatic ignition
7. Gas Control: automatic gas control system
8. Detection Limits(Cu): 0.002 μ g/mL
9. Precision: RSD $\leq$ 0.5%

Graphite Furnace Analytical System

1. Heating Mode: vertical heating
2. Temperature Control Method: vertical optical temperature monitoring graphite tube wall temperature
3. Temperature Range: room temperature to 3000 $^{\circ}$ C
4. The Program : automatic temperature control up to 20 order
5. Temperature Control: the furnace enriched up to 20 times
6. Characteristics Volume: 0.5 $\times$ 10-12g (Cd)
7. Detection Limit: 0.4 $\times$ 10-12g (Cd)
8. Precision: RSD $\leq$ 3%
9. The Cooling Water: can choose cooling water circulation system
10. Safety: the graphite tube damage, water flow
air pressure and other alarm temperature overheating protection

Autosampler Graphite Furnace

1. Sample Tray: 70 sample cups, 6 reagent cup
2. Sample Volume: 1-100 μ l
3. The Smallest Lincrement: 0.1 μ l
4. The Volume of Sample Repeatability Volume : better than 1%(at the time of 10mL-100mL)
5. Repeated Sampling Frequency: up to 99 Times
6. Cleaning and Waste Container Volume : each 500mL



KN-AAS Flame Furnace Atomic Absorption Spectrophotometer

Overview

KN-AAS Flame Furnace Atomic Absorption Spectrophotometer conforms to **ASTM D5863 Standard Test Methods for Determination of Nickel, Vanadium, Iron, and Sodium in Crude Oils and Residual Fuels by Flame Atomic Absorption Spectrometry**. When fuels are combusted, metals present in the fuels can form low melting compounds that are corrosive to metal parts. Metals present at trace levels in petroleum can deactivate catalysts during processing. These test methods provide a means of quantitatively determining the concentrations of vanadium, nickel, iron, and sodium. Thus, these test methods can be used to aid in determining the quality and value of the crude oil and residual oil.

Features

1. High precision automatic optical system
2. Polymer spray chamber, Polymer materials corrosion spray chamber, acid and alkali resistance
3. Titanium burner, the optional 50mm and 100mm burner
4. Automatic analysis, It can automatically accomplish safety ignition, extinction and switching, Reliable structure, low fault rate, thus ensuring the sensitivity and reproducibility of the flame method. The light source system six lamp automatic conversion, can be directly used high performance hollow cathode lamp, improve the sensitivity analysis of the flame, the automatic adjustment of the power supply parameters and the beam position, automatic wavelength scanning and searching peak

Technical parameters

Mainframe

1. Light Source: ≤ 3 lamps automatic turret, automatic alignment
2. Power Supply: 110/220V (+5% ~ -10%), 60/50Hz; 5000VA
3. Lamp Current: pulsed power supply
4. Optical System: large 1800 /mm grating ruling, full closed optical system
5. Wavelength Range: 190nm-900nm , Automatically peak find, a key optical optimization function
6. Wavelength Accuracy: ≤ 0.15 nm
7. Wavelength Repeatability: ± 0.1 nm
8. Spectral Bandwidth: 0.1nm, 0.2nm, 0.4nm, 1.0nm, 2.0nm, (5 steps with automatic changeover)
9. Baseline Stability: $\leq \pm 0.002$ A/30 min (Static), $\leq \pm 0.005$ A/30min (Dynamic)
10. Absorbance Range: 0-4A

Flame Analytical System

1. Detector: imported photomultiplier tube
2. Burner Head: full titanium combustion head, 50mm or 100mm general combustion head
3. Atomization Chamber: polymer explosion-proof spray chamber
4. Nebulizer : atomizer efficient glass atomizer, can also be customized
5. Ignition Type: microcomputer control, automatic ignition
6. Gas Control: automatic gas control system
7. Detection Limits(Cu): 0.002 μ g/mL
8. Precision: RSD $\leq 0.5\%$



KN-1840 UV-VIS Spectrometer

Overview

KN-1840 UV-VIS Spectrometer conforms to **ASTM D1840 Standard Test Method for Naphthalene Hydrocarbons in Aviation Turbine Fuels by Ultraviolet Spectrophotometry**. This test method for naphthalene hydrocarbons is one of a group of tests used to assess the combustion characteristics of aviation turbine fuels of the kerosene boiling range. The naphthalene hydrocarbon content is determined because naphthalenes, when burned, tend to have relatively larger contribution to a sooty flame, smoke, and thermal radiation than single ring aromatics.

Features

1. This tester successful implementation of the stringent requirements of high accuracy and reliability measurement to meet the requirements of various applications that can be used in biological research, bio-industry, pharmaceutical analysis, pharmaceutical, teaching and research, environmental protection, food hygiene, clinical examination, health and epidemic prevention and other fields.
2. A wide wavelength range, the wavelength range to meet the various requirements of the field
3. 5nm, 4nm, 2nm, 1nm, 0.5nm spectral bandwidth of five custom installation according to user requirements, to meet the stringent requirements of the Pharmacopoeia
4. Automatic design to achieve the most simple means of measurement
5. LSI design greatly improves the scalability and reliability of the system
6. Improved optimization of the optical design, import source and receiver system created a high performance and high reliability
7. Rich measurement methods, with a wavelength scan, time scan, multi-wavelength determination, multi-order derivative determination (optional), dual-wavelength, three-wavelength (optional) DNA protein measurements (optional), and other measurement methods to meet different measurement requirements, and can be displayed directly on a 6-inch screen
8. Based on user requirements optional hole rack, manual four with stand, manual Eighth rack, automatic Eighth frame, glass stand, test tube rack, 1cm colorimetric frame, 5cm colorimetric frame, 10cm colorimetric racks
9. Measurement data can be output through the printer with USB interface
10. Can be powered down to save the measurement parameters and data, user-friendly
11. Can achieve more accurate and flexible measurement via PC control, which can meet the needs of different users
12. Can be done any standard curve editor, convenient for operation

Technical parameters

1. Wavelength range: 190~1100nm
2. Band width: 1.8nm , 1.0nm, or 0.5 , 1, 2, 4nm adjustable
3. Wavelength accuracy: $\pm 0.1\text{nm}$
4. Wavelength repeatability $\leq 0.1\text{nm}$
5. Photometric accuracy: $\pm 0.3\% \tau$ (0-100% τ) $\pm 0.002A$ (0~0.5A) $\pm 0.003A$ (0.5A~1A)
6. Photometric repeatability: $0.15\% \tau$ (0-100% τ) $\pm 0.001A$ (0~0.5A) $\pm 0.0015A$ (0.5A~1A)
7. Stray light: $\leq 0.03\% \tau$ (220nm NaI, 340nm NaNO₂)
8. Stability: 0.0005A/h@500nm
9. Noise: $\pm 0.0002A$ @500nm
10. Photometric mode: T,A,C,E
11. Wavelength setting: Automatic
12. Photometric display range: -4~4A
13. Display: 6 inches high brightness blue LCD
14. Detector: Import silicone photodiode
15. Light source: Imported deuterium lamp, imported tungsten lamp
16. Power requirement: AC220V/50Hz, 110V/60Hz
17. Power: 120W
18. Dimension(L*W*H): 560*450*230mm
19. Weight: 28kg



KN-FTIR Spectrometer for Lubricants

Overview

Lubricants are degraded by oxidation, consumption of additives, and accumulation of sludge. Because degradation of lubricants shortens the life of engines and causes operational problems, it is necessary to grasp the condition of degradation and carry out oil changes at the proper timing. The relevant ASTM standard provides a method for evaluating lubricants based on various parameters. It is possible to evaluate chemical changes such as oxidation, nitration, and sulfonation of lubricants and contamination by moisture and dust by KN-FTIR

KN-FTIR is a compact, robust and lightweight FTIR spectrometer, which can monitor the condition of lubricating oil and provide laboratory-grade results. The first truly self-contained infrared lube oil condition monitoring analyzer on the market today. Combines advantages such as fast and reliable test results and high portability. Can Test directly in the field, with results in seconds and in full compliance standard methods for ASTM, DIN and JOAP.

Lubricant Analysis with IR Spectroscopy

Lubricant oils exhibit various chemical changes during their life time. This starts by simple changes such a fuel dilution of the fuel used or the uptake of soot (ASTM E2412) from the combustion. Numerous chemical reactions with combustion products lead to oxidation (ASTM D7414), nitration (ASTM D7624) or sulfation (ASTM D7415) of the lubricant and can be summarized as degradation products. To enable cycle times known from modern lubricants a wide variety of additives are added. These additives are used up during operation.

Applicable field

Degradation	Standard	Unit
Oxidation	ASTM E2412, D7414, JOAP, DIN 51453	A/cm
Nitration	ASTM E2412, D7624, JOAP, DIN 51453	A/cm
Sulfation	ASTM E2412, D7415, JOAP	A/cm
Contaminants	Standard	Unit
Soot	ASTM E2412, JOAP, DIN 51452	A/cm, wt%
Water	ASTM E2412, JOAP	A/cm, wt%
Ethylene Glycol (Antifreeze)	ASTM E2412, JOAP	A/cm, wt%
Diesel fuel	ASTM E2412, JOAP	A/cm, wt%
Gasoline	ASTM E2412, JOAP	A/cm, wt%
FAME		wt%
Polyol ester		wt%
Phosphate ester		wt%
Additives	Standard	Unit
ZDDP	ASTM E2412, D7412, JOAP	A/cm, wt%
Phenolic Antioxidants	ASTM D2668	%, wt%
Aminic Antioxidants		%, wt%

High stable optical system

- The design integrates main components to an optical bench machined from a cast aluminum. Highly stable and no need for adjustment, re-moving troubles of maintenance of optical path.
- Precision machinery ensures high repeatability of every scanning. Advanced design concept is adopted in both optical path and every part
- The system's corner cube optics provides easy operation without requiring complicated electronics and additional moving parts. In addition, many components of the spectrometer are user replaceable that saves time over the lifetime of the instrument.
- Internal dynamic collimation system and movable mirror driving system keep interferometer at optimum situation. Voice-coil driver and precision slide improves the ability of working in severe conditions.
- The spectrometer includes a container of desiccant that protects the beam splitter and other optical components from moisture damage.

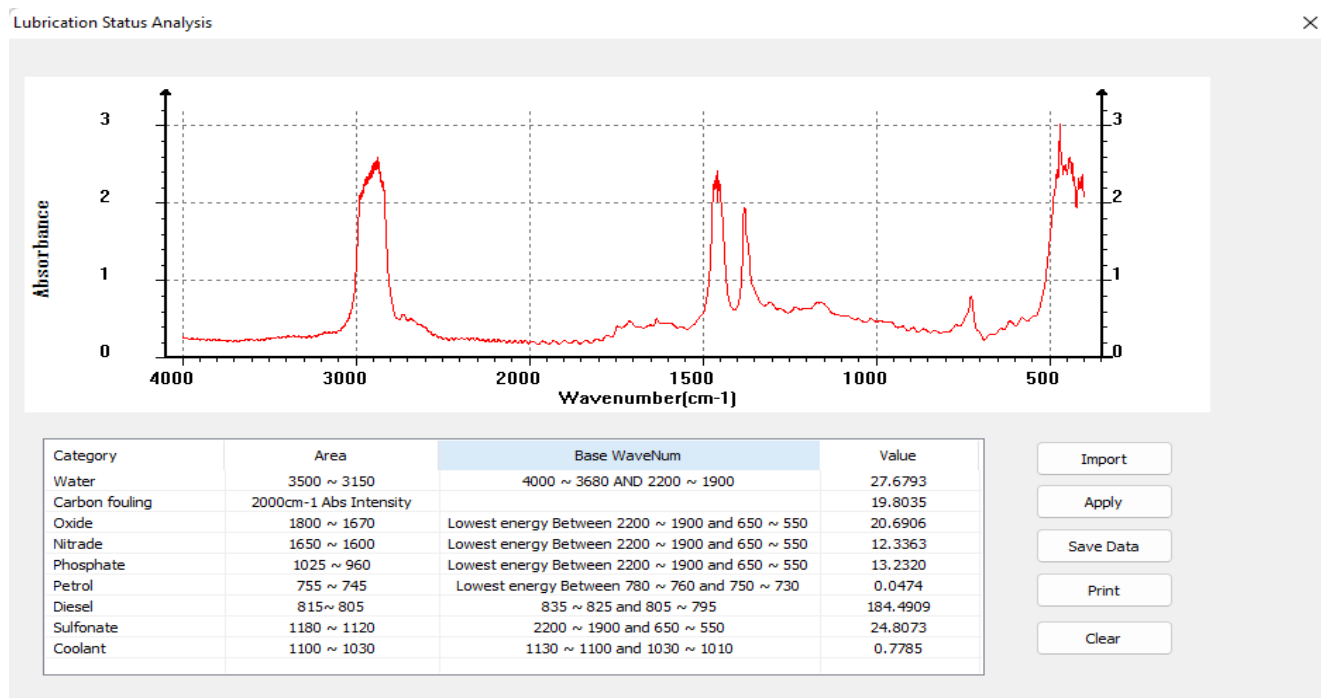
Working condition requirements

- Ambient temperature: 16°C~25°C
- Humidity range: 20% to 50%;
- Power supply: AC100V ~ 240V, 47Hz ~ 63Hz 1.2A, good grounding

Technical parameters

- Wavenumber range: 7800~350cm⁻¹
- Resolution: 1cm⁻¹
- Signal noise ratio: 30000:1 (DTGS, Resolution @ 4cm⁻¹, sample and background scan for 1min @ 2100cm⁻¹)
- Detector: Pyroelectric detector
- Beam splitter: Coated KBr
- Light source: Long life, air cooled IR light source
- Electronic system: A/D converter of 24 bits at 500MHz, USB 2.0
- Power: 110V~220VAC, 50~60Hz

Typical element spectrum and curve



Packing list

Number	Item	Quantity
1	Spectrometer	1
2	Power supply	1
3	Dust cover	1
4	USB cable	1
5	Power cord	1
6	Screw driver, 150*6mm	1
7	Allen wrench, 2.5mm	1
8	Replacement desiccant	1
9	Polystyrene film	1
10	Software CD	1
11	User Manual	1

Optional accessories

Number	Item	Specification	Mode	Quantity
1	Wedge shaped cell	100μm Wedged ZnSe Flow cell	Specac	1
2	Drying oven	Used for placing infrared spectrometer	HW-9	1
3	Special software	Oil condition analysis	S-IR-LOM	1

**Specac Wedge-shaped cell
Dedicated for lubricants**



KN-5134 GC for Detailed Analysis of Petroleum Naphthas

Overview

KN-5134 GC for Detailed Analysis of Petroleum Naphthas conforms to **ASTM D5134 Standard Test Method for Detailed Analysis of Petroleum Naphthas through n-Nonane by Capillary Gas Chromatography** and **ASTM D6733 Standard Test Method for Determination of Individual Components in Spark Ignition Engine Fuels by 50-Metre Capillary High Resolution Gas Chromatography**. A representative sample of the naphtha is introduced into a gas chromatograph equipped with a methyl silicone bonded phase fused silica capillary column. Helium carrier gas transports the vaporized sample through the column in which the components are separated. Components are sensed by a flame ionization detector as they elute from the column. The detector signal is processed by an electronic data acquisition.

Tester Feature:

1. 7-inch color touch screen, resistive touch is available, all English interface
2. Adopts advanced 10/100M adaptive Ethernet communication interface and built-in IP protocol stack, which can easily form a local area network to realize long-distance data transmission.
3. The equipped IBrainChrom workstation can support multiple chromatographs (253) to work at the same time to realize data processing and counter-control. The ModbusRTU server built in the IBrainChrom workstation can easily connect the analysis results to the DCS (distributed control system).
4. Adopts modular design, easy to upgrade. Optional multiple high-performance detectors, such as FID, TCD, ECD, FPD and NPD detectors to meet complex sample analysis. The traditional pointer pressure gauge is completely abandoned, and EPC technology is loaded for air circuit control. Realize the self-protection of gas circuit failure, automatic ignition, focus on flameout, automatic opening of the gas circuit, and achieve one-key start.
5. The timing startup program can easily complete online analysis of gas and liquid samples (equipped with sampling components).



Software features:

1. The gasoline PONA analysis method is a method to analyze the composition of gasoline components (P-paraffin; O-olefins; N- naphthenic hydrocarbon; A-aromatics) and individual hydrocarbon compounds.
2. The relative retention index method is generally used for qualitative determination of each component of gasoline.
3. Independent calculation and retention of the standard library of index on each instrument.
4. PONA3000 gasoline analysis software, the standard graph and the sample graph are on the same coordinate, the upper and lower chromatographic peaks correspond to each other, the qualitative is clear at a glance, simple and easy to learn.

Chromatogram



KN-1945 GC for Analysis of Natural Gas

Overview

KN-1945 GC for Analysis of Natural Gas conforms to **ASTM D1945 Standard Test Method for Analysis of Natural Gas by Gas Chromatography**. It can analyze the chemical composition of natural gases and similar gaseous mixtures. Components in a representative sample are physically separated by gas chromatography (GC) and compared to calibration data obtained under identical operating conditions from a reference standard mixture of known composition. The numerous heavy-end components of a sample can be grouped into irregular peaks by reversing the direction of the carrier gas through the column at such time as to group the heavy ends either as C₅ and heavier, C₆ and heavier, or C₇ and heavier. The composition of the sample is calculated by comparing either the peak heights, or the peak areas, or both, with the corresponding values obtained with the reference standard.

Configuration:

6-valve, 2-column (packed), TCD

Sample type:

Natural gas

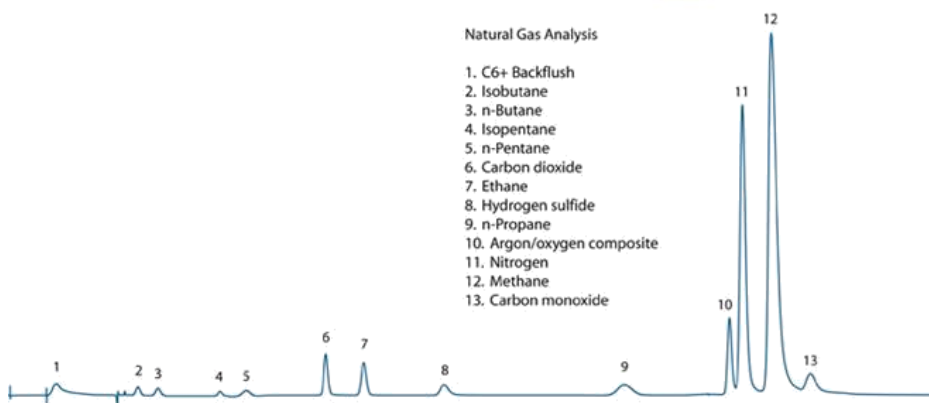
Components separated:

Isobutane, n-butane, isopentane, n-pentane, carbon dioxide, ethane, hydrogen sulfide, n-propane, argon/oxygen composite, nitrogen, methane

Lower detection limits:

100ppm for most components, 400ppm for propane, 500ppm for hydrogen sulfide

Chromatogram



KN-4291 GC for Trace Ethylene Glycol in Used Engine Oil

Overview

KN-4291 GC conforms to **ASTM D4291 Standard Test Method for Trace Ethylene Glycol in Used Engine Oil**. It is used for the measurement of ethylene glycol as a contaminant in used engine oil.

The ethylene glycol is supposed to be in the range from 5 to 200 mass ppm. The sample of oil is extracted with water and the analysis is performed on the water extract. A reproducible volume of the extract is injected into a gas chromatograph using on-column injection and the eluting compounds are detected by a flame ionization detector. The ethylene glycol peak area is determined and compared with areas obtained from the injection of freshly prepared known standards.

Standard Calibration:

6-valve, 2-column (packed), TCD

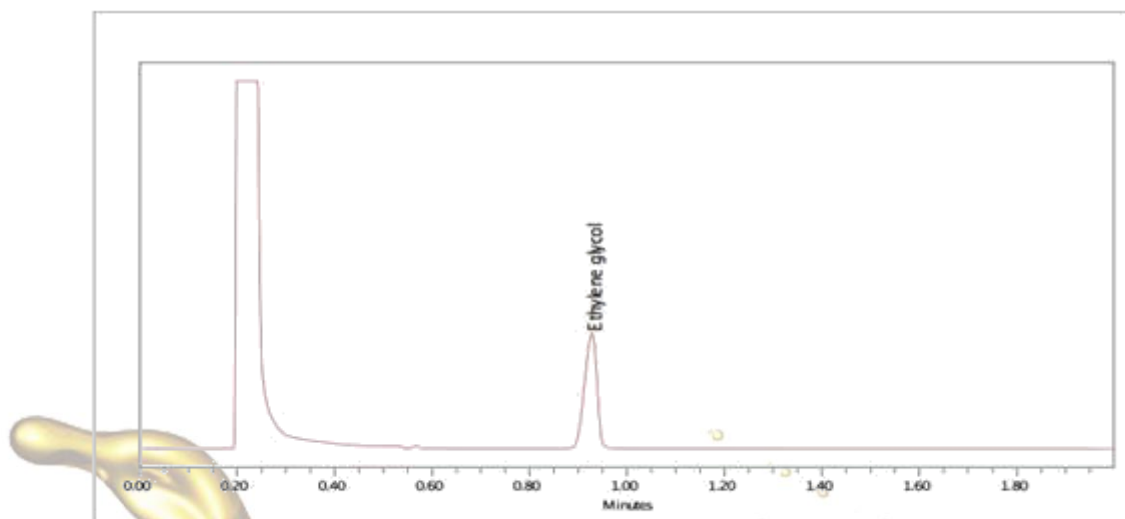
Temperature information:

1. Temperature range: Ambient+5°C~ 400°C, Increment: 0.1°C
2. Accuracy: $\pm 0.1^{\circ}\text{C}$
3. Programmed heating: Constant temperature time between five steps 0~999min, increment: 0.1min, temperature increment: 0.1°C
4. Heating rate: max. 40°C/min below 200°C, max. 20°C/min above 200°C

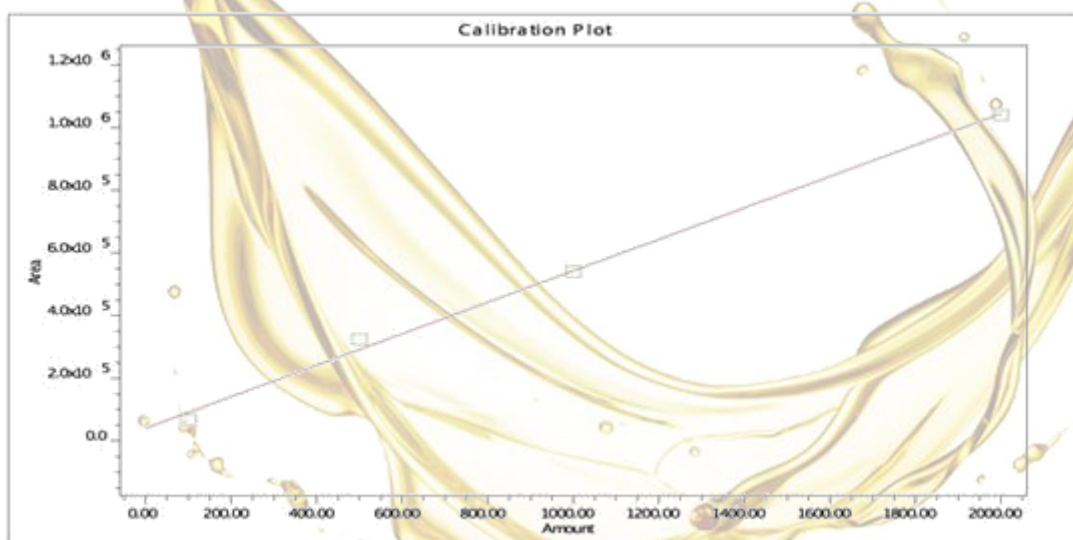
Specification:

1. Dimension: 555mm*525mm*485mm
2. Input power: AC220V $\pm$ 7%, 50Hz, 2Kw
3. Net weight: About 52kg

Chromatogram



Chromatogram shows elution of ethylene glycol



Calibration curve of ethylene glycol



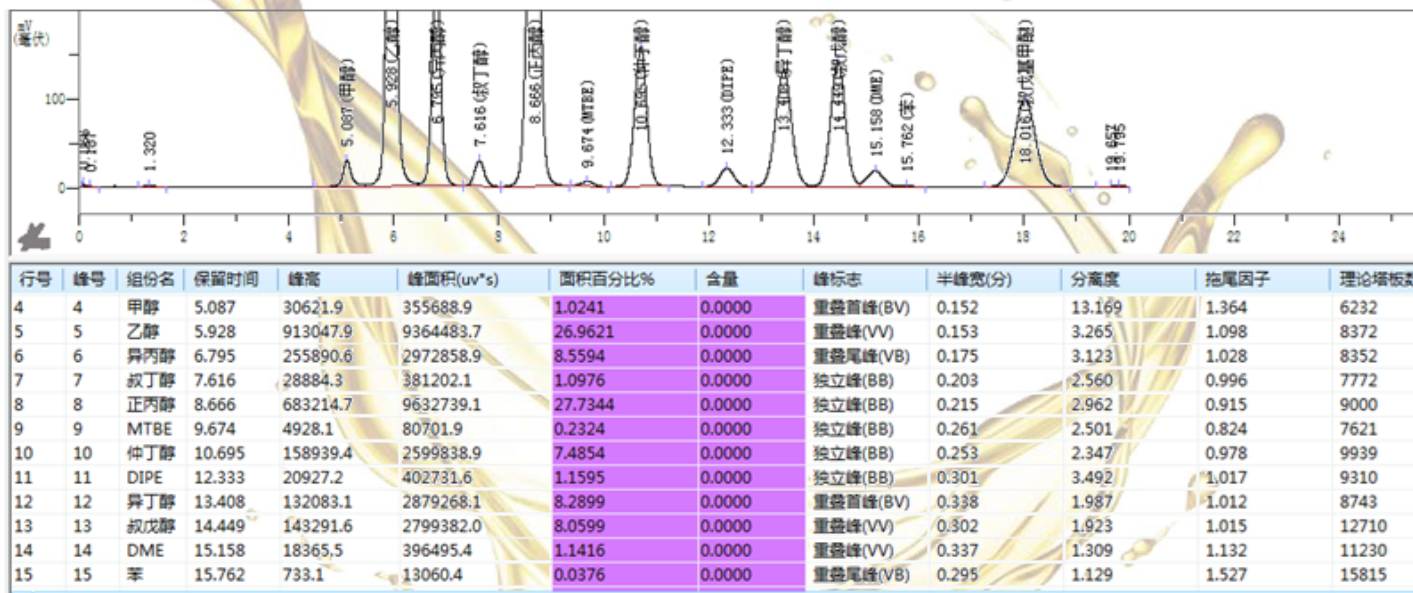
KN-4815 GC Determining Oxygenates in Gasoline

Overview

KN-4815 GC determining oxygenates in gasoline conforms to **ASTM D4815 Standard Test Method for Determination of MTBE, ETBE, TAME, DIPE, tertiary-Amyl Alcohol and C₁ to C₄ Alcohols in Gasoline by Gas Chromatography**. It can determinate ethers and alcohols in gasoline by gas chromatography.

Ethers, alcohols, and other oxygenates can be added to gasoline to increase octane number and to reduce emissions. Type and concentration of various oxygenates are specified and regulated to ensure acceptable commercial gasoline quality. Drivability, vapor pressure, phase separation, exhaust, and evaporative emissions are some of the concerns associated with oxygenated fuels.

Chromatogram



KN-Biodiesel GC Plus Gas Chromatograph

Overview

KN-1945 GC for Analysis of Natural Gas conforms to **ASTM D1945 Standard Test Method for Analysis of Natural Gas by Gas Chromatography**. It can analyze the chemical composition of natural gases and similar gaseous mixtures. Components in a representative sample are physically separated by gas chromatography (GC) and compared to calibration data obtained under identical operating conditions from a reference standard mixture of known composition. The numerous heavy-end components of a sample can be grouped into irregular peaks by reversing the direction of the carrier gas through the column at such time as to group the heavy ends either as C₅ and heavier, C₆ and heavier, or C₇ and heavier. The composition of the sample is calculated by comparing either the peak heights, or the peak areas, or both, with the corresponding values obtained with the reference standard.

Configuration:

6-valve, 2-column (packed), TCD

Sample type:

Natural gas

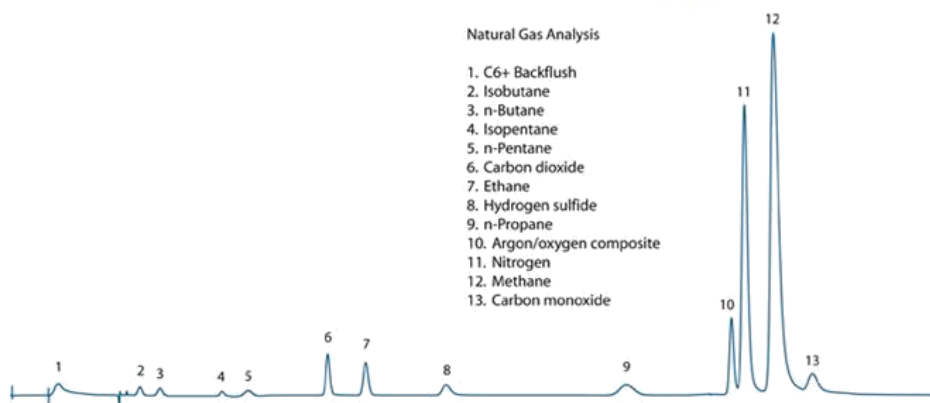
Components separated:

Isobutane, n-butane, isopentane, n-pentane, carbon dioxide, ethane, hydrogen sulfide, n-propane, argon/oxygen composite, nitrogen, methane

Lower detection limits:

100ppm for most components, 400ppm for propane, 500ppm for hydrogen sulfide

Chromatogram



KN-2163 Gas Chromatograph

Overview

KN-2163 Gas Chromatograph is suitable for Liquefied petroleum gas production quality control, quality of liquefied petroleum gas (LPG) import and export commodity inspection, the LPG quality examination analysis results conform to **ASTM D2163 Standard Test Method for Determination of Hydrocarbons in Liquefied Petroleum (LP) Gases and Propane/Propene Mixtures by Gas Chromatography**. Analysis of composition and the detection limits the gaseous hydrocarbon analysis below C₅, not including alkynes

This GC covers the quantitative determination of individual hydrocarbons in liquefied petroleum (LP) gases and mixtures of propane and propene, excluding high-purity propane in the range of C₁ to C₅. Component concentrations are determined in the range of 0.01 to 100 volume percent.

This GC does not fully determine hydrocarbons heavier than C₅ and non-hydrocarbon materials, and additional tests may be necessary to fully characterize an LPG sample

Details

1. Double detectors, FID and TCD
2. FID is used for testing:ethane,propylene,propane,iso-butane,isobutene,butane,Trans butene,2-Butene, iso-pentane, pentene, pentane
3. TCD is used for testing nitrogen
4. The GC is equipped with multiple steps temperature programming, can facilitate optimum chromatographic separation conditions, shorten analysis time, improve analysis efficiency, The GC is equipped with gas six-way valve, Double chromatographic column separation can realize one sample full analysis of the above ingredients, double six-way valve sample injection non-interfering, can realize sampling simultaneously.
5. Equipped with 4 liters of aluminum bottles of special standard mixture, very convenient for quantitative analysis.
6. Dual channel chromatography workstation, support/XP operating system, chromatographic spectrogram storage, data processing, report print follow one's inclinations. Equipment warranty is one year (except for man-made damage and loss), life-long maintenance

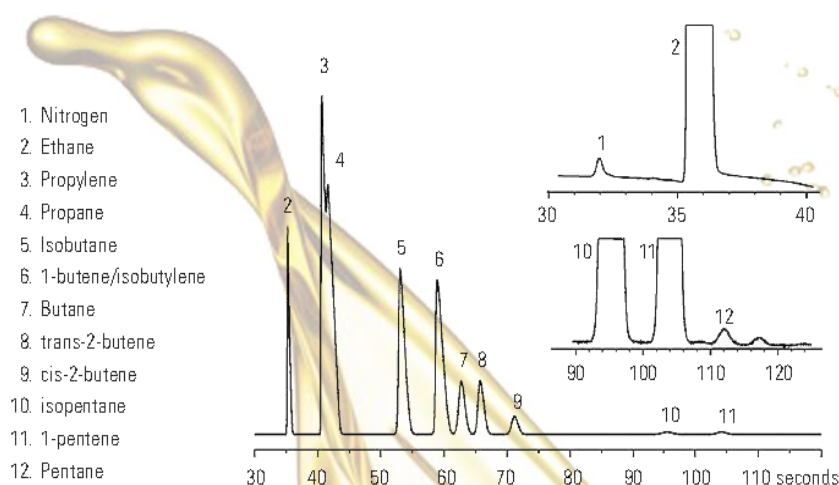
Features

1. Double detectors, FID and TCD
2. FID is used for testing:ethane,propylene,propane,iso-butane,isobutene,butane,Trans butene,2-Butene, iso-pentane, pentene, pentane
3. TCD is used for testing nitrogen
4. The GC is equipped with multiple steps temperature programming, can facilitate optimum chromatographic separation conditions, shorten analysis time, improve analysis efficiency, The GC is equipped with gas six-way valve, Double chromatographic

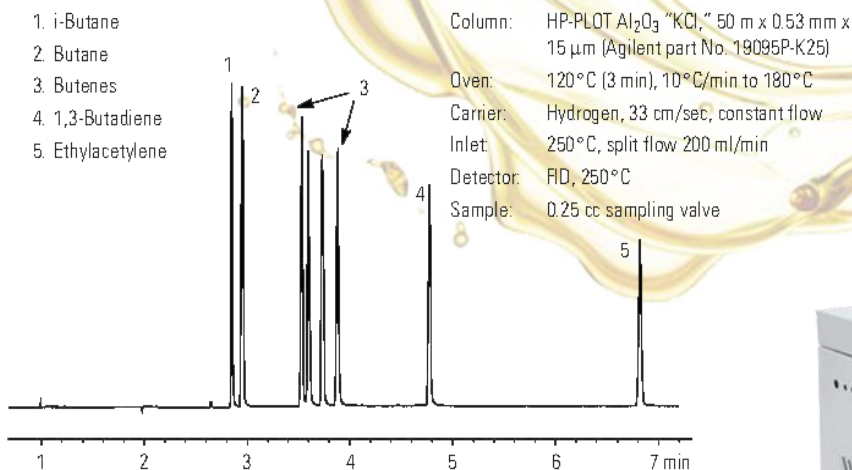
column separation can realize one sample full analysis of the above ingredients, double six-way valve sample injection non-interfering, can realize sampling simultaneously.

- Equipped with 4 liters of aluminum bottles of special standard mixture, very convenient for quantitative analysis.
- Dual channel chromatography workstation, support/XP operating system, chromatographic spectrogram storage, data processing, report print follow one's inclinations. Equipment warranty is one year (except for man-made damage and loss), life-long maintenance

Chromatogram



C₄ isomers including butadiene at low levels.



KN-3612 Gas Chromatograph (TOGA)

Overview

KN-3612 TOGA conforms to **ASTM D3612 Standard Test Method for Analysis of Gases Dissolved in Electrical Insulating Oil by Gas Chromatography**. It is used for the measurement of gases dissolved in electrical insulating oil having a viscosity of 20 cSt (100SUS) or less at 40°C (104°F)

Oil and oil-immersed electrical insulation materials may decompose under the influence of thermal and electrical stresses, and in doing so, generated gaseous decomposition products of varying composition which dissolve in the oil. The nature and amount of the individual component gases that may be recovered and analyzed maybe indicative of the type and degree of the abnormality responsible for the gas generation of specific gases over time are also used to evaluate the condition of the electric tester.

Background

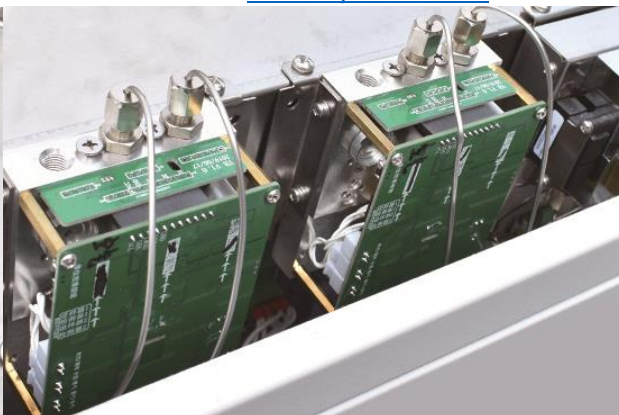
An electrical and thermal loads are applied to transformers, the insulator oil and various components can undergo decomposition, the byproducts of which are dissolved into the transformer oil as gaseous compounds. Analysis of these gases, called dissolved gas analysis (DGA), is a common analysis performed on insulator oil sampled from electrical transformers that can indicate the health, longevity, and potential error states of transformers. Given the large and growing number of transformers associated with modern electrical infrastructure, limited throughput for the large number of received samples is a common issue faced by testing labs. ASTM D3612 Method C specifies the use of automated headspace sampling of the transformer oil, which allows for higher throughput over other sampling methods for DGA analysis, such as vacuum extraction or the use of a stripper column (e.g., ASTM D3612 Methods A and B, respectively)

Features

1. The TOGA adopts Ethernet communication interface, which can easily form a local area network to achieve long-distance data transmission, remote control and remote diagnosis.
2. It has powerful and perfect power-on self-diagnosis function, intuitive display of fault information, power failure storage protection function and anti-power interference function
3. Adopts transformer oil special anti-pollution composite column technology greatly improves the service life of the column
4. The instrument has undergone strict aging tests before leaving the factory, and the parameters have been set, and the user only needs to perform a simple start-up operation



Small dead volume Injection system



High-precision gas flow control system

Parameters

- 1ml Injection volume, the minimum detected concentration (ul/L)

Component	H ₂	O ₂	N ₂	CO	CO ₂	CH ₄	C ₂ H ₄	C ₂ H ₆	C ₂ H ₂
Minimum Concentration (ul/L)	2	10	20	≤5	5	0.06	0.06	0.06	0.06

2. Ambient requirements: 0~40℃
3. Accuracy: ±0.1℃
4. Temperature control range: Ambient+5℃~450℃
5. Analysis cycle: 7min
6. Power: 1.9KW
7. Dimension: 660*560*480mm



High efficiency conversion device



FID(High sensitivity and low noise)

Main technical parameters:

1. Real-time computer control and data processing

The TOGA can expand the 10/100M Ethernet interface, and can be connected to the TOGA through the computer in the local area network to realize remote data acquisition and management. Increases the freedom of the device and promotes efficient application in the laboratory.

Through the user-friendly software operation interface, it is very convenient for users to set parameters including temperature, range rise, event, detector and so on; Intuitive operation includes functions such as FID automatic ignition, TCD switching bridge flow, turning on and off temperature control, turning on and off the rise and closing of the range and various time events

2. The unique design of gasification chamber and detector ensures the stability and convenient maintenance of the TOGA

The unique inlet design solves injection bias, and the dual-column compensation function not only solves the baseline drift caused by the program heating, but also reduces the influence of background noise, which can achieve lower detection limits

Unique vaporization chamber design, smaller dead volume; The replacement of injection pads, liners, polarizing poles, collecting poles, nozzles and other accessories can be replaced easily; Filling columns, capillary injectors, TCD, FID detectors and other main replacements can be completely disassembled with only one wrench, which is very convenient for maintenance.

3. High precision and stable temperature control system

The main control circuit adopts advanced microprocessor, large-capacity FLASH and EEPROM memory, so that the data preservation is more reliable; The integrated design of the circuit board integrating measurement, control and power supply improves the anti-interference and reliability of the TOGA

Adopts the temperature control circuit of the microprocessor, the temperature accuracy of the controlled object in each heating zone reaches 0.1°C

The column chamber has a double overtemperature protection device. If the temperature exceeds the setting, the instrument stops heating up and reports the fault on the display

The intelligent double rear door technology ensures that the TOGA can have good temperature control accuracy when the column chamber temperature is close to room temperature, and can quickly cool down

Twenty-step programmed heating to accommodate the analysis of complex samples with wide boiling points

4. Simple operation interface

Adopts 7-inch LCD display and supports capacitive touch, which is intuitive and easy to operate;

Self-diagnosis function and display of the fault site;

Data power-off protection function, the operating data set by the TOGA can be stored for a long time after the power failure

5. Protection

Will stop heating when there is no carrier gas, so as to protect the column and thermal conductivity cell

6. Auto ignition

It is able to set the time for automatic ignition, and at the same time has the function of fire extinguishing hydrogen protection

Temperature control parameter

1. Column Oven: Ambient+5°C~450°C, Accuracy:±0.1°C
2. Injector: Ambient+5°C~450°C, Accuracy:±0.1°C
3. Detector: Ambient+5°C~450°C, Accuracy:±0.1°C
4. Maximum control 7 paths temperature

Column Oven parameter

1. Column Oven: Ambient+5°C~450°C, Accuracy:±0.1°C
2. Volume: 260mm*270mm*230mm
3. Programmed heating: 20 steps
4. Programmed heating rate: 1~80°C/min (0.1°C increment)
5. Retention time of each step: 0~655min (1min increment)
6. Automatic rear opening design to guarantee the fast cooling speed,
It will only cost within 7min to cool from 350°C to 50°C
7. Fan with big power and low noise to guarantee the uniformity of the temperature

Detector

FID

1. Adopts unique and stable amplifier technology, the signal amplification board has been specially treated to maintain stable operation in harsh conditions
2. Be suitable for packed column and capillary column
3. Operation temperature: 450°C
4. Minimum limit of detection: <5pg c/s (n-Hexadecane)
5. Linear dynamic range (LDR): 10^7 (±10%)
6. Data acquisition frequency: 100Hz
7. Automatic ignition: Auto hydrogen cut off after fire extinguished

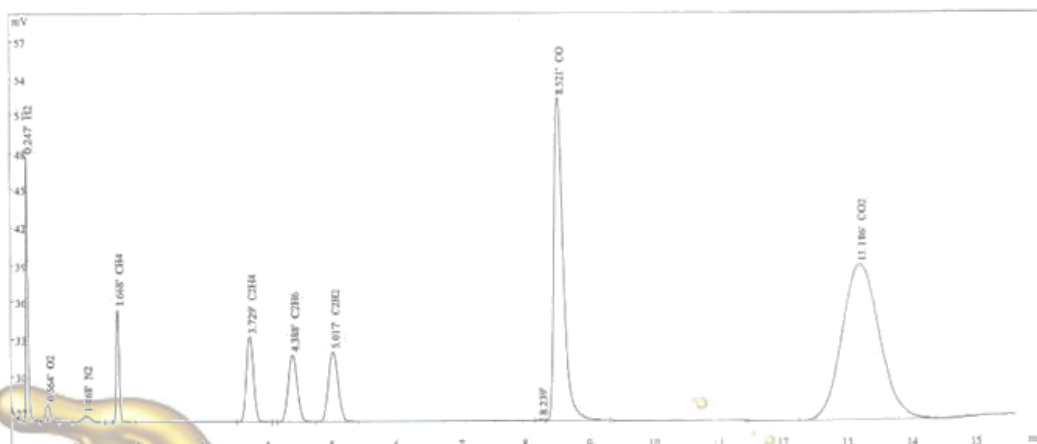
TCD

1. Be suitable for packed column and capillary column
2. Fast stabilization time, small dead volume, short equilibrium time
3. Operation temperature: 400°C
4. Data acquisition frequency: 100Hz
5. Linear dynamic range (LDR): 10^5 (±10%)
6. Minimum limit of detection: <800pg propane/ml (Helium)

Others

1. Dimension: 586*500*530mm
2. Weight: 46g
3. Rated voltage: 220V±50Hz, Power≤2.5kW

Chromatogram



No.	Retention time	Name	Concentration	Peak Area
1	0.247	H2	2242	36315
2	0.564	O2	3483	6517
3	1.168	N2	2399	4891
4	1.668	CH4	47.43	25650
5	3.729	C2H4	49.38	49749
6	4.388	C2H6	49.55	48600
7	5.017	C2H2	50.62	54912
8	8.521	CO	469.7	244782
9	13.186	CO2	952.4	500395
Total			971.4	972071



KN-7419 HPLC for Total Aromatics and Total Saturates

Overview

KN-7419 HPLC for Total Aromatics and Total Saturates conforms to **ASTM D7419 Standard Test Method for Determination of Total Aromatics and Total Saturates in Lube Basestocks by High Performance Liquid Chromatography (HPLC) with Refractive Index Detection**. The composition of a lubricating oil has a large effect on the characteristics and uses of the oil. The determination of saturates, aromatics and polars is a key analysis of this composition. The characterization of the composition of lubricating oils is important in determining their interchangeability for use in blending etcetera.

Features:

1. The static motor control circuit designed with independent technology realizes the automatic feedback tracking function of the motor control signal, effectively improves the motor control accuracy, and ensures the reliability and stability of the pump
2. The technology of floating self-calibrating sealing ring technology and pump head self-cleaning function can prolong the service life of the sealing ring and ensure the durability and high efficiency of the tester
3. Easy-to-use flow and pressure calibration functions ensure the high precision and stability of the tester
4. Program design with two gradients: linear gradient and step gradient optional
5. Programmable solvent classes and compression factors that automatically compensate for complete pre-cleaning for quick solvent changes.
6. Optional automatic cleaning plunger and sealing ring device
7. There are three modes: single wavelength test, time-wavelength program test and wavelength scanning test
8. OLED graphic display screen, with the functions of automatically lighting the deuterium lamp, wavelength self-calibration, and automatic zero adjustment after the power-on self-test is completed
9. Adopts a double beam monochromator optical system centered on a concave grating and a transmission device powered by a microprocessor-controlled stepping motor to ensure the accuracy and reproducibility of the wavelength

Technical parameters:

Pump type: Double plunger tandem reciprocating pump

1. Flow rate range: 0.001~10ml/min (set step size 0.001ml/min)
2. Flow rate accuracy $\leq \pm 0.1\%$ (0.001~10ml/min)
3. Max working pressure: 50MPa, be able to set upper and lower limit, automatic alarm
4. Pressure display error $< \pm 0.5\text{MPa}$ (0~50MPa)
5. Pressure pulsation $< 0.1\text{MPa}$
6. Pump leakproofness: When 42MPa, pressure decrease $< 0.5\text{MPa}$ within 10min
7. Flow rate precision: RSD $< 0.05\%$
8. Gradient: Binary or quaternary



Programmable flow control function

1. Flow rate regulation steps: 20
2. Program time: Max 6000min
3. File capacity: 20

Dual pump control high pressure gradient function

1. Gradient type: Horizontal Ladder and Function (Linear)
2. Max program steps: 20
3. Mixing ratio setting range: 0~100% (Increment 0.1%)
4. Gradient error: $\pm 1.5\%$ [acetone/water solution, (0~100)%, flow 1.0mL/min, (1.0~20)MPa, detector wavelength 254nm]
5. Gradient file capacity: 20

Technical characteristics

1. Temperature setting range: Ambient~80°C
2. Temperature display resolution: 0.1°C
3. Temperature control accuracy: $\pm 1^\circ\text{C}$
4. Overheating protection: 80°C
5. Heating power: 100W
6. Wavelength range: 190~700nm wavelength scanning
7. Wavelength accuracy: $\pm 1\text{nm}$
8. Wavelength repeatability: $\pm 0.1\text{nm}$
9. Wavelength bandwidth: 8nm
10. Flow cell volume: 8ul
11. Baseline noise: $\pm 0.15 \times 10^{-5}\text{AU}$ (wavelength is 254nm, air in the flow cell)
12. Baseline drift: $1 \times 10^{-4}\text{AU/h}$ (wavelength is 254nm, air in the flow cell)

Standard configuration

No.	Item	Quantity
1	Dedicated software	1 set
2	UV detector (wavelength range: 190-700nm)	1 set
3	High pressure infusion pump (analytical type)	2 sets
4	High pressure mixer (analytical)	1 piece
5	Manual injection valve	1 set
6	4.6*250 Chromatographic column	1 piece
7	Injection valve support	1 piece
8	Vacuum pump	1 set
9	Column oven	1 set
10	Organic membrane	1 box
11	Liquid micro syringe	2 pieces
12	Solvent tray	1 set
13	Starter Kit (Dual Pump System)	1 set
14	Sand core filter	1 set
15	RI differential detector	1 set
16	Cyano column 7.5-10mm*250mm 5-10um	1 piece
17	Silica column 7.5-10mm *500mm 5um	1 piece

KN-5837 Furanic Compounds by HPLC

Overview

KN-5837 Furanic Compounds by HPLC conforms to **ASTM D5837 Standard Test Method for Furanic Compounds in Electrical Insulating Liquids by High-Performance Liquid Chromatography (HPLC)**. Furanic compounds are generated by the degradation of cellulosic materials used in the solid insulation systems of electrical equipment. Furanic compounds which are oil soluble to an appreciable degree will migrate into the insulating liquid. High concentrations or unusual increases in the concentrations of Furanic compounds in oil may indicate cellulose degradation from aging or incipient fault conditions.

Features:

1. Reasonable circuit design, much easier door design, cooling system improves stability
2. Equipped with a new version of the chromatographic workstation Survey that meets GMP certification requirements, upgraded electronic signatures, user rights assignment, audit trail, system adaptability and other functions
3. Replacement tray design is more beautiful
4. Improved conductive silicone button design improves touch feeling
5. Change instrument signal communication method to improve data stability
6. Upgrade the motherboard to optimize the control program to increase the stability

Technical parameters:

Pumping system

1. Injection method: Micro-volume tandem double plunger
2. Maximum injection pressure: 6000psi
3. Flow rate range: 0.001~9.999ml/min $\pm 0.5\%$ (Step size: 0.001ml/min)
4. Flow rate stability RSD: $\leq 0.2\%$
5. Pressure fluctuation: $\pm 1\%$ (0~100%, Water / acetone aqueous solution 2 gradient)
6. Pump sealing: $< 0.1\text{Mpa}$, Flow rate: 1ml/min, Pressure drop $< 5\text{MPa}$
7. Time program function: YES
8. Dimension: W260*H130*D420mm

UV-VIS Spectrophotometric Detector

1. Wavelength: 190~700nm $\pm 1\text{nm}$
2. Wavelength reproducibility: $\leq 0.1\text{nm}$
3. Linearity range: $\geq 10^4$
4. Spectral bandwidth: 6nm
5. Flow cell volume: 10 μL
6. Optical path: 10mm
7. Time program function: YES
8. Dynamic Noise: $\leq \pm 0.75 \times 10^{-5}\text{AU}$ (Methanol, 1ml/min, 254nm, 20°C)
9. Static Noise: $\leq \pm 0.5 \times 10^{-5}\text{AU}$ (Empty pool, Response time 1 s, 20 °C)
10. Dynamic Drifting: $\leq \pm 1 \times 10^{-4}\text{AU}$ (Methanol, 1ml/min, 254nm, 20°C)
11. Static Drifting: $\leq \pm 0.5 \times 10^{-4}\text{AU}$ (Empty pool, Response time 1 s, 20 °C)
12. Minimum concentration detection: $\leq 4 \times 10^{-9}\text{g/ml}$ (Naphthalene / methanol solution)
13. Qualitative repeatability RSD $\leq 0.1\%$, Quantitative repeatability RSD $\leq 0.5\%$



KN-1218 Auto Digital Refractometer

Overview

KN-1218 Auto Digital Refractometer conforms to **ASTM D1218 Standard Test Method for Refractive Index and Refractive Dispersion of Hydrocarbon Liquids**. This test method covers the measurement of refractive indexes, accurate to six units in the fifth decimal place and refractive dispersions, of transparent and light-colored hydrocarbons in the range of 1.3300 to 1.5000 at temperatures from 20°C to 30°C (This tester range is 10°C~80°C). It adopts a high-performance CCD photosensitive parts, it can automatically measure the refractive index (nD) of transparent, translucent, dark, viscous and other types liquid sample. Also can measure sugar degree (Brix) of sugar solution. Its accurate, reliable, fast and easy operation. Full compliance with FDA 21CFR part.11. This tester innovative adopts the cloud service system, all the data from the tester can be updated to cloud server, especially for group company or government customer. Automatic refractometer has a wide range of use, within the filed of factories, schools and related scientific research institute petroleum industry, oil industry, etc.

Features

1. Ultra long service life light source – Adopts high brightness LED lights with over 100000 hours service life.
2. Auto temperature control system – Adopts peltier temperature control system with 0.02°C accuracy
3. Perfect measuring prism – Measuring prism is made of high hardness sapphire glass, of excellent properties against corrosion and scratches
4. High performance CCD sensor – Adopts high performance CCD sensor, measure accuracy accurate to the fifth decimal place.

Technical parameters

1. Refractive index measuring range (nD): 1.30000~1.70000
2. Measured value error (nD): ± 0.0001
3. Measurement resolution (nD): 0.0001 / 0.00001
4. Scope of sugar solution mass fraction (Brix): 0~100%
5. Measured value error (Brix): ± 0.01
6. Measurement resolution (Brix): 0.1% / 0.01%
7. Temperature control mode: Built-in Peltier
8. Scope of temperature display: 0~100°C
9. Temperature control range: 10~80°C $\pm 0.02^\circ\text{C}$
10. Interface: RS232 / USB / Ethernet Interface
11. Data storage capacity : 4G
12. Display mode: 7 inches, TFT touch screen
13. Power supply: 110V~240V (12V, 10A)
14. Power: 45W
15. Net Weight: 12kg
16. Dimension: 365mm*300mm*150mm



KN-13357 Lubricating Oil Filterability Tester

Overview

This instrument is produced in accordance with the Petroleum products - Determination of the filterability of lubricating oils - Part 2: Procedure for dry oils, and is used to determine the filterability of lubricating oil based on mineral oil, especially the hydraulic oil in the hydraulic system. It is not suitable for liquids based on other materials (such as flame-retardant liquids, because they may be compatible with the filter membrane used in this method); it is also not suitable for some hydraulic oils with special properties, because they contain insoluble or partially Dissolved additives or special macromolecular substances.

Features

1. The glass fittings meet the standard requirements;
2. Digital display time, simple operation, easy to observe;
3. Precision regulator valve adjustment, the pressure can be controlled within 86658pa
4. The instrument is designed as an integrated structure for easy operation;
5. The shell is made of cold-rolled steel plate, and the surface is treated with electrostatic spray, which has good rust resistance and is easy to clean;
6. Electronic stirrer, with stainless steel paddle rod and paddle.

Technical parameters

1. Applicable standards: SH/0805, ISO 13357
2. Timing method: digital display timer
3. Pressure control: precision pressure regulator adjustment, accurate control pressure is ± 5 Kpa
4. Solvent receiver: special solvent filter receiver bottle
5. Rotation mode: reduction gear motor drive, automatically reversed
6. Stirring method: motor stirring, 1500r/min $\pm$ 50 r/min
7. Power supply: AC220V 50Hz
8. Pressure display: digital meter display
9. The power of the whole machine: 2500W
10. Instrument size: 510*400*620mm
11. Net weight: 38KG



KN-WA-5A Mercury Analyzer

Overview

KN-WA-5A conforms to **ASTM D5954 Standard Test Method for Mercury Sampling and Measurement in Natural Gas by Atomic Absorption Spectroscopy** & **ASTM D6350 Standard Test Method for Mercury Sampling and Analysis in Natural Gas by Atomic Fluorescence Spectroscopy**. It is specially designed for measurement of mercury in air and gaseous matrices (eg. Hydrocarbon gases like Natural Gas, Shale Gas, LPG/LNG and more) in compliance with widely established and accepted technique of Gold-Amalgamation and detection by Atomic Spectroscopy - with the choice of either Atomic Absorption (AA) or Atomic Fluorescence (AF). This tester presents many unique levels of automation and functions to help laboratory accomplishes productivity, unmatched versatility, efficiency and operational labor saving. KN-WA-5A is compact in design to allow for easy transport for field operation and measurements.

Features

1. Dual cold amalgamation system achieves high precision
2. Choice of 2 atomic spectroscopy detectors – satisfying all required test methods and applications

Optional Accessories

Heated Vaporizer for LPG Cylinder () Model LP-WA
Model TC-WA Auto Tube Changer (30 positions)
Manual Reducing Vaporization Attachment (20ml)(S-MA)

Sampling Pump (PS-4)
Dry Gas Meter
Mercury Collector Tube (M-160)
5pcs/box
Carrying Case for KN-WA-5 Unit

Mercury Vapor Calibration Box (MB-1)

Applications / Test Method

	Applications	AAS Methods	AFS Methods
Gas Analysis	Ambient air, Working environment air, Fuel gas, Natural Gas, Shale Gas, LPG and more.	ASTM D 5954-98; ISO 6978, ISO 20552, JLPGA-S-07, Manual method of measuring hazardous air pollutants.	ASTM 6350-98; ISO 6978, ISO 20552, USEPA IO-5
Reduction Vaporization	Drinking Water, River water, Sea Water, Waste water, Digested Liquid and more.	USEPA 245.1, 245.2, 245.5, 7470A, 7471B, ASTM D 3223-02, EN 1483; APHA 3112, JIS K0102.	ASTM 6350-98; ISO 6978, ISO 20552, USEPA IO-5

Specifications

		KN-WA-5A Atomic Absorption System	KN-WA-5F Atomic Fluorescence System
Mercury Collector furnace part	Scrubber and Dehumidifier	Electronic (Peltier) Cooling	Electronic (Peltier) Cooling (Optional)
	Mercury Collector Furnace	Heat up to 700°C	Heat up to 700°C
	Filter 1	Gold Filter	Gold Filter
	Filter 2	Activated Carbon Filter	Activated Carbon Filter
	Pump	Diaphragm Air Pump	Activated Carbon Filter
	Flow Rate	0.1~1.0L/min (Adjustable)	0.1~1.0L/min (Digital Mass Flow Control)

Detector Part	Principle	Atomic Absorption Spectroscopy (Dual-Cell Auto Range)	Atomic Fluorescence Spectroscopy
	Light Source	Low Pressure Mercury Discharge Lamp	Low Pressure Mercury Discharge Lamp
	Wavelength	253.7nm	253.7nm
	Detectors	Photo tube	Photo tube
	Carrier Gas	Ambient (Purified) Air	Purified Argon (99.995% or better)
	Detection Limit	0.001ng (1pg)	< 0.1pg
	Working Range	0.001~1000ng	0.001~1000ng LOW Mode (0~10ng) High Mode (10~1000ng), selectable
	OS	Windows 7, 8, 8.1, 10pro	Windows 7, 8, 8.1, 10pro
	Display	Peak Wave Shape, Calibration Curve, Measuring Condition, Measuring Results, Error Message, etc.	Peak Wave Shape, Calibration Curve, Measuring Condition, Measuring Results, Error Message, etc.
	Communication	Ethernet	Ethernet
	Power Supply	AC100~240V±5%, 50/60Hz, 170VA	AC100~240V±5%, 50/60Hz, 170VA
	Installation Dimensions	230*460*390mm (KN-WA-5A only)	230*460*390mm (KN-WA-5F only)
	Weight	13kg (KN-WA-5A only)	13kg (KN-WA-5F only)



KN-113 Digital Ductilometer

Overview

KN-113 Digital Ductilometer conforms to **ASTM D113 Standard Test Method for Ductility of Bituminous Materials**. It is suitable to determine the distance to which it will elongate before breaking when two ends of a briquet specimen of the material are pulled apart at a specified speed and at a specified temperature.

Features

1. Adopts humanized design philosophy. No leading screw, lead rail or other components in the test trough. The sample can be easily installed in and the maximum measurement distance can reach 1.5m
2. Adopts high-accuracy digital temperature controller.
3. Adopts innovative transmission design. The stretching is stable and synchronous. There is no tremble and the speed is uniform
4. Three specimens. Suitable to the test standard for asphalt ductility
5. The specimen can return and positioning automatically after the determination.
6. Adopts membrane panel and LCD temperature controller. Water-proof, durable and easy to clean.

Technical parameters

1. Power supply: AC220V(-5%~+10%),50Hz, Maximum power consumption: 4100W
2. Measurement distance: 1.5m(± 10 mm)
3. Heating mode: Electric heater
4. Heating power: 3000W
5. Liquid circulation : By magnet circulation pump
6. Temperature control range: (5~49) °C,adjustable. Resolution is 0.01 °C, Accuracy: ± 0.1 °C
7. Tensile speed: 10mm/min and 50mm/min, two grades
8. Measurement accuracy: ± 1 mm
9. Ductility display: Digital display after data processed by a single chip machine
10. Refrigeration: Compressor 1.25P, input power is 950W
11. Ambient requirements: Temperature : (-10~+35) °C, Humidity $\leq 85\%$



KN-5133 Gel Index Tester (LTLS)

Overview

KN-5133 Gel Index Tester (LTLS) conforms to **ASTM D5133 Standard Test Method for Low Temperature, Low Shear Rate, Viscosity/Temperature Dependence of Lubricating Oils Using a Temperature Scanning Technique**. This test method covers the measurement of the apparent viscosity of engine oil at low temperatures and **ASTM D7110 Standard Test Method for Determining the Viscosity-Temperature Relationship of Used and Soot-Containing Engine Oils at Low Temperature**. This Test method covers how to measure the apparent viscosity of used and soot-containing engine oils at low temperature.

Features

1. Metal bath cold well, no noise
2. Microcomputer temperature controller, PID adjustment, PT100 temperature sensor with high precision
3. One-button automatic lifting system, hydrometer automatic positioning
4. Unique test tube lock device, it is able to fix the test tube stable
5. Big touch screen operation
6. Dedicated software, be able to correct the viscosity and analysis the linear accuracy
7. Automatic calibration process, the calibration data will be shown in diagram
8. Multiple temperature correction, also can add the correction point freely
9. Automatic scan the viscosity and generate the gel curve. Will automatic analysis the gel index and temperature
10. Adopts linear curve cooling, cooling rate could be edited

Technical Parameters

1. Cooling mode: Semi-conductor analysis the linear accuracy
2. Temperature control mode: Digital display PID temperature controller
3. Temperature control range: Ambient~ $40 \pm 0.1^{\circ}\text{C}$
4. Measuring range: 0~40000mPa·s
5. Operation mode: Touch screen
6. Lifting mode: Automatic
7. Rated voltage: AC220V, 50Hz
8. Total power: Main host: 800W,
Low temperature bath:1200W
9. Dimension: Main host: 400*250*700mm,
Low temperature bath: 430*540*730mm
10. Net weight: Main host: 32kg,
Low temperature bath: 45kg



KN-1263 Tester for Leakage Tendencies of Automotive Wheel Bearing Greases

Overview

KN-1263 Tester for Leakage Tendencies of Automotive Wheel Bearing Greases conforms to **ASTM D1263 Standard Test Method for Leakage Tendencies of Automotive Wheel Bearing Greases**. The test method provides a screening device that permits differentiation among products having distinctly different leakage characteristics. It is not the equivalent of longtime service tests, nor is it intended to distinguish between wheel bearing greases showing similar or borderline leakage.

Features

1. The transmission device is composed of the main assembly, the bearing spindle, the bearing hub, the leakage receiver and the fan. The main assembly is composed of a dedicated front wheel hub and shaft assembly, and is installed in a controllable thermostat. The hub is driven by an electric motor through a V-belt. The loss receiver is used to collect the grease that has leaked from the inner end of the hub. This receiver is detachable in order to determine the loss of grease. It is sleeved on the shaft and fixed against the large bearing.
2. The heating temperature control system consists of a 1000W air heating tube, temperature sensor, intelligent digital temperature control meter, chronograph, heat preservation box, etc. The digital temperature control meter can display the set temperature and the actual temperature intuitively, and it is easy to set the temperature and correct the temperature difference.

Technical parameters

1. Rated voltage: AC220V $\pm$ 10%, 50Hz
2. Motor power: 60W
3. Motor rated speed: 1300rpm
4. Heating power: 1000W
5. Wheel hub and bearing speed: 600rpm
6. Temperature range: Ambient~130°C
7. Accuracy: $\pm$ 1°C
8. Timing range: 0~99h



KN-4290 Tester for Leakage Tendencies of Automotive Bearing Grease

Overview

KN-4290 Tester for Leakage Tendencies of Automotive Bearing Grease conforms to **ASTM D4290 Standard Test Method for Determining the Leakage Tendencies of Automotive Wheel Bearing Grease Under Accelerated Conditions**. Leakage tendencies is used for automotive wheel bearing applications.

Features

1. DC motor rotation, low noise, stable speed, good mechanical performance and low wear
2. The hub and shaft assembly are compact in structure, small end clearance, and imported bearings are used for bearings. Reliability and wear resistance are guaranteed.
3. Digital display timer, recording test time. One thermometer hole on the shaft assembly
4. Standard motor 1/4 horsepower, 1000r/min $\pm$ 50r/min, Heating power is 1800W in total
5. The instrument adopts an integrated design with a long-lasting appearance and easy operation
6. Microcomputer temperature controller, digital display, accuracy $\pm 1.5^{\circ}\text{C}$, PT100 sensor
7. Unique heat pipe rod insert casting body box heating system

Technical parameters

1. Temperature range: Ambient $\sim$ 180 $^{\circ}\text{C}$ $\pm$ 1.5 $^{\circ}\text{C}$
2. Timing method: Digital four digits timer
3. Heating method: Metal bath
4. Temperature control mode: Imported PID temperature controller
5. Timing range: 0.01s $\sim$ 99h99m
6. Power: 2.5KW
7. Rated Voltage: AC220V/50HZ
8. Motor speed: 1000r/min $\pm$ 50r/min
9. Fan motor: 1550 r/min
10. Thrust: 111N



KN-1142 Tester for Water Vapor Content of Gaseous Fuels

Overview

KN-1142 Tester for Water Vapor Content of Gaseous Fuels conforms to **ASTM D1142 Standard Test Method for Water Vapor Content of Gaseous Fuels by Measurement of Dew-Point Temperature**. Generally, contracts governing the pipeline transmission of natural gas contain specifications limiting the maximum concentration of water vapor allowed. Excess water vapor can cause corrosive conditions, degrading pipelines and equipment. It can also condense and freeze or form methane hydrates causing blockages. Water-vapor content also affects the heating value of natural gas, thus influencing the quality of the gas.

Features

1. It is mainly used for the detection of hydrocarbon dew point and water dew point in natural gas.
2. This tester adopts the cold mirror detection principle, which has high detection accuracy and stability, and is suitable for commercial inspection and measurement or on-site inspection.
3. The cold mirror refrigeration adopts a CO₂ refrigerator with a cold energy recovery system.
4. The cooling efficiency of the refrigerator is compared with traditional The CO₂ cooler has increased by more than 50%, which improves work efficiency while reducing the loss of cooling media.
5. The tester is also suitable for a variety of refrigeration media including dry ice and liquid nitrogen, with a wide detection range and strong environmental adaptability.

Technical parameters

1. Temperature range: Ambient~-40°C (CO₂ cooler),
Ambient~-62°C (dry ice),
Ambient~-129°C (liquid nitrogen)
2. Accuracy: $\pm 0.5^{\circ}\text{C}$
3. Ambient temperature: -20~50°C
4. Protection grade: Ex iA IIC T4
5. Anti-pressure grade: $\leq 25\text{Mpa}$
6. Power supply: 3.6V lithium battery
7. Dimension: 420*180*160mm
8. Weight: $\leq 5\text{kg}$



KN-127 Petroleum Wax Drop Melting Point Tester

Overview

KN-127 Petroleum Wax Melting Point Tester conforms to **ASTM D127 Standard Test Method for Drop Melting Point of Petroleum Wax**, Including Petrolatum. Melting point is a wax property that is of interest to most wax consumers. It can be an indication of the performance properties of the wax. Drop melting point, Test Method D127, is often used to measure the melting characteristics of petrolatum and other high viscosity petroleum waxes.

Features

1. Digital display PID temperature controller, with accuracy of $\pm 1^{\circ}\text{C}$
2. The instrument adopts temperature-resistant high borosilicate glass cylinder, which can observe the sample transparently and has good heat preservation performance.
3. The instrument adopts the compressor refrigeration, which produces a large amount of refrigeration to maintain the temperature constant
4. This instrument is formed by steel plate, and the surface adopts electrostatic spraying process, which is durable and strong in corrosion resistance.

Technical parameters

1. Applicable standard: ASTM D127 ISO2707
2. Wax bath temperature range: $4^{\circ}\text{C} \pm 0.1^{\circ}\text{C}$
3. Transparent bath temperature range: $16 \sim 150^{\circ}\text{C}$ (ambient temperature $\leq 20^{\circ}\text{C}$)
4. Temperature control mode: Digital display temperature programming
5. Heating mode: SS electric tube heating
6. Cooling mode: Compressor
7. Test stations: 2
8. Heating power: 1500W
9. Cooling power: 500W
10. Total power: 2000W
11. Rated voltage : $\text{AC}220\text{V} \pm 10\%$, 50Hz



KN-721 Petroleum Wax Oil Content Analyzer

Overview

KN-721 Petroleum Wax Oil Content Analyzer conforms to **ASTM D721 Standard Test Method for Oil Content of Petroleum Waxes**. This analyzer covers the determination of oil in petroleum waxes having a congealing point of 30°C (86°F) or higher as determined in accordance with Test Method D 938, and containing not more than 15 % of oil

Features

1. Separated temperature control system, can guarantee the accuracy of the test temperature
2. Totally enclosed compressor refrigeration, Copper made cooling bath
3. Electronic heating bath, Stirring device on the top, Stainless steel heater
4. Standard glass tube, can meet ISO requirements
5. Evaporation device got transparent observation
6. Four air flow is divided into two road control, to ensure the accuracy of flow rate.
7. Micro-computerized Controller with PID, Digital display temperature (continuous display when testing), accuracy to 0.1°C, Pt100 RTD temperature probe
8. contacted control box is very convenient

Technical parameters

1. Standard: ASTM D721
2. Temperature control: PID digital temperature controller
3. Cooling method: Compressor
4. Temperature control: heating pipe
5. Working temperature: 0±0.5°C -34.5±0.5°C 90±0.5°C
6. Evaporation device: 4tubes 35±1°C
7. Power: AC220V±10%/50HZ



KN-2872 Rolling Thin Film Oven

Overview

KN-2872 Rolling Thin Film Oven is designed on the requirements of the instrument according to **ASTM D2872 Standard Test Method for Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin-Film Oven Test)**. This oven is used to indicate approximate change in properties of asphalt during conventional hot-mixing at about 302°F (150°C) as indicated by viscosity and other rheological measurements. It yields a residue which approximates the asphalt condition as incorporated in the pavement. If the mixing temperature differs appreciably from the 302°F (150°C) level, more or less effect on properties will occur. This test method also can be used to determine mass change, which is a measure of asphalt volatility.

Features

1. Adopts thermal insulation layer and duct between the studio and box shell
2. Stable and accurate temperature control
3. Filled with aluminum silicate cotton in insulation
4. Dedicated air machine to supply the required air flow during the test
5. Temperature sensor of the heating device adopts the advanced ASIC chip and manufacturing technology with perfect performance

Technical Parameters

1. Working temperature: 163°C
2. Temperature accuracy: $\pm 0.5^{\circ}\text{C}$
3. Heating power: 2KW
4. Wheel speed: $15 \pm 0.2\text{rpm}$
5. Air flow: $4 \pm 0.2\text{L/min}$
6. Bottle nozzle size: 6.35mm
7. Filled sample bottle size: $\phi 64 \times 140$
8. Studio size: 480*450*380
9. Rated voltage: 220V $\pm 5\%$



KN-1754 Thin Film Oven

Overview

KN-1754 Thin Film Oven is designed on the requirements of the instrument according to **ASTM D1754 Standard Test Method for Effects of Heat and Air on Asphaltic Materials (Thin-Film Oven Test)**. This oven is used to indicate approximate change in properties of asphalt during conventional hot-mixing at about 150°C as indicated by viscosity, penetration, or ductility measurements. It yields as residue which approximates the asphalt condition as incorporated in the pavement. If the mixing temperature differs appreciably from the 150°C level, more or less effect on properties will occur.

Features

1. Adopts thermal insulation layer and duct between the studio and box shell
2. Stable and accurate temperature control
3. Filled with aluminum silicate cotton in insulation
4. Dedicated air machine to supply the required air flow during the test
5. Temperature sensor of the heating device adopts the advanced ASIC chip and manufacturing technology with perfect performance

Technical Parameters

1. Heating power: 2KW
2. Working temperature: 163°C
3. Temperature accuracy: $\pm 1^{\circ}\text{C}$
4. Thermometer: 155~170°C, 0.5°C
5. Wheel speed: $5.5 \pm 1\text{rpm}$
6. Studio size: 420*450*350
7. External form size: 820*540*600
8. Rated voltage: 220V $\pm 5\%$, 50Hz



KN-88 Asphalt Saybolt Viscometer

Overview

KN-88 Asphalt Saybolt Viscometer is designed and made as **ASTM D88 Standard Test Method for Saybolt Viscosity**. It covers the empirical procedures for determining the Saybolt Universal or Saybolt Furol Viscosities of petroleum products at specified temperatures between 21 and 99°C (70 and 210°F).

Features

1. This instrument is composed of bath, temperature controller, parameters display and calculation (calibration coefficient, time, viscosity and so on).
2. This instrument adopts micro computer technology. It equips double lines to detect. It can determine two samples at the same time. It can display the parameters and calculate the arithmetic mean value automatically.
3. This instrument can convert the Saybolt viscosity to Engler viscosity and kinematic viscosity automatically. Operator can get three viscosity data from one test. The work efficiency is high.

Technical parameters

1. Power supply: AC(220±10%)V 50Hz
2. Instrument structure: Desk type
3. Working mode: Double lines, parallel test
4. Receiving flask: (60±0.0)5ml
5. Heating power of bath: 1000W
6. Working temperature of bath: Room temp.~240.0°C
7. Temperature control accuracy: ±0.1°C
8. Timing range: 0.0s~999.9s
9. Timing accuracy: ±0.1s
10. Ambient temperature: ≤35°C
11. Relative humidity: ≤85%
12. Overall dimension: 360×360×790mm



KN-36 Tester for Softening Point of Asphalt (Ring-and-Ball)

Overview

KN-36 Tester for Softening Point of Asphalt (Ring-and-Ball Test tester) conforms to the **ASTM D36 Standard Test Method for Softening Point of Bitumen (Ring-and-Ball Tester)**. The tester covers the determination of the softening point of bitumen in the range from 30 to 160°C [86 to 320°F] using the ring-and-ball tester immersed in distilled water [30 to 80°C] or USP glycerin (above 80 to 160°C).

Features

1. Computer control, photoelectric detection, LCD display, micro printer.
2. Linear heating, evenly stirring
3. Be able to do two tests simultaneously
4. Results displayed by the LCD and can be printed via the printer
5. Temperature measuring range:
6. Sample softening point <80°C, distilled water as the heating medium, +5~+80°C
7. Sample softening point ≥80°C, glycerin as the heating medium, +32~+160°C

Technical parameters

1. Rated voltage: 220V±10%, 50Hz
2. Temperature resolution: 0.1°C
3. Stirrer: Continuously adjustable, 9 gears
4. Heating rate: 3min after booting, automatically adjust to 5±0.5°C/min
5. Heating power: 600W
6. Computer connection port: RS232
7. Beaker capacity: 1000ml.
8. Ambient requirements: Temperature <35°C, no convection currents
9. Total power: 700W



KN-36Z Automatic Bitumen Softening Point of Asphalt (Ring-and-Ball)

Overview

KN-36Z Automatic Bitumen Softening Point of Asphalt (Ring-and-Ball) conforms to the **ASTM D36 Standard Test Method for Softening Point of Bitumen (Ring-and-Ball Tester)**. The tester covers the determination of the softening point of bitumen in the range from 30 to 160°C [86 to 320°F] using the ring-and-ball tester immersed in distilled water [30 to 80°C] or USP glycerin (above 80 to 160°C).

Features

1. It adopts computer control, detection light path is clear and visible, result is accurate and reliable. Finish the sample test automatically and it will print the test result after the test ends
2. Linear heating the test bath, the bath liquid stirs well, heating rate conforms to the requirement of the related standard, be able to test 2 in one time
3. Adopts high temperature resisting quartz cuboid glass tank, steel ball locating ring and steel ball dimension conforms to all the requirements

Technical parameters

1. Rated voltage: AC220V±10%, 50Hz
2. Measuring range: Softening point≤80°C, +5°C ~+80°C
3. Softening point>80°C, +32°C~+160°C
4. Accuracy: 0.1°C
5. Stirrer: Electromagnetic stirring, speed is continuously adjustable
6. Heating rate: 3min later it will be adjusted to 5.0±0.5°C / min
7. Result: Printer
8. Heating rate: 600W, all power dissipation≤700W
9. Flask capacity: 1000ml
10. Ambient requirement: Ambient~35°C, Humidity≤85%



KN-5452 Tester for Particulate Contamination in Aviation Fuels

Overview

KN-5452 Tester for Particulate Contamination in Aviation Fuels conforms to **ASTM D5452 Standard Test Method for Particulate Contamination in Aviation Fuels by Laboratory Filtration**. This test method provides a gravimetric measurement of the particulate matter present in a sample of aviation turbine fuels delivered to a laboratory for evaluation. The objective is to minimize these contaminants to avoid filter plugging and other operational problems. Although tolerable levels of particulate contaminants have not yet been established for all points in fuel distribution systems, the total contaminant measurement is normally of most interest.

Features

1. Aluminum structure with anti-vibrating feet according to ASTM D5452
2. 5 liters stainless steel sample tank epoxy coated conform to ASTM D4306 and dispensing screw cap with mose barb internal diameter of approx. 9.5 mm and length 32 mm, equipped with 100 mm fuel resistant flexible tube
3. Metallic funnel 200 ml capacity with filter support and base for fine closing of the membrane
4. 5 liters graduated cylindrical vacuum bottles for receive sample
5. Grounding system and vacuum connection tube included



KN-40A Channel Point Tester for Gear Oil

Overview

KN-40A Channel Point Tester for Gear Oil conforms to **FTMS-791B-3465.1** and **SH/T 0030**. It is used for determination of channel point of gear oil at low temperature. The test consists of storing an Oil sample for 18 hours at a low temperature, cutting a channel in the lubricants with a metal strip and determining whether the lubricants flow together to cover the bottom of the container within 10 seconds.

Features

1. Adopts a floor-standing integrated structure, and four universal wheels are installed at the bottom, which is convenient to move the tester
2. 5-inch LCD touch screen, intelligent temperature control
3. Built-in heating and cooling system, be able to control both high temperature and low temperature in the same chamber, convenient and accurate
4. Equipped with glass window, after sampling, turn on the power and heating switch, the test will be finished automatically

Technical parameters

1. Preheat temperature range: 46~48℃
2. Cooling temperature range: -60℃~0℃ ±1℃
3. Rated voltage: AC220V ± 10%, 50Hz
4. Power: 1500W



KN-ZL Portable Chiller

Overview

KN-ZL Portable Chiller can be widely used in petroleum, chemical, pharmaceutical, biochemical, scientific research and other fields. This is a very popular cooling device in the world.

Features

1. Small full enclosed compressor cooling
2. Small size and light weight with low noise
3. Stable working performance and long service life

Technical parameters

1. Rated voltage: AC220V $\pm$ 5%, 50Hz
2. Operation temperature: 4~35 $^{\circ}$ C
3. Cooling range: Ambient $\sim$ 0 $^{\circ}$ C
4. Compressor power: 125W
5. Cooling-head dimension
 ϕ 45mm*170mm
 ϕ 45mm*250mm
6. Stainless steel hose length: 1000mm
7. Dimension: 360*270*240mm
8. Maximum cooling volume: 10L
9. Net weight: about 17kg



KN-8120 Ferrous Debris Quantification Tester

Overview

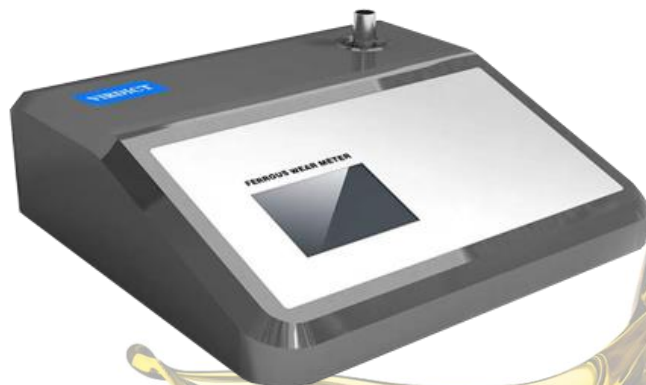
KN-8120 Ferrous Debris Quantification Tester conforms to **ASTM D8120 Standard Test Method for Ferrous Debris Quantification**. By quantifying the concentration of total ferrous debris, this test method provides a direct indication of wear in the machinery by enabling the user to pinpoint when there is a deviation from the normal buildup of ferrous debris shed by the machinery or when the concentration of ferrous debris has exceeded safe operating limits.

Technical parameters

1. Measuring range: 0~2500ppm
2. Sample test method: Magnetic method
3. Operating temperature range: 15~40°C
4. Result resolution: 5ppm
5. Repeatability: $\pm 10\text{ppm}$ (0~1000ppm) / $\pm 20\text{ppm}$ (>1001ppm)
6. Sample bottle: standard 5ml test tube
7. Weight: 1.1kg
8. Test time: less than 3s for each test
9. Power supply: DC 24V

Application

1. Oil analysis
2. Rotating machinery (pumps, reducers, bearings, etc.)
3. Hydraulic facility
4. Engine and transmission
5. Wind generator
6. Mobile equipment and vehicles
7. Military equipment
8. Durability tester
9. Other tribological friction equipment



KN-8120Z Ferrous Debris Quantification Tester

Overview

KN-8120Z Ferrous Debris Quantification Tester conforms to **ASTM D8120 Standard Test Method for Ferrous Debris Quantification**. By quantifying the concentration of total ferrous debris, this test method provides a direct indication of wear in the machinery by enabling the user to pinpoint when there is a deviation from the normal buildup of ferrous debris shed by the machinery or when the concentration of ferrous debris has exceeded safe operating limits.

Features

1. Easy operation of 5-inch touch screen and good visibility display
2. Good repeatability, fast measurement result confirmation (measurement time 2sec)
3. Possible to measure with oil of 2ml sample amount (grease can be measured with the same container)
4. After testing, you can check the trend with the result value
5. Easy portability in the field with a sturdy bag
6. Measurement conforming to ASTM D8120 standard



Technical parameters

1. Power: AC110~240V, 50/60Hz
2. Measuring range: 0~5500mg/L(ppm)
3. Measurement temperature range: 0~50℃
4. Display: 5 inch touch screen, 1280*720
5. Interface type: USB method
6. Sample amount: 2ml
7. Repeatability < 2sec
8. Test sensitivity: 1mg/L
9. Memory: 32G
10. Battery capacity: 3400mAh (within 5hr after full charge)
11. Dimension: 250*218*133mm
12. Weight: 2.7kg

Application

1. Oil analysis
2. Rotating machinery (pumps, reducers, bearings, etc.)
3. Hydraulic facility
4. Engine and transmission
5. Wind generator
6. Mobile equipment and vehicles
7. Military equipment
8. Durability tester
9. Other tribological friction equipment





KN-8184 Particle Quantifier Instrument for Ferrous Wear Debris

Overview

KN-8184 Particle Quantifier Instrument for Ferrous Wear Debris conforms to **ASTM D8184 Standard Test Method for Ferrous Wear Debris Monitoring in In-Service Fluids Using a Particle Quantifier Instrument**. This test method is intended for the application of PQ magnetometry in assessing the progression of wear in machinery, for example, engines and gearboxes, by trending the mass of ferrous debris in samples of lubricating oils or greases.

Features

1. Strictly meets the ASTM D8184 standard requirements
2. Dedicated sensor and signal processing circuit, good stability and high sensitivity
3. Oil sample transfer, measurement automatically, 10 seconds to measure a data.
4. Supporting PC data management software, measurement data can be directly imported to the computer for data management, trend analysis, curve printing, etc.
5. Oil samples do not need to be processed and can be directly injected into the oil bottle for measurement.
6. User operation is easy to use.
7. You can enter any number and letters, the user to name the file.

Technical Parameters

1. Power supply: AC220V $\pm$ 10%, 50-60Hz
2. Environmental temperature: 10 $^{\circ}$ C~30 $^{\circ}$ C
3. Display screen: LCD120 $\times$ 90
4. Repeatability: $\pm$ 4PQ or $\pm$ 1% [whichever is greater]
5. Resolution: 1PQ
6. Test time: 7 seconds
7. Detection range of abrasive particles: > 1 μ m ferromagnetic abrasive particles
8. Measurable minimum value: 5PQ
9. Serial port connection method: USB mother port
10. Measurement range: 0~15000PQ
11. Size: 370mm * 220mm * 136mm
12. Weight: 4.2kg



KN-6421 Tester for Electronic Port Fuel Injector Fouling by Bench Procedure

Overview

KN-6421 Tester for Electronic Port Fuel Injector Fouling by Bench Procedure conforms to **ASTM D6421 Standard Test Method for Evaluating Automotive Spark-Ignition Engine Fuel for Electronic Port Fuel Injector Fouling by Bench Procedure**. This test method covers a bench test procedure to evaluate the tendency of automotive spark-ignition engine fuel to foul electronic port fuel injectors (PFI). The test method utilizes a bench tester equipped with Bosch injectors specified for use in a 1985-1987 Chrysler 2.2-L turbocharged engine. This test method is based on a test procedure developed by the Coordinating Research Council (CRC) for prediction of the tendency of spark-ignition engine fuel to form deposits in the small metering clearances of injectors in a port fuel injection engine.

Features

1. After preparation is done, one button operation, and the tester will record the test results automatically
2. Dedicated data processing software to automatically read in test data, automatically calculate test results and output test records
3. There will be guidance operation during the preparation process
4. Be able to save no less than 10 pieces of test data
5. If there is a something happens that may causes the result invalid during the test process, the tester will automatically stop and alarm
6. The tester has with nozzle automatic screening function, which can complete the nozzle screening operation required by the standard
7. Adopts high precision balance and maintenance-free pump
8. Equipped with dedicated ultrasonic cleaning system to clean the nozzle

Technical parameters

1. Injection temperature: $160 \pm 5^{\circ}\text{C}$
2. Injection pressure: constant at $263 \pm 6.8\text{kPa}$
3. Injection pulse time: $15 \pm 1\text{s}$, accuracy: 0.1s
4. Oil tank capacity: 2.25L
5. Cycle definition: 15s Injection pulse (repeat continuously 4ms high and 20ms low) + 50min hot soak +10 min cool down period
6. Cycle number: 22 cycle a time
7. Balance accuracy: 0.01g
8. Ambient temperature: $10 \sim 35^{\circ}\text{C}$
9. Relative humidity: 20~80%
10. Rated voltage: $\text{AC}220\text{V} \pm 10\%$, 50Hz, 1000W



KN-381 Existent Gum Content Tester (Steam Method)

Overview

KN-381 Existent Gum Content Tester (Steam Method) conforms to **ASTM D381 Standard Test Method for Gum Content by Jet Evaporation**. When testing either aviation or motor gasoline, a $50\pm0.5\text{ml}$ quantity of fuel is evaporated under controlled conditions of temperature and flow of air. When testing aviation turbine fuel, a $50\pm0.5\text{ml}$ quantity of fuel is evaporated under controlled conditions of temperature and flow of steam. For aviation gasoline and aviation turbine fuel, the resulting residue is weighed and reported as milligrams per 100ml. For motor gasoline, the residue is weighed before and after extracting with heptane and the results reported as milligrams per 100ml.

Features

1. Tester consists of temperature controller, timing device, heating device, manometer, flow meter, metal bath and steam generator
2. The temperature control device adopts a digital display temperature controller, which has high precision. The output adopts solid state relay, it features non-contact, no spark, no noise, long service life, safe and reliable
3. Digital timing device
4. Stainless steel heating, it features fast heating speed
5. Adopts metal bath, reliable and stable

Technical parameters

1. Rated voltage: $\text{AC}220\text{V} \pm 10\%$, 50Hz
2. Power: 2500W
3. Steam generator power: 8kW
4. Temperature control mode: Digital controller
5. Evaporation bath temperature: $232\sim246^\circ\text{C}$
6. Test station: 3
7. Air flow rate: $600\pm90\text{ml/s}$
8. Ambient requirements
9. Temperature, $10\sim50^\circ\text{C}$, Humidity $\leq 85\%$



KN-381A Existent Gum Content Tester (Air Method)

Overview

KN-381A Existent Gum Content Tester (Air Method) conforms to **ASTM D381 Standard Test Method for Gum Content by Jet Evaporation**. When testing motor gasoline, a 50 ± 0.5 ml quantity of fuel is evaporated under controlled conditions of temperature and flow of air. For motor gasoline, the residue is weighed before and after extracting with heptane and the results reported as milligrams per 100ml.

Technical Parameter

1. Air Flow Rate: 600 ± 90 ml/s (air flow rate of each test station under room temperature)
Every test station equipped with a single flow rate flow meter, be able to control and display the corresponding air flow rate independently for making sure the test accuracy
2. Input Power: 1500W
3. Evaporation Bath Temperature Range: $162^\circ\text{C} \pm 2.5^\circ\text{C}$
4. Test Station Temperature Range: $155^\circ\text{C} \pm 5^\circ\text{C}$
5. Time Display: 30min00s~00min00s / 00min00s~99min60s
6. Test Station: 3

Working Condition

1. Rated voltage: $\text{AC}220\text{V} \pm 10\%$, 50Hz
2. Evaporation Bath Type & Size: Aluminum Block, 260mm*130mm
3. Dimension: 590*480*340mm



KN-6560 Tester for Paraffin, Resins and Asphaltenes Contents in Crude Oil

Overview

KN-6560 Tester for Paraffin, Resins and Asphaltenes Contents in Crude Oil in Crude Petroleum and Petroleum Products conforms to **ASTM D6560 Standard Test Method for Determination of Asphaltenes (Heptane Insolubles) in Crude Petroleum and Petroleum Products** and **SY/T 7550 Determination of Paraffin, Resins and Asphaltenes Contents in Crude Oil**. Asphaltenes are the organic molecules of highest molecular mass and carbon-hydrogen ratio normally occurring in crude petroleum and petroleum products containing residual material. They may give problems during storage and handling if the suspension of asphaltene molecules is disturbed through excess stress or incompatibility.

Features

1. The tester consists of two separate devices, namely suction device, dewaxing and filtering device, compressor refrigeration system, etc., placed side by side, compact structure; digital temperature control table automatic constant temperature; especially designed according to ASTM D6560 standard. The sand core funnel is unique in that it has the advantage of reducing operating time and ease of operation.

Technical parameters

1. Rated voltage: AC220V $\pm$ 10%, 50Hz
2. Water bath heating power: 2.0kW
3. Water bath temperature range: Ambient $\sim$ 90°C (setting freely)
4. Working station: Two stations with four holes
5. Cooling bath temperature range: -30°C $\sim$ Ambient (Setting freely)
6. Cooling system: Compressor
7. Temperature accuracy: $\leq \pm 0.5^\circ\text{C}$
8. Temperature display: LED digital display



KN-659 Autoignition Temperature Tester

Overview

KN-659 Autoignition Temperature Tester conforms to **ASTM E659 Standard Test Method for Autoignition Temperature of Chemicals**. A small, metered sample of the product to be tested is inserted into a uniformly heated 500ml glass flask containing air at a predetermined temperature. The contents of the flask are observe in a dark room for 10min following insertion of the sample, or until autoignition occurs. Autoignition is evidenced by the sudden appearance of a flame inside the flask and by a sharp rise in the temperature of the gas mixture. The lowest internal flask temperature at which hot-flame ignition occurs for a series of prescribed sample volumes is taken to be the hot-flame autoignition temperature of the chemical in air at atmospheric pressure. Ignition delay times (ignition time lags) are measured in order to determine the ignition delay-ignition temperature relationship.

Features

1. Exclusive use of XECOM data processing chips imported from the United States to accurately process data
2. Adopt advanced microcomputer technology and color display with touch screen
3. Advanced embedded microcontroller technology
4. Adopt SMT surface mount technology
5. PID temperature control and setting technology, high precision of temperature control
6. Automatic thermal printing of Chinese characters
7. Standard RS232 interface, can communicate with computer
8. Automatically complete the determination of the self-ignition point of fire-resistant fuel, with automatic constant temperature countdown after reaching the preset self-ignition point, automatic sampling, automatic detection of the self-ignition point, and automatic printing of results
9. Automatic sampling to avoid the problem of inaccurate positioning caused by manual sampling
10. Users can set the test temperature interval by themselves

Technical parameters

1. Display mode: LCD touch screen
2. Temperature control range: 100~800°C, ±1°C
3. Timing accuracy: 1s
4. Injection volume: 0.07ml
5. Sampling interval: ≥15min
6. Voltage: AC220V ± 10%, 50Hz ± 5%
7. Power: <1500W
8. Ambient temperature: 5~35°C
9. RH ≤ 85%



KN-1287 PH Meter

Overview

KN-1287 PH Meter conforms to **ASTM D1287 Standard Test Method for pH of Engine Coolants and Antirusts** and **ASTM D1121 Standard Test Method for Reserve Alkalinity of Engine Coolants and Antirusts**. pH is a measure of the hydrogen ion concentration and indicates whether an engine coolant, or a solution of these compounds is acidic, alkaline, or neutral. The pH range includes values from 0 to 14. Values from 0 to 7 represent the acidic half of the scale. Values from 7 to 14 represent the alkaline or basic half of the scale. The pH value 7 is considered neutral, as it is neither acidic nor alkaline.

pH sometimes used for production quality control. It is generally desirable that engine coolants have an alkaline pH. pH is not significant from the standpoint of predicting service life. The pH of used engine coolants or antirust solutions is not a dependable indication of either existing effectiveness or remaining life of the solution.

Technical Parameters

1. Applicable standard: ASTM D1287, ASTM D1121, ISO 4925 6.3
2. Grade: 0.02
3. Measuring range
 - pH measuring range: (0.00 ~ 14.00)pH
 - mV measuring range: (-1800 ~ 1800)mV

Screen introduction

Icon	Paraphrase
	Whether the data is stable
	Auto power-off
mV	mV Result unit
pH	pH Result unit
Sec	Time unit
°C	Temperature unit
MTC	Manual temperature compensation
%PTS	Percentage threshold of slope
	Measurement
	Calibration
	Setting



KN-2570 Simulated Service Corrosion Tester

Overview

KN-2570 Simulated Service Corrosion Tester conforms to **ASTM D2570 Standard Test Method for Simulated Service Corrosion Testing of Engine Coolants**. An engine coolant is circulated for 1064h at 88°C (190°F) in a flow loop consisting of a metal reservoir, an automotive coolant pump, an automotive radiator, and the connecting rubber hoses. Test specimens representative of engine cooling system metals are mounted inside the reservoir, which simulates an engine cylinder block. At the end of the test period, the corrosion-inhibiting properties of the coolant are determined by measuring the mass losses of the test specimens and by visual examination of the interior surfaces of the components.

Features

1. Consists of operation parts, display, heating control, speed control, pressure control, flow rate control and necessary spare parts
2. Motor: For driving the coolant circulation, connected to the water pump
3. Water pump: For offering the required circulating flow rate
4. Condenser: For decreasing the test pressure, simulates the car working condition
5. Reservoir: For placing the metal test specimens
6. Glass tube: For observing the circulating status

Technical parameters

1. Applicable standard: ASTM D2570
2. Ambient requirements: 20~25°C, Humidity < 60%
3. Fuse: 20A
4. Temperature control accuracy: $\pm 3^{\circ}\text{C}$
5. Temperature measuring accuracy: 0.1°C
6. Temperature control range: Ambient~88°C
7. Flow rate control range: 0~95L/min
8. Flow rate control accuracy: $\pm 5\%$
9. Rated Voltage: AC220V, 50Hz
10. Power: 7000W



KN-7143 Ultimate Strength and Thermostrengthening Tester

Overview

KN-7143 Ultimate Strength and Thermostrengthening Tester conforms to **GOST 1743 Greases**.

Method for Determination of Ultimate Strength and Thermostrengthening. It is mainly used to measure the pressure of the grease when it is displaced in the threaded pipe of the plasticizer at the test temperature, and convert it into a strength limit value, which is expressed as Pa. The appearance design of the grease strength limit tester is beautiful and generous, the structure design is reasonable, the operation is convenient, and the results are accurate

Features

1. Microcomputer temperature controller, with high precision and PT100 temperature sensor
2. Equipped funnel on the top
3. Digital display working time and will do alarm by the buzzer
4. Two types of standard screwed tube, long type: 100mm, $\phi 4$ mm, teeth space: 0.8mm

Short type: 500mm, $\phi 4$ mm, teeth space: 0.8mm

Technical parameters

1. Temperature range: 0~100°C
2. Cooling mode: Compressor cooling
3. Hot bath:



KN-1478 Low-Temperature Torque Tester

Overview

KN-1478 Low-Temperature Torque Tester conforms to **ASTM D1478 Standard Test Method for Low-Temperature Torque of Ball Bearing Grease**. This test method was developed using greases having very low torque characteristics at -54°C . Specifications for greases of this type commonly require testing at this temperature. Specifications for greases of other types can require testing at temperatures from -73°C to -18°C .

This test method has proved helpful in the selection of greases for low-powered mechanisms, such as instrument bearings used in aerospace applications. The suitability of this test method for other applications requiring different greases, speeds, and temperatures should be determined on an individual basis.

Features

1. Test bearing, contains eight 7.9mm balls, separated by a two-piece, pressed steel cage, and standard radial clearance of $0.008\sim 0.018\text{mm}$
2. Micro computer temperature controller, with range from ambient to -70°C
3. Pt100 Temperature sensor, with accurate to 0.1°C
4. Imported compound compressor, low noise
5. Driving motor adopts high-speed ratio, 1740/1, to keep a stable rotating speed
6. Low temperature tank adopts dedicated Insulating material, ambient environment will not affect the inner temperature
7. Digital display the pull-in torque and running torque
8. Brass grease cup, strictly conforms to the standard requirements
9. Digital display working time and equipped with alarm function
10. Stainless steel air bath

Technical parameters

1. Cooling mode: Danfoss double-compressor cooling
2. Temperature range: Ambient $\sim -70^{\circ}\text{C}$
3. Timer: Digital display
4. Rotating speed accuracy: 1rpm
5. Torque test: Digital ergometer
6. Torque accuracy: 0.1%
7. Total power: 2000W
8. Rated voltage: AC220V, 50Hz
9. Size: 800*500*1300mm



KN-SY Circulating Water Bath

Overview

KN-SY Circulating Water Bath can be widely used in drying, concentration, distillation, impregnated chemical reagents, impregnated drugs and biological products, and can also be used for constant temperature heating in water baths and other temperature tests, and is an essential tool for biology, genetics, viruses, aquatic products, environmental protection, medicine, health, biochemical laboratories, analysis rooms, education and scientific research.

Features

1. Over-temperature protection
2. Compressor over-pressure protection
3. Power-off protection
4. Be able to be used for external circulation

Technical parameters

1. Temperature range: $0\sim95\pm0.1^{\circ}\text{C}$
2. Chamber size: 260*160*140mm
3. Dimension: 540*720*820mm
4. Weight: 40kg



KN-8288 Automatic Tapping Torque Testing System

Overview

KN-8288 Automatic Tapping Torque Testing System conforms to **ASTM D8288 Standard Test Method for Comparison of Metal working Fluids Using a Tapping Torque Test Machine**. This test method can be used to predict the comparative lubricating properties of a metalworking fluid (MWF).

Fluids that produce lower torques or higher efficiencies are predicted to have better machining characteristics. The method is applicable to all tap types, machining speeds, alloys and coatings that can be fabricated into a test piece. Comparison between different operating conditions or various types of fluids can be made. The reportable quantity is the efficiency or mean average torque of a reference fluid divided by the mean average torque of the fluid of interest.

Features

1. Reversible control servo motor, with high rotation precision, quieter operation
2. Dynamic data collection up to 100000 readings per second
3. Multiple button control, supports manual, automatic control and motor torque maximum protection
4. Touch screen operation, integrated PC (8 operating system languages)
5. Marble base and main column
6. Collet-type chuck + quick change head (head adjustable for taps ranging M2-M10)
7. Automatic torque protection when torque exceeds 10N, preventing overload damage to the equipment
8. Servo AC power supply stabilization system: Integrates purification, stabilization, and automatic protection. Features a wide stabilization range, high stabilization precision, and rapid response capabilities
9. This workbench encompasses multiple functions: screen visualization, high-precision XY-axis grating scales, aluminum alloy with multiple failure treatments for resistance to deformation and excellent rigidity. It maintains dynamic geometric error precision within 1 μ m. The workbench also supports manual fine-tuning for more precise hole positioning.

Technical parameters

1. Precision Grating Scale: X,Y Axis Travel: 50~3000mm, 0.5 μ m precision
2. Spindle Speed: 50~1000rpm
3. Rated voltage: 220V, 50Hz

