

KN-7536 Apparatus for Chlorine in Aromatics

Overview

KN-7536 Apparatus 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.

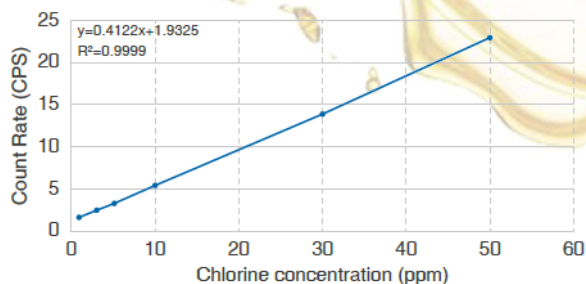
Features

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

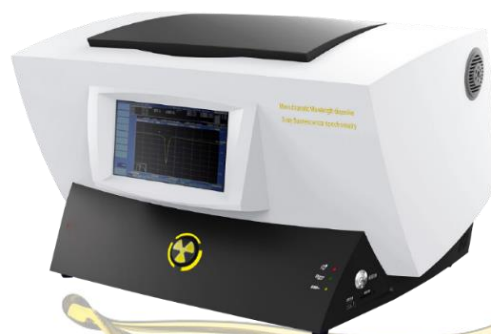
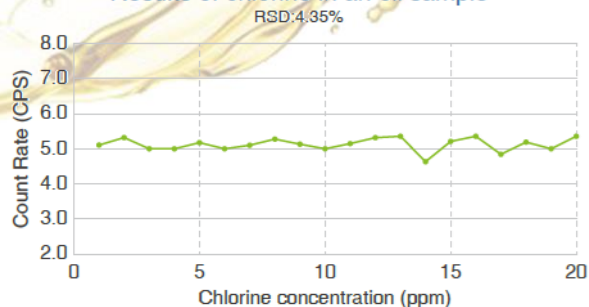
Technical parameters

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-2622 Apparatus for Sulfur Content in Petroleum Products by WDXRF

Overview

KN-2622 Apparatus for Sulfur Content in Petroleum Products by WDXRF conforms to **ASTM D2622 Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry** and **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**. 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: 0.35ppm~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-7039 Apparatus for Sulfur Content in Petroleum Products

Overview

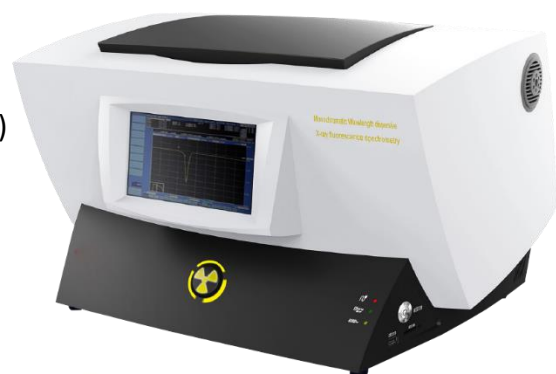
KN-7039 Apparatus for Sulfur Content in Petroleum Products by WDXRF conforms to **ASTM D7039 Standard Test Method for Sulfur in Gasoline, Diesel Fuel, Jet Fuel, Kerosine, Biodiesel, Biodiesel Blends, and Gasoline-Ethanol Blends by Monochromatic Wavelength Dispersive X-ray Fluorescence Spectrometry.** & **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

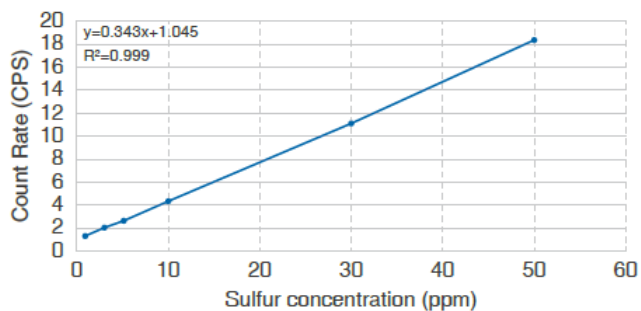
1. Johansson-type DCG system, advanced design of beam path
2. After calibration before ex-factory, will never have optical path displacement
3. No need conversion gasses, vacuum requirements or self-aeration system
4. No need to establish working curves frequently
5. Intuitive touch screen operation

Technical parameters

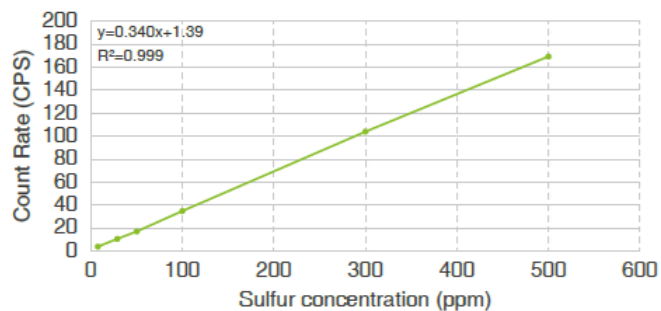
1. Limit of detection 0.2ppm (300s)
2. Range: 0.5ppm~5%
3. Measuring time: 60~300s (selectable)
4. Standard deviation: $S_n-1 \leq 0.5\text{ppm}$ (5ppm), 2.5ppm (50ppm)
5. I/O ports: USB
6. Rated voltage: $220\text{V} \pm 10\%$, 5A / $110\text{V} \pm 10\%$, 5A
7. Dimension: 614*444*375mm



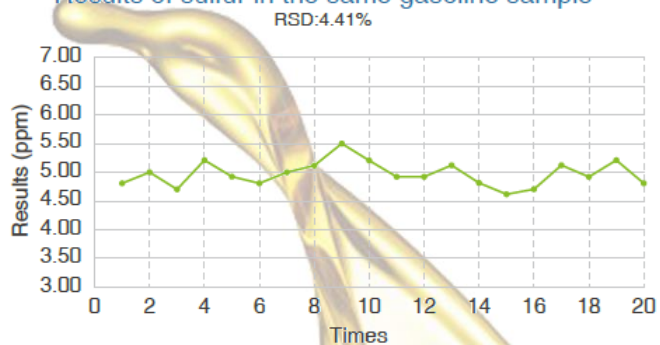
Calibration curve for low concentration



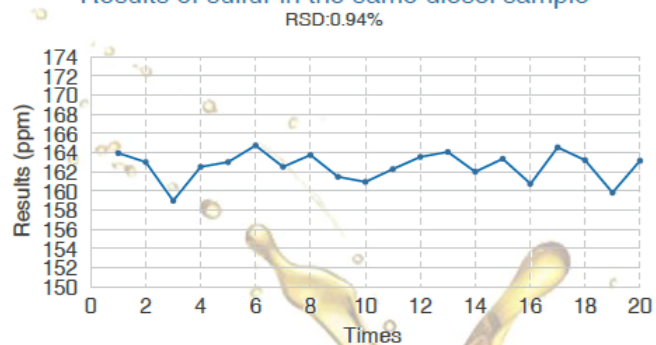
Calibration curve for higher concentration



Results of sulfur in the same gasoline sample



Results of sulfur in the same diesel sample



KN-6481 Portable Energy Dissipation X-ray Fluorescence Spectrometer

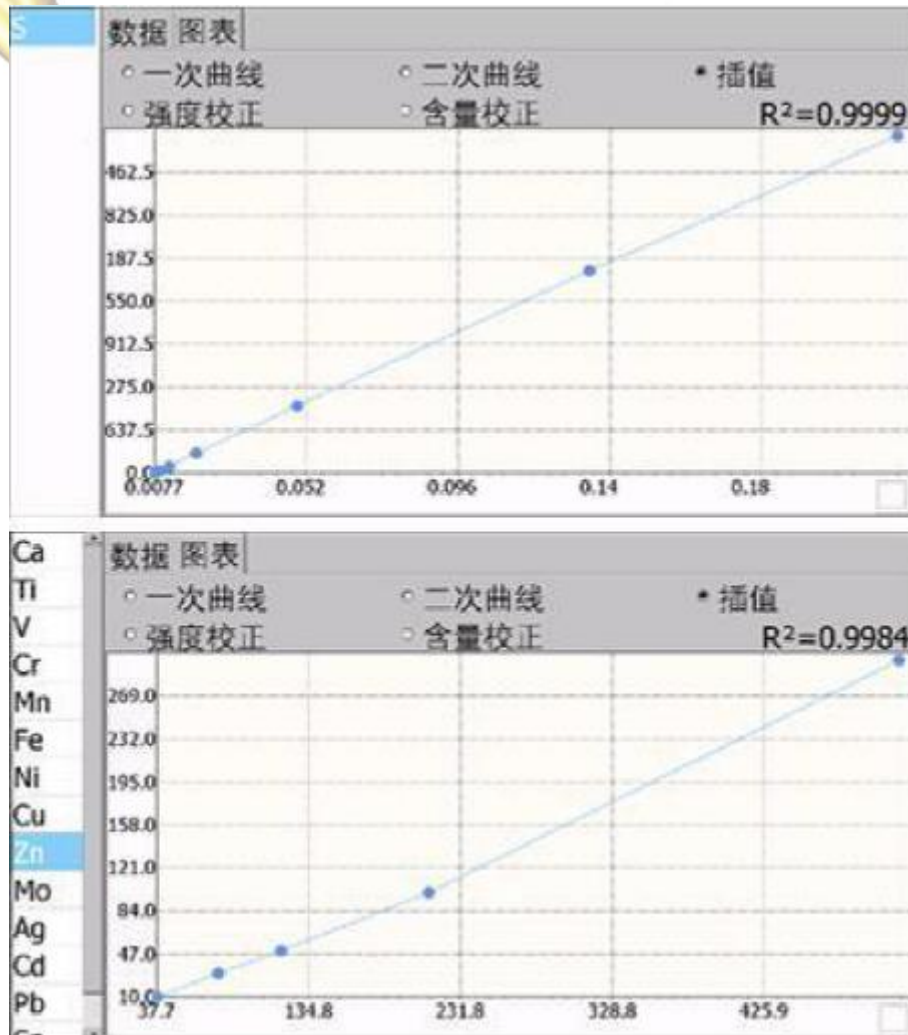
Overview

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** and **ASTM D7751 Standard Test Method for Determination of Additive Elements in Lubricating Oils by EDXRF Analysis**. 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. Portable and one button operation.

Working Curve Linear Chart



Sample Spectrogram Comparison



Repeatability Data

Fuel Oil 50ppm Sulfur, Lubricating Oil 30ppm Heavy Metal Stability Data							
Repeatability	S (PPM)	Ti (PPM)	V (PPM)	Mn (PPM)	Ni (PPm)	Zn (PPM)	Pb (PPM)
1	49.52	30.71	29.58	30.11	29.54	29.74	31.22
2	48.68	31.05	30.14	31.25	28.76	30.52	30.41
3	49.33	31.19	28.96	31.10	29.35	31.21	30.63
4	50.12	31.29	30.31	31.51	28.41	29.65	30.33
5	48.76	31.42	30.11	29.65	27.96	28.55	29.42
6	49.62	31.07	29.75	29.51	29.34	29.41	28.53
7	49.53	30.75	29.51	29.41	30.04	30.66	29.58
8	50.18	30.54	29.41	30.65	27.53	29.64	30.11
9	51.83	30.62	28.96	30.74	28.55	29.34	29.44
10	49.72	30.88	29.47	30.88	29.43	30.63	30.98
11	49.33	30.08	30.11	31.54	29.01	29.75	28.87
Average Value	49.69	30.87	29.66	30.58	29.90	29.83	29.96
Standard Deviation	0.85	0.39	0.47	0.79	0.74	0.85	0.86
RSD (%)	1.71	1.25	1.57	2.58	2.58	2.85	2.87

Technical Parameters

1. Analysis method: Energy Dissipation X-ray Fluorescence
2. Detector: Fast SDD, resolution can reach 125eV
3. Excitation source: 50KV/100uA – silver target end window integrated micro X-ray tube and high voltage power supply
4. Elements measuring range: All elements from Al (Aluminum) to U (Uranium)
5. Detection time: 60~200s
6. Sample type: Solid, Liquid, Powder
7. Detection limit: Fuel oil: P 3ppm, S 1ppm, Cl 2ppm
Lubricating oil: Ti 0.5ppm, V 0.5ppm, Cr 0.5ppm, Mn 0.3ppm, Fe 0.8ppm, Ni 1ppm, Cu 0.5ppm, Zn 0.5ppm, Pb 0.6ppm, Mo 1ppm, Ag 6ppm, Cd 8ppm, Sn 10ppm
8. Content range: 5ppm~99.99%
9. Calibration method: Cu
10. Processor (CPU): 1G Hz
11. Operation: One button operation, no need to select the corresponding test mode
12. Relative humidity $\leq 90\%$
13. Operation temperature range: -20~50°C

Standard configuration

1. Fast SDD Multichannel Detector
2. X-ray tube, high voltage and low voltage power supply
3. Amplifying circuit and digital multi-channel system
4. Power and control system
5. Built-in PDA
6. Dedicated software, PDA version
7. Bluetooth printer (Optional)
8. 110V/220V Universal adapter
9. Shock-resistant, pressure-resistant, lockable carrying case



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 apparatus with high sensitivity, stable property, low detection lower limit, accurate test result, good repeatability.

Features

1. We 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 apparatus
3. The apparatus 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 apparatus 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-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;

KN-4294 X-ray Fluorescence Sulfur Content Apparatus

Overview

KN-4294 X-ray Fluorescence Sulfur Content Apparatus 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°C,humidity:≤85% (30°C)
8. Rated voltage:AC220V±20V,50Hz; Power: 30W



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: 5~30℃; b. Relative humidity: $\leq 85\%$ (30℃)
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-1551 Quartz Tube Sulfur Apparatus

Overview

KN-1551 (KN-1551A) Quartz Tube Sulfur Apparatus (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 apparatus 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 apparatus 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 apparatus 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 apparatus adopts high quality lamp and needle valve
4. The apparatus 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 apparatus 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 $\pm$ 10% 50Hz
2. Glassware components: 5 tubes (7 tubes)
3. Sucking pump: 220V 60W
4. Ambient requirements: Temperature: 10~40°C; Humidity $\leq$ 85%

