

# MATERIAL ANALYZERS



## CALO-11, CALO-11A, CALO-13, CALO-15, Calorimeters



CALO-11A

### Bucket water circulation system



### Applications

The CALO Series calorimeters can be used to determine the calorific value of coal, coke, petroleum, cement black meal, solid biomass fuels and other combustibles. Conformance with Standards: GB/T213-2008 Standard Test Method for Calorific Value of Coal ASTM D5865-2010 Standard Test Method for Gross Calorific Value of Coal and Coke ISO1928 Solid Mineral Fuels – Determination of gross calorific value by the bomb calorimetric method and calculation of net calorific value, and for ASTM D240 also.

### High Adaptability to Environment

#### Stable internal environment

Jacket and jacket lid equipped with water circulation device and temperature control system, which can make sure the water temperature of each part of the jacket to be consensus and constant, thus the test results will not be affected even if the room temperature fluctuates up to 10°C.



CALO-13

### High Precision and Accuracy of Test Results

#### Independent bucket and jacket water system

Bucket water will be drained to water tank directly after finishing the test, so the inlet and outlet of bucket water will not affect the jacket water.

#### Constant bucket water volume and temperature

Constant volumetric tank with temperature control device makes sure water volume and temperature of each test are exactly the same.

#### High temperature resolution

Temperature measured by PT1000 Platinum resistance to the nearest 0.0001K.

#### Stable and reliable water quality

Equipped with high quality water purification device, the water quality of each test is guaranteed.

Model	CALO-11/11A	CALO-13	CALO-15
Method	Isoperibol		
Analysis Time	< 11min	< 13min	< 15min
Precision	RSD < 0.1%		
Heat Capacity Stability	≤ 0.20% within three months		
Heat Capacity Precision	≤ 0.1%		
Temperature Resolution	0.0001K		
Power Requirement	220V(-15%-10%), 50Hz		
Max Power	1.5kW		
Gas Requirement	99.5% purity of oxygen		
Water Requirement	Distilled water		



**CALO-15**

### Easy to Operate, Handle and Maintain

- Easy-to-use Windows- based software.
- Easy data handing, real time data can be transmitted through internal network.
- With CAN bus interface, several calorimeters can be controlled by a single PC.
- Connected with balance and network by standard interface RS232.
- Durable bombs need hydrostatic pressure test only once a year.

### High Efficiency and Automation

#### Test in turn without waiting

With bomb identifier, up to four bombs can be recognized, operators can prepare other bombs while testing thus improvement gained in efficiency & operating time.



**Power Inverter**

### Test finished automatically

- Automatic oxygen filler equipped, oxygen filling by one press.
- Automatic controlling of water volume, filling, heating, emptying and jacket water circulation.
- Automatic sample ignition.
- Automatic temperature rise measurement and result calculation.

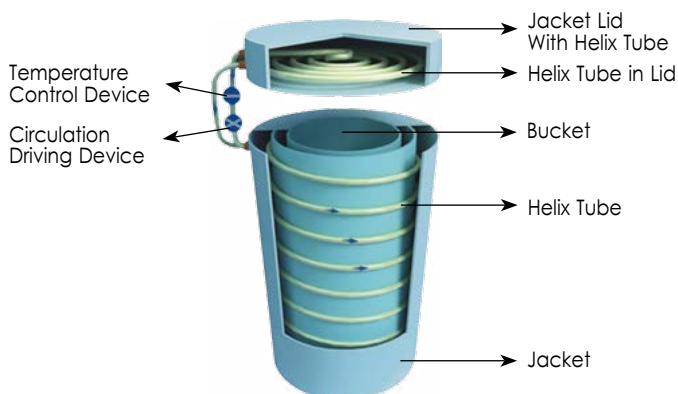


**CALO-15**

### Less sensitive to power supply

Unique design of inverter which can purify and stabilize the power supply, ensures the calorimeter will not be affected by the fluctuation of power voltage (from 160V to 240V) and frequency.

### Sectional Drawing of Jacket/Lid With Helix Tube Inside



Model	CALO-11A	CALO-11	CALO-13	CALO-15
<b>Standard Layout</b>	Calorimeter, Lenovo PC (Desktop), Printer	Calorimeter, Water Tank, Lenovo PC (Desktop), Printer		
<b>Type</b>	Vertical type	Benchtop	-	-
<b>Size</b>	437x554x1040mm	432x560x393mm	432x560x393mm	432x560x393mm
<b>Net weight</b>	95kg	60kg	60kg	60kg

### CALO-B, Calorimeter



**CALO-B**

### Features

- Weighing the weight and measuring the water temperature of bucket manually, then the calorimeter will finish the whole test automatically.
- Simple structure, easy for maintenance.
- Durable bombs need hydrostatic pressure test only once a year.

- With PCI interface, several calorimeters can be controlled by a single PC.
- Connect with balance and network by standard interface RS232, real time data can be transmitted through internal network.
- Easy-to-use Windows-based software, easy data handling.

Model	CALO-B
<b>Analysis Time</b>	< 25 min
<b>Heat Capacity Stability</b>	≤ 0.20% within three months
<b>Heat Capacity Precision</b>	≤ 0.2%
<b>Temperature Resolution</b>	0.0001K
<b>Power Requirement</b>	220V(-15%-10%), 50Hz
<b>Max Power</b>	0.5kW
<b>Gas Requirement</b>	99.5% purity of oxygen
<b>Water Requirement</b>	Distilled water
<b>Size / Net weight</b>	528x330x380mm / 30Kg

## CALO-40, Calorimeter



### Features

- Vertical type, jacket water  $\geq 40$ kg which can ensure the stability of jacket water temperature.
- Test finished automatically
  - Automatic oxygen filler equipped, oxygen filling by one press.
  - Automatic sample ignition.
  - Automatic temperature rise measurement and result calculation.
- High temperature resolution, temperature measured by PT1000 Platinum resistance to the nearest 0.0001K to improve the test precision.

- Durable bombs need hydrostatic pressure test only once a year.
- With PCI interface, several calorimeters can be controlled by a single PC.
- Connected with balance and network by standard interface RS232, real time data can be transmitted through internal network.
- Easy-to use Windows-based software, easy data handling.
- Conformance with Standards: GB/T213-2008, ASTM D5865-2010, ISO1928, and for ASTM D240 also.

Model	CALO-40
<b>Analysis Time</b>	15~25 min
<b>Heat Capacity Stability</b>	$\leq 0.20\%$ within three months
<b>Heat Capacity Precision</b>	$\leq 0.15\%$
<b>Temperature Resolution</b>	0.0001K
<b>Power Requirement</b>	220V(-15%~10%), 50Hz
<b>Max Power</b>	0.5kW
<b>Gas Requirement</b>	99.5% purity of oxygen
<b>Water Requirement</b>	Distilled water
<b>Size / Net weight</b>	600x417x908mm / 89Kg



## CALO-3, BenchTop Calorimeter

- Accurate Test result: Benchtop type, large water quantity. Difference of jacket water temperature in each test less than 0.1K.
- Automatic water temperature adjustment (at final stage, bucket temperature is 1K higher than jacket temp.), water amount determination and test.
- Support oxygen bomb air tightness examination, no complicated elevating mechanism and compressor.
- Strong data processing capability, statistics report and printing function; capable of connecting with network and balance.
- With expert diagnostic, self-protection, self-diagnostic function.
- Authentic test data, no software modification.
- Conformance with Standards: GB/T213-2008, ASTM D5865-2010, ISO1928, and for ASTM D240 also.

Model	CALO-3
<b>Analysis Time</b>	15 - 25min
<b>Temperature Resolution</b>	0.0001K
<b>Heat Capacity Precision</b>	$\leq 0.15\%$
<b>Jacket Type</b>	Isoperibol
<b>Accuracy/stability</b>	In accordance with related standard
<b>Heat Capacity Stability</b>	$\leq 0.2\%$ within three months
<b>Network/Balance Connection</b>	Available (by interface RS232)
<b>Power Requirement</b>	220V(-15% - 10%), 50/60Hz
<b>Main Body Size / Weight</b>	500x600x400mm / 65Kg





CALO-6

**Application:**

It can be used to determine the calorific value of solid and liquid combustibles such as coal, coke, petroleum oil, cement black meal, biomass fuels as well as buHding material.

**Highlights:**

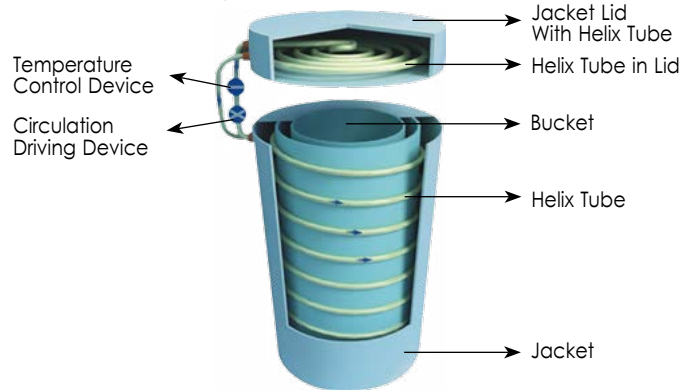
**Optimized design, fully automatic oxygen filling & releasing, fully automatic bomb raising & lowering, full test process is less than 10 minutes.**

- Unique bucket water circle system, which can determine water volume for each testing automatically. New stainless steel oxygen bomb can be easily assembled and disassembled. High stirring efficiency by propeller, taster heat transfer of oxygen bomb, testing time is greatly reduced.
- Unique automatic press type oxygen filling and releasing design, no blockage, much more stable than traditional automatic calorimeter.
- Built-in interngent water tank with heating and cooling function, water temperature can keep constant, non-stop working available.
- High automation: bomb raising & lowering, oxygen filling & releasing, determination of bucket water volume and control of water temperature and test can be finished automatically.

**CALO-6, BenchTop Calorimeter**

- Fully automatic oxygen filling & releasing, fully automatic bomb raising & lowering, full test process is less than 10 minutes.
- Optional support stand, customer can choose either benchtop or vertical type.

**Sectional Drawing of Jacket/Lid With Helix Tube Inside**



**Conformance to Standards:**

- ASTM 05865-2007 Standard Test Method for Gross Calorific Value of Coal and Coke
- ISO 1928 Solid Mineral Fuels Determination of gross calorific value by the bomb calorimetric method and calculation of net calorific value.
- ASTM D240.

**Accurate and reliable test result**

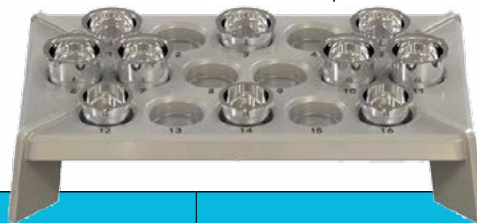
- Larger heat capacity make the testing result is more accurate and reliable.

**Good environment adaptability, precise, accurate & reliable rest result.**

- Helix tube multi-point isothermal technology. create a controllable and stable internal environment (consists of jacket and jacket lid, temperature difference <math><0.1^{\circ}\text{C}</math>), stop the interference of extetnal environment (such as air flow, temperature) to bucket, test result is reliable.
- Independent jacket and bucket vwater system. After the test, bucket water automatically flow back into water tank, no affection between inlet and outlet of bucket water and jacket water. Jacket water temperature is stabilized.

**Reasonable structure, reliable operation, safe and environment friendly**

- With self-diagnostic function, malfunction can be detected accurately, easy to maintain.
- Unique crucible support design, convenient to use.



Model	CALO-6
Full Test Process	<math><10\text{min}</math>
Temperature Resolution	0.0001K
Heat Capacity Precision	$\leq 0.1\%$
Heat Capacity Stability	$\leq 0.20\%$ within three months
Power Requirement	220V/110V(-10% ~ 10%), 50/60Hz
Main Body Size (mm)	440X550X460
Water Tank Size (mm)	390X550X440
Weight (kg)	50

**ELAn-50A, Proximate Analyzer**



**High efficiency**

During the active analysis, the operator can pre-weigh the next batches of samples.

**Improved accuracy**

Sample weighing at room temperature by external and internal balances, effectively reduced the influence caused by balance drift.

**Safe operation**

Specially designed volatile matter crucible together with unique auto-sample loading mechanism to avoid the operation of replacement or removal the crucible cover under high temperature thus to avoid the heat emission and hurt to the operator.

**Operation cost saving**

Gas supply by compressed air, no oxygen and nitrogen required.

**Easy to operate and handle**

- Easy-to-use Windows-based software, after finishing the sample weighing, operator's attendance is not needed.
- Easy data handling, real time data can be transmitted by internal network.
- With CAN bus interface, several proximate analyzers can be controlled by a single PC.
- Connect with balance and network by standard interlace RS232.

Model	ELAn-50A
Sample Weight	0.5~1.1 mg
Furnace Temperature	Room temperature ~ 1000°C
Temp. Control Precision	±3°C (Moisture) ±5°C (Ash, Volatile matter)
Max Sample	18
Power Requirement	220V(-15%~10%), 50Hz
Gas Requirement	Compressed Air
Max Power	4.5kW
Standard Layout	Proximate Analyzer, Lenovo PC (Desktop), Printer
Size	845x563x596mm
Net weight	146kg

**ELAn-4A, Sulfur Analyzer**



- A super wide uniform temperature zone (90mm) ensures complete combustion of coal samples.
- Dilated and thickened platinum electrode plates. with bigger interface. make the Integration more accurate and complete.
- With CAN bus, several sulfur analyzers can be controlled by a single PC, balane; could be connected & data could be trransmitted by real-time network transmission.

Model	ELAn-4A
Sulfur Determination Range	(0.01-35)%
Temp. Control Precision	±3°C
Sulfur Resolution	0.01%
Furnace Temperature	1150°C for coal. 900°C for oil
Sample Size	(8~110)mg
Analysis Time	3~6min/sample
Number of Samples	1
Power Requirement	220V(-15%~10%), 50Hz
Max Power	3kW
Standard Layout	Sulfur Analyzer, Lenovo PC (Desktop), Printer
Size	680x520x395mm
Net weight	78kg

**ELAn-12, Infrared Sulfur Analyzer**



**Highlights:**

**High automation, safe operation**

Up to 12 samples can be loaded and after that, the operator can be freed for other tasks. The analyzer will finish the whole test process automatically, including automatic sample introducing, testing and sample discarding, the operator needs not to operate under high temperature.

**Adding and replacing samples during active analysis available**

Unique auto-sample loading device makes sample adding and replacing available when active analysis is conducting.

**Ultra-low drift infrared cell**

With high-performance infrared light supply and superior optical glass as well as pure gold infrared path. the drift of the infrared cell,

**Convenient to replace filter wool**

To take filter boat out by sample introducing rod automatically, thus makes the replacement of the filter wool more convenient.

**Extended working life of sample sending rod**

Sample introducing rod with self-protection system, after presenting the samples, the rod will retreat to the low temperature zone automatically, so the working life of the rod is greatly extended.

**Less gas consumption**

With gas supplied by sample introducing rod which is hollowly designed, the software could decide whether to supply gas or not according to the position of the sample introducing rod, so, the oxygen consumption is lowered and operation cost is reduced.



**Hollow sample introducing rod**

9 Patents, Infrared Sulfur Analyzer is the only type of sulfur analyzer which can replace the filter wool conveniently

**Application:**

infrared Sulfur Analyzer can be used to determine the total sulfur content in coal , coke and other combustibles.

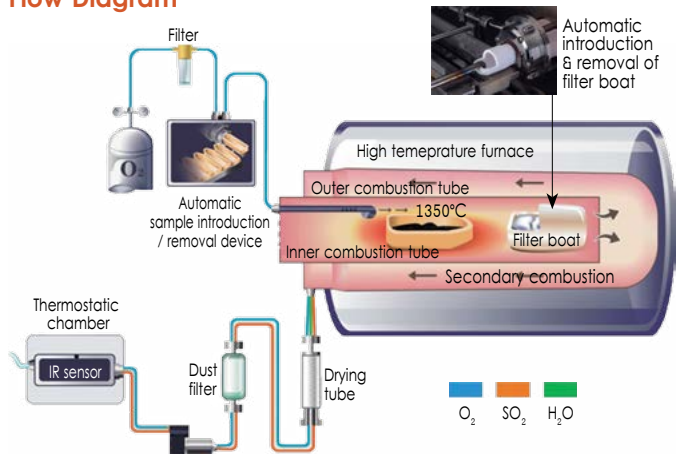
**Conformance with Standards:**

ISO 19579:2006 Solid mineral fuels Determination of sulfur by IA spectrometry  
 ASTM D4239-10 Standard Test Method for Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion Methods

**Easy to operate and handle**

- Easy-to-use Windows-based software.
- Easy data handling, real time data can be transmitted by internal network.
- With CAN bus interface, several sulfur analyzers can be controlled by a single PC.
- Connect with balance and network by standard interface RS232.

**Flow Diagram**



Model	ELAn-12
Method	Infrared absorption
Test Range	0,01%-50% (Can be extended to 100% according to customers requires)
Sample Weight	200-500 mg
Recommended Weight	300 ± 50 mg
Analysis Time per Sample	≤ 110s
Max Sample	12
Furnace Working Temp.	1350°C
Power Requirement	220V(-15%~10%), 50Hz
Gas Requirement	Oxygen purity 99.5%
Max Power	4kW
Standard Layout	Analyzer, Lenovo PC (Desktop), Printer
Size	822x604x636mm
Net weight	108kg

## ELAn-18, Proximate Analyzer



### Dual furnaces design

Low temperature furnace for moisture test, high temperature furnace for ash and volatile matter test.

### High test efficiency, continuous test available

Unique test mode of conducting moisture and ash test simultaneously, it can perform moisture and ash analysis in different furnaces, batch analysis of all the test indexes doesn't need to wait for furnace cooling to avoid time wasting. During the active analysis, operators can pre-weigh the next batches of samples.

### Improved accuracy

Sample weighing at room how temperature by external and internal balances, the influence caused by balance drift has been effectively reduced.

### Safe operation

Specially designed volatile matter crucible together with unique auto-sample loading device to avoid the operation of replacement or removal crucible covers under high temperature thus to avoid the heat emission and hurt to the operator.

### Operation cost saving

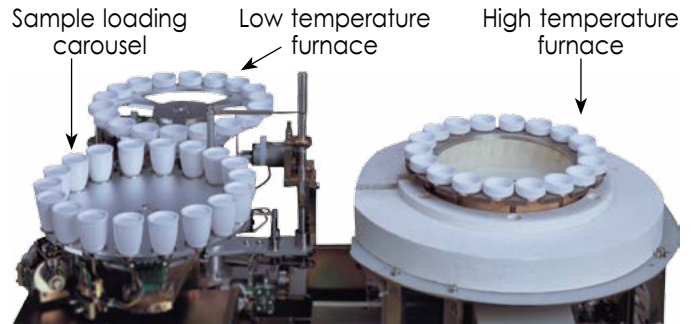
Gas supply by compressed air, no oxygen and nitrogen required.

### Easy to operate and handle

- Easy-to-use Windows-based software, after finishing the sample weighing, operator's attendance is not needed.
- Easy data handling, real time data can be transmitted by internal network.
- With CAN bus interface, several proximate analyzers can be controlled by a single PC.
- Connect with balance and network by standard interface RS232.

15 Patents, including 7 invention patents, proximate analyzer is suitable for batches with large quantity of samples.

### Dual furnace design, test moisture and ash simultaneously



Crucible clamping device



Weighing at ambient temperature

Model	ELAn-18
Sample Weight	0.5~1.1 mg
Furnace Temperature	Room temperature ~ 1000°C
Temp. Control Precision	±3°C (Moisture) ±5°C (Ash, Volatile matter)
Max Sample	18
Power Requirement	220V(-15%~10%), 50Hz
Gas Requirement	Compressed Air
Max Power	4.5kW
Standard Layout	Proximate Analyzer, Lenovo PC (Desktop), Printer
Size	878x613x601mm
Net weight	149kg



## ELAn-35, Carbon Hydrogen & Nitrogen Analyzer



### No disassemble or cooling required, easy to replace the combustion crucible.

For the elemental analyzers, the combustion residues will remain in the combustion crucible, after some quantity of tests (about 100), it needs to be replaced. For other brands, it is complex and time wasting, operators need to wait for the furnace cooling down and disassemble the analyzer, then replace the crucible manually. For us operators only need to click on the software, the crucible to be replaced will be presented from the combustion furnace to the crucible replacing door automatically. Once the crucible is replaced, tests can be conducted immediately.

### Convenient to replace the reagent furnace

Separate design of combustion furnace and reagent furnace makes the replacement of the reagent easy and convenient.

### Ultra-low drift infrared cell and thermal conductivity cell

With high-performance infrared light supply and superior optical glass, precise thermostatic control as well as pure gold infrared path, the drift of the infrared cell and TC cell have been optimized which are developed and designed by US.

### Low operation cost

Purity of 99.95% oxygen and nitrogen can meet the test requirement.

During the test, He consumption is only 0.7L/min.

### High automation

Up to 34 samples can be loaded and after that, operators can be freed for other tasks. The analyzer will finish the whole test automatically.

### Improved test precision

Samples are carried into the combustion furnace by oxygen blow, which can make sure all the gases obtained by combustion are collected into the gas chamber to improve the test precision.

### Shorten preheating time

Preheating time is less than 2.5 hours.

### Easy to handle

- Easy-to-use Windows-based software.
- Easy data handling, real time data can be transmitted through internal network.
- With CAN bus interface, several elemental analyzers can be controlled by a single PC.
- Connect with balance and network by standard interface RS232.

10 patents (7 Invention patents), the only type of elemental analyzer which can replace the combustion crucible automatically

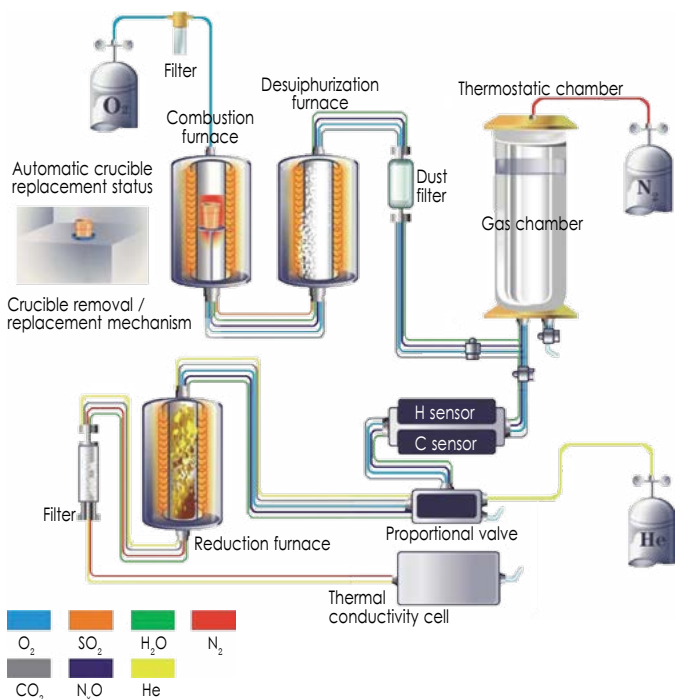
### Application:

Carbon Hydrogen & Nitrogen Analyzer can be used to determine the the carbon, hydrogen and nitrogen content in coal, coke and other combustibles.

### Conformance with Standards:

15029541 Solid mineral fuels Determination of total carbon, hydrogen and nitrogen content Instrumental method  
 ASTM D5373-02 Standard Test Method for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Laboratory Samples of Coal and Coke  
 61311-476-2008 Standard Test method for Determination of Carbon and Hydrogen of Coal

### Flow Diagram



Model	ELAn-35
Method	Carbon & Hydrogen: infrared absorption Nitrogen: Thermal conduction
Measuring Range	Carbon (0.02%~100%) Hydrogen (0.02%~50%) Nitrogen (0.01%~50%)
Max Sample	34
Single Sample Analysis Time	≤ 5 min
Sample Weight	75-105mg (90mg recommended)
Repeatability	Cad≤0.5% Had≤0.15% Nad≤0.08%
Gas Requirement	Combustion Supporting Gas: Oxygen Purity: ≥ 99.5% Driving Gas: Nitrogen Purity: ≥ 99.5% Carrier Gas: Helium Purity: ≥ 99.99%
Power Requirement	220V(-15%~10%), 50Hz
Max Power	4.5kW
Standard Layout	Analyzer, Lenovo PC (Desktop), Printer
Size / Net weight	680x630x980mm / 127kg

**MOIST-41, Moisture Tester**



**Wide application scope, high test capacity**

Applicable to all varieties and types of coke and coal. It can test 18 samples for moisture content on air dried basis or 9 samples for total moisture each time and is capable of testing several batches of samples continuously.

**Satisfying umpire analysis**

With the provision for passing a current of dry nitrogen through it & adopting light-wave heating, which features high heating rate and even heat distribution. the equipment satisfy umpire analysis.

**High automation**

Automatic weighing function could display real-time sample weight & calculate test results automatically.

**Easy to handle**

With CAN bus, several moisture testers can be controlled by a single PC balance could be connected and data could be transmitted by real-time network transmission.

**Application:**

Moisture Tester can be used 10 determine moisture content on air dried basis and total moisture in coal, coke, petroleum. minerals and so on.

**Conformance with Standards:**

ISO117722 Solid mineral fuels Hard coal Determination of moisture in the general analysis test sample by drying in nitrogen ASTM D5142-09 Standard Test Method for Proximate Analysis of the Analysis Sample of Coal and Coke by Instrumental Procedures GB/T212-2008 Standard Test Method for Proximate Analysis of coal GB/T211-2007 Determination of total moisture in coal.

Model	MOIST-41
<b>Max Sample</b>	18 samples (Inherent moisture) 9 samples (total mo moisture)
<b>Sample Weight</b>	(0.9-1.1)g for moisture content on air dried basis; (10-12)g for total moisture
<b>Furnace Temperature</b>	105°C ±0 110°C
<b>Temp. Control Precision</b>	±3°C
<b>Analysis Time</b>	(20-40)min
<b>Power Requirement</b>	220V(-15%-10%), 50Hz
<b>Max Power</b>	1.5kw
<b>Size / Net weight</b>	542x506x564mm / 53kg
<b>Standard Layout</b>	Moisture Tester / Lenovo PC (Desktop) / Printer

**ASH-10, Ash Fusion Tester**



**High automation**

Automatically loading the cone support at ambient temperature. Automatically identifying four characteristic temperatures.

**More sample loading**

Up to 9 samples can be loaded once.

**Real-time monitor test process**

Equipped with CCD camera technology, the whole test process will be monitored in real time, the images will be shown on the computer screen & stored.

**Accurate test result**

HD color camera makes the images clearer, thus the identification of characteristic temperature can be more accurate.

**Recheck the test result available**

On completion of the test, the stored image can be replayed for finding the characteristic temperature manually.

**Precisely controlled furnace temperature**

**Low gas consumption**

**Easy to operate and handle**

- Easy to use Windows based software.
- Easy data handling, real time data can be transmitted through internal network.
- With CAN bus interface, several ash fusion testers can be controlled by a single PC.

**Application:**

Can be used to determine the four characteristic temperatures (DT, ST, HT & FT) of coal and coke ash.

**Conformance with Standards:**

ASTM D1857-04 Standard Test Method for Fusibility of Coal and Coke Ash. ISO540 (2004)Hrd coal and coke Determination of ash fusibility. GB/T2192008 Standard Test Method for Fusibility of Coal.



Model	ASH-10
<b>Samples Number</b>	5 (9 samples available according to customers requires)
<b>Max. Temperature</b>	1600°C
<b>Temp. Resolution</b>	1°C
<b>Furnace Material</b>	Mullite
<b>Heating Element</b>	Silicon, Molybdenum rods
<b>Heating Rate (User-defined available)</b>	20±5°C/min(≤900°C) 5±1°C/min(>900°C)
<b>Test Atmosphere</b>	Reducing atmosphere: Gas flow method; Oxidizing atmosphere: Air flow method
<b>Power Requirement</b>	220V (-15%-10%), 50Hz
<b>Max Power</b>	2.4kw
<b>Size / Net weight</b>	550x850x843mm / 100kg
<b>Standard Layout</b>	Ash Fusion Tester / Lenovo PC (Desktop) / Printer



**FP-640, Flame PhotoMeter**

- 7 inch multi color touch screen
- Automatic Calculation of correlation coefficient
- Flame out protection device
- LPG burning gas
- Direct concentration read-out
- Pre-selection of flame sizes
- Measuring range changing
- Air compressor including.

Model		FP-640	FP-640A	FP-640B	FP-640C	FP-640D	FP-640E	FP-640F
<b>Sensitivity</b>	K	0.01ppm						
	Na	0.01ppm						
	Li	-	Optional	0.1ppm	-	-	0.1ppm	
	Ca	-	-	-	2ppm	-	2ppm	
	Ba	-	-	-	-	6ppm	-	6ppm
<b>Range</b>	K	0-100ppm						
	Na	0-160ppm						
	Li	-	Optional	0-100ppm	-	-	0-100ppm	
	Ca	-	-	-	0-1000ppm	-	0-1000ppm	
	Ba	-	-	-	-	0-3000ppm	-	0-3000ppm
<b>Linearity</b>	K	0.195ppm (0.39-3.12ppm)						
	Na	0.69ppm (1.15-9.2ppm)						
	Li	-	Optional	0.15ppm (0.25-5ppm)	-	-	0.15ppm (0.25-5ppm)	
	Ca	-	-	-	3ppm (5-100ppm)	-	3ppm (5-100ppm)	
	Ba	-	-	-	-	9ppm	-	9ppm
<b>Repeatability</b>	1% CV for 20 consecutive samples							
<b>Respond time</b>	<Bs							
<b>Sample uptake</b>	<6L/min							
<b>Package</b>	G.W 17kg 570X530X380mm 0.115M <sup>3</sup>							

**EDX-POCKET** are designed for on-site analysis in the wild, featuring small, light, precise, rapid, beautiful, safe, convenient, waterproof & long-standby time. Equipped with digital multi-channel technology, it greatly improves the detection limit and stability of the instrument, expanding the application fields. The products has passed strict testing and inspection, and all index are accorded with the related technological requirements, reaching the international advanced level.



EDX-POCKET4-3

#### Application Fields

- For RoHS & hazardous elements testing of super huge articles
- For on-site testing of electronic components and parts
- For on-site random testing of various kinds of toys, children's products, and gifts
- For packing material testing and verifying
- For various kinds of batteries hazardous substance testing and verifying
- For hazardous elements testing in cloth, shoes material etc.
- For hazardous elements testing in electroplate liquids
- For hazardous elements testing in jewelry, ornaments etc.

#### Testing Advantages for Application

##### 1. Testing super huge articles

Due to the huge size of the specimen it can not be tested by common desktop instrument. This problem has been solved by this handheld instrument.

##### 2. Testing toys

Because of various kinds of toys, it is impossible for repeated sampling in labs. Now this handheld analyzer is applied for on-site testing. Thus it greatly reduces the production cycle.

##### 3. Testing package materials

Because of the large sizes and large amounts of printing ink, it is impossible for rapid & comprehensive testing with desktops. Now these problems can be solved by handheld analyzer.

#### EDX-POCKET4-3, Handheld Hazardous Elements Analyzer

##### Performance Advantage

###### Perfect performance as desktop

Small power integral end-window miniature X-ray tube, large dimensional beryllium window Silicon Drift Detector (SDD, the best detector in the world), and miniature digital signal multi-channel processor, greatly reduce the testing time and testing deviation, & improve the testing precision, requiring similar performance as the desktop.

###### Small & light body, easy for carry

Operation of on-site and in-situ detection at anytime or anywhere.

###### Rapid & nondestructive detection

1-2secs for rapid detection, more than 10secs for precise detection, whose results are similar to the results gotten in lab. No destruction to samples.

###### Detection of light elements

Helium-charging system (optional) greatly expands measurable range (analyze elements from Mg), satisfying the requirements of customers for light elements detection.

###### HD camera for convenient observation

Observation of testing position at any time.

###### Direct testing

It can directly analyze on the surface of the analyses, without needing of preparing samples.

###### Simple deviation calibration

Built-in intensity calibration method ensures simple deviation calibration caused by different geometry shapes and none homogeneous structure density.

###### Professional software for easy operation

It is equipped with professional hazardous elements analysis software. Combining FP with EC software, it is easy for operation and acquiring wider application fields.

###### Faster data transmission

Built-in system, HD touch screen (resolution 640x480), digital multi-channel technology, and SPI data transmission technology, effectively accelerate the data transmission and improves the counting ability.

###### Multiple safety protection, caring for health

Automatically shut-down of X-ray light tube within 2 seconds with no sample in testing; the radiation level is far lower than the international safety standard; compliment away test safety cover.

###### Powerful battery & convenient charging

Compliment away two Lithium batteries (7800mAH), it can continuously work for 8 hours all together. It is convenient for charging because of wide voltage AC charger and Onboard charger.

###### Multiple protections

Waterproof and dust proof function provide the ability of working under high temperature and humidity. Its body is manufactured with high strength military material, which is moisture proof, shockproof, and pressure resistant.

###### Simultaneously testing elements

It can detect the elements such as Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Se, Cd, Sb, Hg, Pb. And it can detect more elements according to the customers' requirements.





### Application:

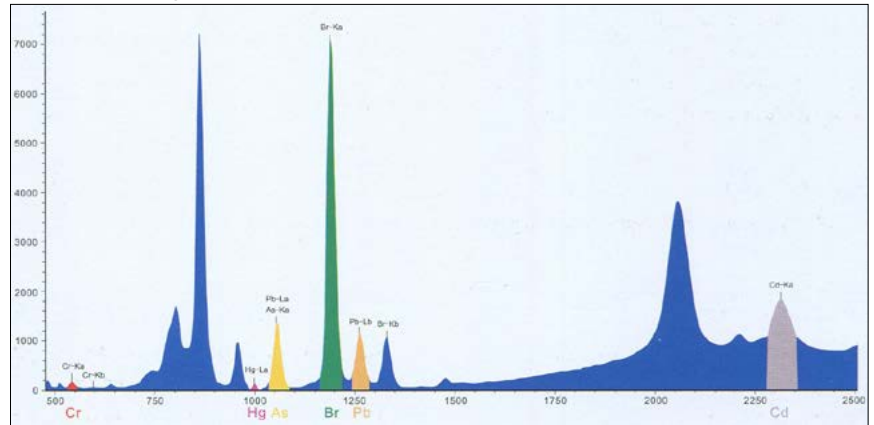
EDX-Pocket-III is widely used in toy safety testing, electrical and electronic and RoHS testing etc. After the issue of European Union toy statement, the instrument quickly finds its position in toy safety testing. It can be used for quantitative & qualitative testing for electronic components and parts; for third-party assessment to electronic components and raw material suppliers; for testing and verifying of packing material; for RoHS testing of various kinds of batteries; for testing of various kinds of toys, children's products, and gifts; for unlimited testing of big objects; for accurate positioning of precise components; for nondestructive testing of valuables.

### Application Advantages for RoHS:

- Equipped with newest SOD (minimum resolution < 139eV), it achieves more precise testing to trace hazardous elements.
- Equipped with HD camera, it supports more accurate positioning, achieving precise testing to tiny articles, such as pins.
- Newly software provides more effective algorithm & more functions, increasing testing precision of hazardous elements.
- Helium-charging system (Optional) greatly expands testing precision to halogen, especially Cl elements.

### Testing Data:

EC681 K Testing Result



Content Unit	PPM	EC681K					
Number	Working Curve	As	Br	Cd	Cr	Hg	Pb
1	PE	30.5568	775.628	140.4	24.194	103.15	100.973
2	PE	30.4782	770.526	140.08	24.764	100.52	99.2205
3	PE	31.5777	766.347	135.44	24.294	98.674	102.973
4	PE	29.9576	769.997	136.38	25.216	100.2	100.845
5	PE	30.3706	769.872	133.74	24.216	101.08	102.973
6	PE	30.6149	771.922	134.2	23.975	100.79	103.976
7	PE	30.391	771.009	135.32	24.5	100.99	101.487
8	PE	30.3195	768.284	136.61	25.167	99.502	99.5987
9	PE	30.6208	769.656	135.56	24.196	103.65	97.705
10	PE	30.8942	768.275	133.53	24.699	98.026	103.761
<b>True value</b>		29.1	770	137	23.7	98	100
<b>Average value</b>		30.5781	770.152	136.13	24.522	100.66	101.351
<b>Standard Deviation S<sub>n</sub></b>		0.40532	2.363	2.2759	0.4059	1.6701	1.9819
<b>Triple S<sub>n</sub> Value</b>		1.21595	7.08901	6.8276	1.2178	5.0104	5.94569
<b>Range Rpm</b>		1.62	9.28	6.87	1.24	5.62	6.27
<b>Relative Standard Deviation</b>		1.33%	0.31%	1.67%	1.66%	1.66%	1.96%
<b>Testing Deviation Σ (%)</b>		5.08%	0.02%	-0.64%	3.47%	2.71%	1.35%



EDX-POCKET4-5

### Application Field

EDX-POCKET-V is widely used for various kinds of alloy analysis. The analytical precision is 2 to 3 times more precise than common alloy analyzer. And testing samples include solid, debris, or any other tangible alloy objects. It can accurately analyze all kinds of high & low alloy steel, stainless steel, tool steel, chromium/ molybdenum steel, nickel alloy, cobalt alloy, nickel/cobalt heat resistant alloy, titanium alloy, copper alloy, bronze, zinc alloy, tungsten alloy etc. Through determination of other alloy elements, it also can identify the light alloys such as Al, Mg and can be used for reliable identification and confirmation of material. It can be applied for incoming material determination in iron & steel smelting, boiler and other high-temperature and high-pressure industries, to ensure the quality of the material. It also can be used for alloy content analysis in shipbuilding, aerospace and other high-tech industries, to ensure the quality and safety of the product. It can be applied in power plant and other national economy and people's livelihood industries for components determination and safety of the devices. While according to scrap metals recycling and utilization industries, it can quickly analyze and categorize a large number of scrap metals, offering the necessary information for both sides in purchasing & selling. It is the powerful weapon for metal & steel identification in

### EDX-POCKET4-5, Handheld Alloy & Stainless Steel Analyzer

#### Performance Advantage

##### Perfect performance as desktop

Small power integral end-window miniature X-ray tube, large dimensional beryllium window Silicon Drift Detector (SDD, the best detector in the world), and miniature digital signal multi-channel processor, greatly reduce the testing time and testing deviation, and improve the testing precision, requiring similar performance as the desktop.

##### Small & light body, easy for carry

Small body. Easy to carry. Convenient for wild work. Can operate on-site and in-situ analysis at anytime or anywhere.

##### Rapid & nondestructive detection

1-2secs for rapid detection, More than 10secs for precise detection, whose results are similar to the results gotten in lab, No destruction to samples.

##### Detection of light elements

Helium-charging system (optional) greatly expands measurable range (analyze elements from Mg), satisfying the requirements of customers for light elements detection.

##### Direct testing

It can directly analyze on the surface of the analytes, without needing of preparing samples.

##### Simple deviation calibration

Built-in intensify calibration method ensures simple deviation calibration caused by different geometry shapes and none homogeneous structure density.

##### HD camera for convenient observation

Observation of testing position at any time.

##### Professional software for easy operation

It is equipped with professional alloy analysis software. Combining FP with EC software, it is easy for operation and acquiring wider application fields.

##### Faster data transmission

Built-in system, HD touch screen (resolution 640x480), digital multi-channel technology, and SPI data transmission technology, effectively accelerate the data transmission and improve counting ability.

##### Multiple safety protection, caring for health

Automatically shut-down of X-ray light tube within 2 seconds with no sample in testing; the radiation level is far lower than the international safety standard; compliment away test safety cover.

##### Powerful battery & convenient charging

Compliment away two Lithium batteries (7800mAh), it can continuously work for 8 hours all together. It is convenient for charging because of wide voltage AC charger and Onboard charger.

##### Multiple protections

Waterproof and dust proof function provide the ability of working under high temperature and humidity. Its body is manufactured with high strength military material, which is moisture proof, shockproof, and pressure resistant.



renewable and re usage of scrap metals resources industry, which greatly contributes to the development of resource recycling industry. It also can be applied for recovery of steel backlogged in warehouse, classification of various metals in salvage station, and cutting of turnery and debris.

## Application Case

### 1. Reliability Analysis

Simply trigger the instrument; the results of material contents will come out. Now you do not need the material reports, the only need that is to have our fourth generational handheld EDX-POCKET-V. With 10 seconds of nondestructive testing to the sample, you can know the quality and quantity of the material, which can prevent the cheat from the material provider.

### 2. Quality Guarantee/Quality Control

During the process of alloy material production and machinery equipment manufacturing, material identification and element testing is indivisible. To prevent the lost caused by the mixture of raw material, the fourth generational EDX-POCKET-V provides professional nondestructive testing, which effectively prevent the lost from mixture of raw material.

### 3. Recovery of Scrap Metal

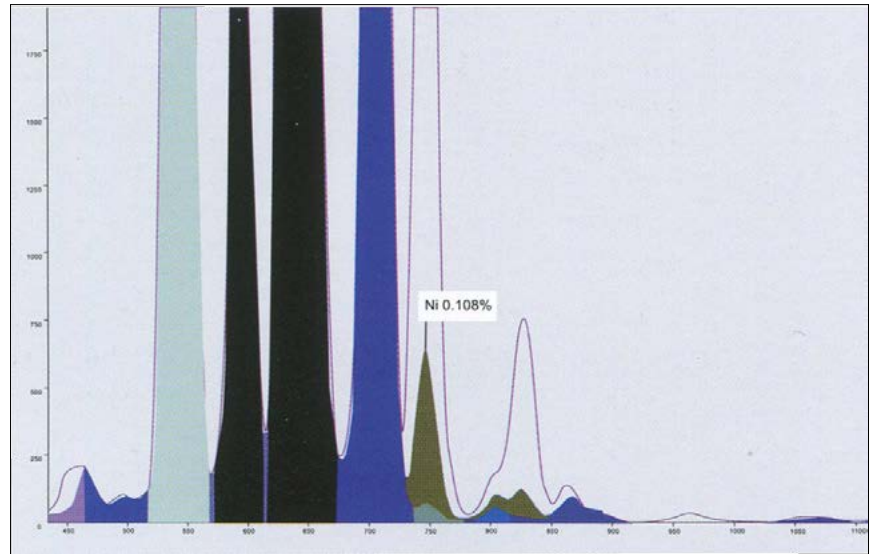
The fourth generational EDX-POCKET-V provides the immediate nondestructive testing from titanium alloy to nickel alloy, widely applied for classification of various kinds of alloy material.

## Core Application Field

Iron and steel Recovery of scrap metals  
Machinery manufacture & process Boiler pressure vessel.

## Analytical precision

Measurement Precision of Main Elements in Stainless Steel (304) Testing for 10 seconds.



Amplified Figure of Ni Content as 0.108% in Stainless Steel

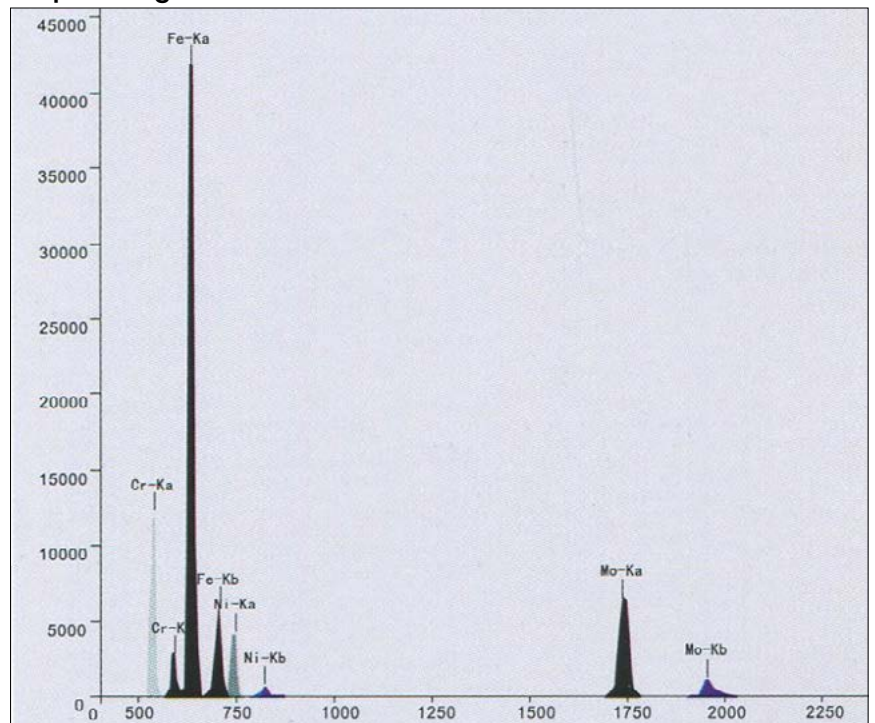


Figure of Stainless Steel (316) Sample

Sample	Cr	Mn	Ni	Cu	Mo
<b>Average value</b>	18.232	0.926	8.072	1.236	0.288
<b>Standard Deviation</b>	0.072	0.055	0.086	0.043	0.008
<b>Relative Standard Deviation (%)</b>	0.395	5.936	1.067	3.506	2.693

## Alloy Testing Advantages

- Rapid nondestructive testing. 1-2secs for rapid detection. More than 10secs for precise detection, whose results are similar to the results gotten in lab
- Professional alloy analysis software, which is easy for operation by commons. Free switch between Chinese and English interface.
- Multiple alloy analysis modes, including "quantitative analysis (ppm)", "qualitative analysis" etc. Built-in multi-calibration methods can calibrate deviation caused by different geometric states
- Unique adjustable fundamental parameter technology provides more analytical modes and more precise modes for customers.
- Dynamic information-match function displays testing results, sample numbers, and matching information on the interface simultaneously, which can be switched between each other.





**EDX-POCKET4-9**

## EDX-POCKET4-9, Heavy Metals in Soil Handheld Analyzer

### Performance Advantage

#### Perfect performance as desktop

Small power integral end-window miniature X-ray tube, large dimensional beryllium window Silicon Drift Detector (SDD, the best detector in the world), and miniature digital signal multi-channel processor, greatly reduce the testing time and testing deviation, and improve the testing precision, requiring similar performance as the desktop.

#### Small & light body, easy for carry

Operation of on-site and in-situ detection at anytime or anywhere.

#### Rapid & nondestructive detection

1-2secs for rapid detection, More than 10secs for precise detection, whose results are similar to the results gotten in lab, No destruction to samples.

#### Detection of light elements

Helium-charging system (optional) greatly expands measurable range (analyze elements from Mg), satisfying the requirements of customers for light elements detection.

#### HD camera for convenient observation

Observation of testing position at any time.

#### Direct testing

It can directly analyze on the surface of the sample, without needing of preparing samples.

#### Professional software for easy operation

It is equipped with professional alloy analysis software. Combining FP with EC software, it is easy for operation and acquiring wider application fields.

#### Simple deviation calibration

Built-in intensity calibration method ensures simple deviation calibration caused by different geometry shapes and none homogeneous structure density.

#### Faster data transmission

Built-in system, HD touch screen (resolution 640x480), digital multi-channel technology, and SPI data transmission technology, effectively accelerate the data transmission and improve counting ability.

#### Powerful battery & convenient charging

Compliment away two Lithium batteries (7800mAh), it can continuously work for 8 hours all together. It is convenient for charging because of wide voltage AC charger and Onboard charger.

#### Simultaneously testing elements

It can detect the elements such as Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Se, Cd, Sb, Hg, Pb. And it can detect more elements according to the customers' requirements.

#### Multiple safety protection, caring for health

Automatically shut-down of X-ray light tube within 2 seconds with no sample in testing; the radiation level is far lower than the international safety standard; compliment away test safety cover.

#### Multiple protections

Waterproof and dust proof function provide the ability of working under high temperature and humidity. Its body is manufactured with high strength military material, which is moisture proof, shockproof, and pressure resistant.

### Applications in Environmental Protection

EDX-POCKET-IX is applied for in-situ testing and repair analysis in soil pollution. It features the characteristics of small & light body, which can be held in hands by common people when measuring. It has been widely applied in various kinds of geologies. Testing samples include slag, rock, soil, mud, with forms of solids, liquids, dust, etc.

### Application Advantages for Heavy Metals

- Applied for soil pollution testing caused by mercury, cadmium, lead, arsenic, copper, zinc, nickel, cobalt, & vanadium
- Detecting & mapping pollution areas
- Rapid discovering and solving abnormal conditions
- Rapid tracing of abnormal pollution and effectively searching and circling pollution areas
- Rapid on-site & in-situ testing of heavy metals in soil
- Rapid classifying various kinds of residential lands, commercial lands and industrial lands into 3 levels, named level 1, level 2 and level 3
- Connection of PDA to GIS system for drawing maps
- Equipped with digital multi-channel technology, it operates more rapid qualitative and quantitative analysis. Designed with high statistical counting rate, it greatly improves the stability of the instrument which is much more important for heavy metals testing, because of the low content of heavy metals in soil.
- Outstanding resolution greatly reduces the interference of arsenic and iron to lead and nickel. Its extremely low detection limit perfectly fits to heavy metals detection for environmental protection.





### Application Cases:

**1. Heavy metals detection in soil**  
Simply trigger the instrument, and you will know the trace metal elements in soil.

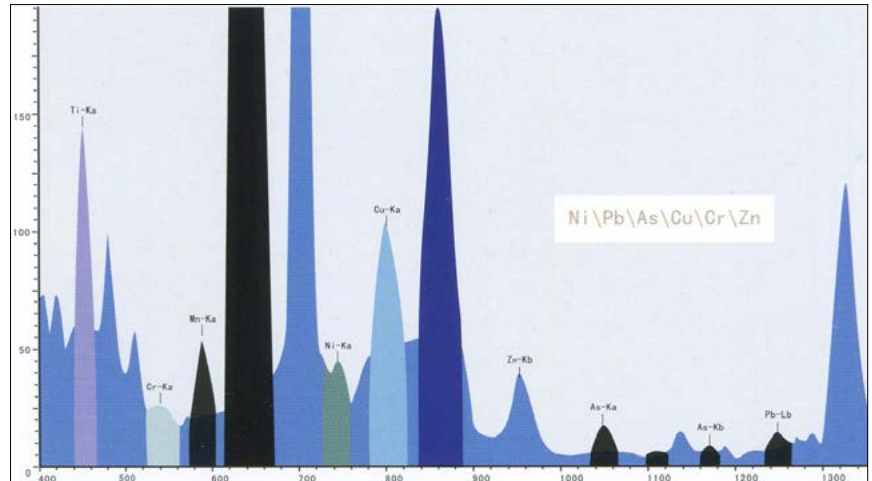
**2. Emergency treatment after heavy metal pollution**

Can quickly on-site trace the pollution and circle the polluted boundary.

**3. Screening of heavy metals polluted samples in large amounts**

The fourth generational handheld EDX-POCKET-IX can circle the key pollution areas in very short time, for key management.

Can rapidly distinguish the polluted areas and non-polluted areas .It improves the screening and productive rate integrally, & greatly reduces the cost of chemical examination and transportation.



The figure of sample testing for 30 seconds

**Analytical Precision:** Measuring precision of main elements in GBW07425 testing for 30 seconds.

Sample	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	As	Se	Sb	Hg	Pb	Cd
07425_1	3811	73	52	566	2.95	10	26	25	63	6	0	1	0	26	0
07425_2	4056	72	54	541	2.95	9	28	18	72	5	0	0	0	28	0
07425_3	3724	68	45	555	2.92	11	28	25	69	8	0	1	0	20	0
07425_4	3980	51	65	602	2.94	12	29	27	70	7	0	0	0	26	0
07425_5	4036	62	51	580	2.95	10	28	29	75	5	0	0	0	27	0
07425_6	4044	75	55	564	2.95	14	25	16	64	5	0	0	0	25	0
07425_7	3794	63	58	575	2.97	14	30	26	70	5	0	0	0	24	0
<b>Average value</b>	3939	65	55	570	3.00	12	28	24	70	6	0	0	0	25	0
<b>Standard deviation</b>	144	9	7	21	0	2	2	5	4	1	0	0	0	3	0
<b>RSD/%</b>	3.64	13.14	12.28	3.72	0.51	17.71	5.98	22.32	5.19	22.79	0.00	244.95	0.00	11.31	0.00

### Performance index:

Models	EDX-Pocket-III/V/VII/IX
<b>Measuring range</b>	Mg to U
<b>Processor and RAM</b>	CUP: 667MHz RAM:256M Maximum expanded storage: 32G Standard configuration: 2G , for storage of large amounts of data
<b>Analytical Range</b>	ppm-99.99%
<b>Testing time</b>	3-30 seconds
<b>GPS, WIFI</b>	Built-in GPS & WIFI system
<b>Battery</b>	Chargeable lithium battery, with capacity of 7800mAh, continuously providing 8 working hours; Equip with wide voltage (110V-220V) general adapter
<b>Testing object</b>	Solid, liquid, powder
<b>Detector</b>	25mm <sup>2</sup> ,SDD
<b>Detector resolution</b>	Minimum resolution: 139eV
<b>Excitation source</b>	Target: Ag High voltage: 5-40kv Tube current: 1-100 μA
<b>Collimator and filter</b>	Collimator kinds: 2 (4.0mm & 2.0mm dia.) Filter types: 6 Automatic switch: YES
<b>Video system</b>	CMOS HD camera
<b>Screen</b>	Semi-transmission & semi-reflection LCD touch screen, resolution 640x480
<b>Detection limit</b>	Detection limit: ppm level
<b>Safety</b>	Self-contained password administration
<b>Testing window</b>	Ø12mm
<b>Gas charging system</b>	Optional Helium charging system
<b>Operational environment</b>	Humidity ~90%
	Temperature: -20°C~+50°C
<b>Size</b>	234x306x82mm(LxHxW)
<b>Weight</b>	Net weight:1.6kg Battery: 0.3kg



### EDX-POCKET4-7, Handheld Mineral Analyzer

The new generational EDX-POCKET-VII Series are designed according to the applications of on-site X-ray analysis in the wild, featuring small and light body, which can be held in hands by common people when measuring. It is super small, super light, super beautiful, super safe, super convenient, super long standby time, super waterproof, super precise and super fast. Digital multi-channel technology make the instrument have better detection limit, better stability, and wider application fields.

This Series of products has passed strict testing and inspection, and all index are accorded with the related technological requirements, reaching the international advanced level.

#### Performance Advantage

##### Perfect performance as desktop

Introducing three core technology of small power window integrated miniature X-ray tube, large dimension beryllium window electric-cooling SDD detector (the best detector in the world), and miniature digital signal multi-channel processor, greatly reduce the testing time and test deviation, and improve the detection precision, which make it have the similar performance as the desktop.

##### Small body, easy to carry and operate

Small body. Easy to carry. Convenient for wild work. Can operate on-site and in-situ analysis at anytime or anywhere.

##### Nondestructive detection

No destruction to samples.

##### Fast detection

Instrument not only can operate fast detection with handheld type within 1-2 seconds, but also can operate longtime precise detection with desktop type, having the similar precision as the laboratory detection after 10 seconds.

##### Newly added light elements detection function

Compared to handheld X-ray fluorescence analyzer of the third generation ,it is added the gas charging system, which can charge helium at ordinary pressure .Thus it can detect the elements from Mg, greatly expanded the detecting range of elements, satisfying the requirements of customers according to light elements detection.

##### Direct testing

It can detect the sample directly, no need of samples. It can analyze various kinds of samples, including electronic products, alloy samples, geological and mining, soil, rock, residues, small solid particles, liquid sediments etc.

##### HD camera, more accurate testing

Built-in HD camera, can observe the testing position at any time, which is very important of mineral sample testing.

##### Easy for calibration of deviation

Multi-testing modes installation & free adding of infinite modes, coordinating with automatic testing mode matching functions, it achieves the easy test for one key. Built-in intensify calibration methods, it can calibrate the deviation caused by different geometry shapes & none homogeneous structure density.

##### Professional software, easy to operate

RoHS elements analyzer, alloy analyzer, mineral analyzer, & heavy metals in soil analyzer all are installed with professional software. Brand new software interface and core, combined FP with EC, it has wider application fields.

##### The collimator filter, improving 3 times of efficiency

On the basis of the combination of collimator and filter, increase them from 4 groups to 12 groups, increasing 3 times.

##### Faster data transmission

Embedded Window CE system, HD touch screen (resolution 640x480), digital multi-channel technology, and SPI data transmission, effectively improve the data transmission ability and counting ability, mastering testing data in every environment.

#### Radiation protection, care for health

Triple safety protection function, automatic sensation, automatically shut-down of X light pipe within 2 seconds with no sample in testing; The radiation level is far lower than the international safety standard when working, with no radiation leakage; accompanied with test safety cover.

#### Strong power, convenient to charge

Lithium battery, with maximum capacity of 7800mAH, can continuously work for 8 hours, whose endurance are 2 times longer compared to last three generations .And equip with wide voltage ac charger or vehicular charger ,which ensure the test at any place or any time.

#### Warning instructions prevent for mistaken operation

Equipped with warning instruction system, green light flashes when the power is on and the yellow light flashed when testing, which prevent for mistaken operation.

#### Multiple protection and durable

The instrument has waterproof and dust proof function and can continuously work under high temp. and humidity. Its protection boxes are manufactured with high strength military material, which enjoy with well moisture proof, shockproof, and pressure resistant functions.

## Performance index:

Index	Description
model	The 4 th generation EDX analyzer-EDX-POCKET Series
Analysis method	Energy dispersive X-ray fluorescence analysis method
Measuring range of elements	Mg to U
Simultaneously detect elements	Simultaneously detect tens of elements
Processor and RAM	CUP: 667MHz, RAM:256M , Maximum expanded storage: 32G, Standard configuration: 2G , can store large amounts of data.
Content range	ppm~99.99%
Testing time	3-30 seconds
GPS, WIFI	Built-in system
Battery time	Lithium battery, which can be charged, with maximum capacity of 7800mAH, can continuously work for 8 hours; Equipped with wide voltage (110V-220V) general adapter, can work under alternating current
Testing object	Solid, liquid, powder
Detector	25mm <sup>2</sup> 0.3mil, SDD detector
Detector resolution	Lowest resolution can be 139eV
Excitation source	40KV/100uA-Ag anode window miniature X light tube and high voltage source
Collimator and filter	Collimator of 4.0 or 2.0 diameter, automatic switch of 6 types filter groups. 12 kinds of groups, world's most compound mode, can satisfy various kinds of samples testing
Video system	HD camera
Screen	TFT-LCD touch screen, resolution 640x480
Detection limit	Lowest detection limit accounts to ppm level
Testing window	12mm
Safety	Self-contained password manager mode
Gas charging system	Helium charging at ordinary pressure system
Data transmission	Digital multi-channel technology, SPI data transmission, quick analysis, high counting rate, waterproof miniature USB, which can be connected to desktop computer
Humidity	≤90%
Temperature	-20°C ~ +50°C
Size	234×306×82mm (L×H×W)
Weight	1.9Kg (with battery), 1.6Kg (without battery)

Mineral exploration industry is at the stage of low successful investing rate, upmost risks, & uncertainly profit returns, which brings high risks to investment. With the changes of China's mineral resources detection and mining work strategy from denotative development in the past to connotative development, the government begins to attach importance on effective investment of mineral exploration, promoting the diversification of investment, and reduces the financial investment while encouraging commercial mineral exploration and development.

The framework of China's commercial mineral resources exploration industry has been formed primarily, and the mining right system has been improved gradually .The market is forming and the commercial mineral exploration activities are beginning, which greatly strengthen the exploration and investigation on

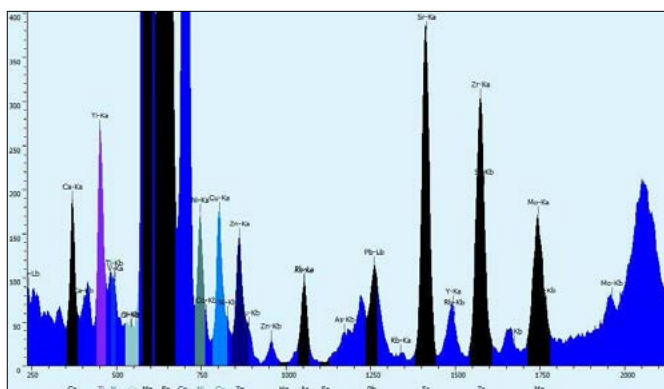
mineral industry. However, to these mineral companies, unlike the national geology exploration bureau, the tools for exploration are not that complete, which restrict the development of these companies if chemical titration method is still used for sample testing, which are with low efficiency and many errors because of human operating.

However, the various analyzers produced by MRC can help the mineral exploration for these companies, improving efficiency, precision, and reducing testing time, which greatly promote the development of mineral exploration.

EDX-POCKET-VII is applied for mineral exploration, in situ testing analysis, & soil content analysis. With the features of small, light, quick analysis, high precision and handheld, it has been widely applied for element sample testing and analysis of various ores and slag. Samples include all natural ores, slag, rocks, soil, slurry from sulfur to uranium, with forms of solid, liquid, and powder.

- Quick category of ore samples. Auto multi-element qualitative and quantitative analysis. Various ore samples choosing and free adding of infinite samples
- Built-in intensified calibration methods, can calibrate the deviation caused by different geometric states and uneven structure density.
- With GPS function, applied in geological exploration and mineral in-situ testing, it can record the data into GPS. In the wild, it can search the satellite signal at any time, recording the longitude, latitude, altitude, and satellite number when testing, and save these data accompanied with the test report.
- It can quickly test a big range of mining area, effectively detect the land belt mode, and survey and map the distribution of ores and mines, doing help for mining rich mineral area in primary.
- Test raw ore, concentrate, and tails when washing the ores.
- Determination of the raw ores & concentrates when purchasing
- Determination of light elements, such as Mg, Al, Si, P, S etc
- Equipped with HD camera, can directly visual requested detection of mineral vein and mineralized points.

- **Geological soil detect**  
Simply trigger the instrument, knowing the trace metal element content.
- **Application of finding ores in the wide**  
Can quickly on-spot follow the abnormalities of mineralization and circle the boundary of ore body. According to the low grade industrial requirements, it can simply get the grade conclusion of boundary. It also can scan and analyze the rock core samples.
- **Mine project analysis**  
The fourth generational handheld Genius 7000 can circle the core mineral vein in very short time for key mining and can quickly tell the grades of ores, sub prime ores, and non-ores .It also can improve the productive rate of the mine and greatly reduce the expenses of chemical examination & transportation.



### Analytical Precision:

#### Measuring Precision of the Main Elements in International Polymetallic Nodule Sample Testing for 30 Seconds.

Sample	Ti	V	Mn	Fe	Co	Ni	Cu
07249-1	1.027	0.055	20.85	18.75	0.352	0.347	0.267
07249-2	1.052	0.053	20.85	18.76	0.351	0.350	0.249
07249-3	1.066	0.055	20.89	18.72	0.347	0.354	0.265
07249-4	1.024	0.054	20.89	18.74	0.347	0.337	0.280
07249-5	1.035	0.058	20.85	18.71	0.359	0.346	0.261
07249-6	1.032	0.053	20.86	18.76	0.350	0.344	0.273
07249-7	1.056	0.057	20.85	18.70	0.353	0.353	0.275
<b>Positive Value</b>	1.043	0.059	20.92	18.71	0.350	0.360	0.280
<b>Average Value</b>	1.042	0.055	20.862	18.734	0.351	0.347	0.267
<b>Standard Deviation</b>	0.0161	0.0018	0.0195	0.0244	0.0039	0.0059	0.0104
<b>RSD/%</b>	1.55	3.35	0.09	0.13	1.12	1.71	3.88

Sample	Zn	As	Pb	Ca	Sr	Zr	Mo
07249-1	0.056	0.018	0.097	2.020	0.122	0.064	0.037
07249-2	0.056	0.018	0.096	2.063	0.122	0.064	0.037
07249-3	0.055	0.018	0.097	2.050	0.123	0.064	0.037
07249-4	0.054	0.018	0.100	2.074	0.121	0.065	0.038
07249-5	0.055	0.018	0.098	2.040	0.120	0.063	0.037
07249-6	0.055	0.018	0.096	2.062	0.122	0.064	0.037
07249-7	0.056	0.017	0.083	2.072	0.122	0.063	0.037
<b>Positive Value</b>	0.057	0.018	0.095	2.010	0.120	0.065	0.037
<b>Average Value</b>	0.055	0.018	0.095	2.054	0.122	0.064	0.037
<b>Standard Deviation</b>	0.0007	0.0003	0.0058	0.0193	0.0010	0.0005	0.0005
<b>RSD/%</b>	1.29	1.89	6.05	0.94	0.80	0.79	1.45



**FP-536D, Automatic COC Flash Point Tester**

The instrument is designed and made as per the National Standard of People's Republic of China GB/T3536-2008 "Test Methods for Flash and Fire Point of Petroleum Products (Cleveland Open Cup Methods)". It is suitable to determine flash point and fire point of petroleum products having a flash point higher than 79 °C, excepting fuel oils.

Model	FP-536D
<b>Power supply</b>	AC 220 V±10%, 50 Hz
<b>Temperature measurement</b>	
<b>Full scale</b>	Ambient temperature to 400°C
<b>Repeatability</b>	≤ 4°C
<b>Reproducibility</b>	≤ 8°C
<b>Resolution</b>	0.1°C
<b>Precision</b>	0.5%
<b>Basic parameters</b>	
<b>Temperature rising speed</b>	as per GB/T3536
<b>Ignition mode</b>	by an electric flame (gas flame is 3 to 4 mm)
<b>Ambient temperature</b>	10~40°C
<b>Relative humidity</b>	≤ 80%
<b>Total power consumption</b>	not more than 400W

**FP-536A, Automatic Cleveland Open Cup Flash Point Tester**

The instrument is designed and made as per the National Standard GB/T3536 "Test Methods for Flash Point and Fire Point of Petroleum Products (Cleveland Open Cup Methods)", and T0651 "Asphalt Flash Point and Fire Point Test (Cleveland Open Cup Methods)" in the Industry Standard 3-1\_1052 Specification and Test Methods of Bitumen and Bituminous Mixtures for Highway Engineering. It is used to determine flash point of petroleum products and bituminous materials, excepting fuel oil and materials having a flash point of lower than 79°C. The instrument is used to determine flash point of petroleum products. It has function of automatic program temperature controlling, LCD display, automatic barometric pressure calibration, and automatic modified value calibration. It can apply flame, ignite, detect & print out test data automatically. It is convenient and rapid. It is the best substitute product for imported one.

Model	FP-536A
<b>Power supply</b>	AC 220 V±10%, 50 Hz
<b>Temperature measurement</b>	
<b>Full scale</b>	Ambient temperature to 300°C
<b>Repeatability</b>	≤ 8°C
<b>Reproducibility</b>	≤ 16°C
<b>Resolution</b>	0.1°C
<b>Precision</b>	0.5%
<b>Basic parameters</b>	
<b>Temperature rising speed</b>	as per GB/T3536
<b>Ignition mode</b>	by an electric flame (gas flame is 3 to 4 mm)
<b>Ambient temperature</b>	10~40°C
<b>Relative humidity</b>	≤ 80%
<b>Total power consumption</b>	not more than 500W

**FP-26D, Automatic PMCC Flash Point Tester**

This instrument is suitable to the standards of GB/T261. It uses the closed cup to test the flash point of liquid. Reference standard: 1502791, ASTM D93, IP34

Model	FP-26D
<b>Power supply</b>	AC 220 V±10%, 50 Hz
<b>Temperature measurement</b>	
<b>Repeatability</b>	≤ 2°C
<b>Reproducibility</b>	≤ 4°C
<b>Resolution</b>	0.1°C
<b>Precision</b>	0.5%
<b>Basic parameters</b>	
<b>Temperature rising speed</b>	as per GB/T261
<b>Ignition mode</b>	gas flame is 3-4mm
<b>Ambient temperature</b>	10~40°C
<b>Relative humidity</b>	≤ 8%
<b>Total power consumption</b>	not more than 300W

# FLASH POINT

## Automatic / Semi Automatic

### FP-26A, Automatic PMCC Flash Point Tester



Model	FP-26A
Power supply	AC 220 V±10%, 50 Hz
Temperature measurement	
Measurement range	ambient temperature -250°C
Flash point	lower than 104°C, error is 2°C higher than 104°C, error is 6°C
Resolution	0.1°C
Precision	0.5%
Basic parameters	
Temperature rising rate	as per GB/T261
Ignition mode	gas flame is 3-4lmm
Ambient temperature	10~40°C
Relative humidity	≤ 80%
Total power consumption	not more than 350W

The instrument is designed and made as per GB/T261 "Test Methods for Flash Point of Petroleum Products (Closed Cup Methods)". It is used to determine the lowest temperature of a petroleum product sample when the mixture of sample vapor and air around the sample contacts flame and flashes when heated in a closed cup under stipulated condition. The lowest temperature is the flash point of the petroleum product sample. The instrument has function of automatic program temperature controlling, automatic barometric pressure modification, and modified value calculation. It can automatically control measurement procedures and test data, and it can also save, analyze and print out test data.

### FPT-5208, Rapid Low Temperature Closed Cup Flash Point Tester



Model	FPT-5208
Power supply	AC 220 V±10%, 50 Hz
Measurement range	-30°C~50°C
Measurement accuracy	
Repeatability	less than 2°C
Reproducibility	less than 2°C
Temperature controlling accuracy	±0.5°C
Igniter	an electron igniter
Refrigeration type	It uses semiconductor for refrigeration (It connects to outer cooling water)
Total power consumption	not more than 300 W
Ambient temperature	5~30°C
Relative humidity	30~80%
Total power consumption	not more than 350W

The instrument is designed and made as per the National Standard of People's Republic of China GB/T5208 "Test Methods for Flash Point (Rapid Equilibrium Closed Cup Method)". It can be used in the field of petroleum, chemistry, paints, railway, aviation, power plant, inspection, military, and scientific research to determine flash point of petroleum products rapidly.

The instrument is suitable to make closed cup flash point determination for paints, adhesives, solvents, petroleum, and relative petroleum products, the flash points of which are in the range of 30°C — 50°C. It can also meet the requirements of ISO 1523 and ISO 3679.

#### Main technical characteristics

- It is designed as per GB/T5208 (Test Methods for Flash Point (Rapid Equilibrium Closed Cup Method)". It can determine closed cup flash point at a low temperature rapidly.
- It adopts semiconductor refrigeration device and cooling water refrigeration device. It is small, convenient and with rapid refrigeration speed.
- It needs fewer samples. The sample for each test is only 2 ml (For solid or semisolid sample, it is 4 ml);
- The test can be automatically completed excepting flame ignition. The test data can be automatically printed.

### FP-208, Rapid Low Temperature Closed Cup Flash Point Tester



Model	FP-208
Power supply	AC 220 V±10%, 50 Hz
Measurement range	-30°C ~ 50°C
Measurement accuracy	Repeatability: less than 2°C Reproducibility: less than 2°C
Temperature controlling accuracy	±0.5°C
Igniter	an electron igniter
Refrigeration type	It uses semiconductor for refrigeration (It connects to outer cooling water)
Power supply	AC 220V±10%, 50 Hz
Total power consumption	not more than 300W
Ambient temperature	5°C ~ 30°C
Relative humidity	30 ~ 80%

The instrument is designed and made as per GB/T5208 "Test Methods for Flash Point (Rapid Equilibrium Closed Cup Method)". It can be used in the field of petroleum, chemistry, paints, railway, aviation, power plant, inspection, military, and scientific research to determine flash point of petroleum products rapidly.

The instrument is suitable to make closed cup flash point determination for paints, adhesives, solvents, petroleum, and relative petroleum products, the flash points of which are in the range of 30°C~50°C. It can also meet the requirements of ISO 1523 and ISO 3679.

#### Main technical characteristics

- It is designed as per GB/T5208 (Test Methods for Flash Point (Rapid Equilibrium Closed Cup Method)). It can determine closed cup flash point at a low temperature rapidly.
- It adopts semiconductor refrigeration device and cooling water refrigeration device. It is small, convenient and with rapid refrigeration speed.
- It needs fewer samples. The sample for each test is only 2ml (For solid or semisolid sample, it is 4ml).
- The test can be automatically completed excepting flame ignition. The test data can be automatically printed.

### FP-208D, Rapid Equilibrium Closed Up Flash Point Tester



Model	FP-208D
Power supply	AC 220 V±10%, 50 Hz
Measurement range	0°C ~ 100°C
<b>Precision of determination</b>	
Absolute difference value between two determinations is lower than 2°C	less than 2°C (same operator)
Absolute difference value between two determinations is lower than 3°C	less than 3°C (different operator)
Temperature controlling accuracy	±0.5°C
Igniter	an electron igniter
Cooling mode	Semiconductor (with cold water cycle at external connection)
Total power consumption	not more than 300 W
Ambient temperature	5~30°C
Relative humidity	30~80%
Dimensions	370X280X280mm

This instrument is designed and made as per GB/T 5208-2008 Determination of flash point - Rapid equilibrium closed cup method. It can meet the requirements of rapid determination for closed cup flash point of petroleum products in oil, chemical, varnish, paint, railway, aviation, electricity, commercial inspection and science research institution.

This instrument is specially suitable to determine different kinds of colored paints, oil paints, adhesives, solvents and petroleum products which the closed cup flash point is 0 - 100°C. The instrument is also correspond with ISO1523 and ISO3679.

#### Main technical features

- Designed as per GB/T 5208-2008 Determination of flash point - Rapid equilibrium closed cup method. It can realize purpose of testing closed cup flash point rapidly and at low temperature.
- The instrument adopts semiconductor refrigeration device and external water cooling device. The size is small and cooling rate is rapid. Easy to operate.
- Test sample needed is less. 2ml for each time (4ml for solid sample and semi-solid sample)
- The determination procedure is automatically completed except ignition. Test results can be printed automatically.

**FP-261, Pensky-Martens Closed-Cup Flash Point Tester**

This instrument is designed and manufactured as per standards GB/T 261-2008 Determination of Flash Point

- Pensky-Martens closed cup method and ASTM D93 Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester. It is used to make determination of the closed cup flash point of the petroleum products.

**Main technical features**

- Single chip microcomputer control technique. LCD screen displays. English man-machine interaction interface. The heating power is continuously step-less adjustable. The rate of heating up is exact. Easy setting for parameters.
- The LCD screen has prompting menu, prompting input operation interface. It shows the setted parameters, real-time temperatures and other test parameters. Press the "record" button when the flash point appears. The screen will show and reserve the flash point.
- The structure is newly design and small. Stainless steel table-board looks clean and beautiful. It can be used as long as equipped with gas or other civilian fuels. It is easy to use and test results exact.

Model	FP-261
Power supply	AC 220 V±10%, 50 Hz
Measurement range	0°C ~ 100°C
Heating device	The furnace is silicon carbide material. Power is 600W The heating power is adjustable from 0 W to 600W
Heating rate	(5 ~ 6)°C/min (1 ~ 1.6)°C/min Automatically controlled
Cooling mode	Semiconductor (with cold water cycle at external connection)
Stirring device	Stirring motor: BYGH101 stepping motor Driving mode: flexible shaft Shaft size: 8mm×40mm
Stirring rate	Procedure A: (90 ~ 120)RPM Procedure B: (250±10)RPM

**FP-536-1, Semi-automatic Cleveland Open Cup Flash Point Tester**

This instrument is designed and made as per GB/T3536-2008 Petroleum Products - Determination of Flash and Fire Points - Cleveland open cup method and ASTM D 92 Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester. It is applicable to all petroleum products with flash points above 79°C and below 400°C except fuel oils.

**Main technical features**

- It adopts technology of single chip microcomputer and LCD screen. English man-machine interface. The heating device is continuously adjustable. Easy to set parameters.
- The LCD screen has prompt menu, prompt type input for operation interface. It shows set parameters and real-time display sample temperature and other parameters. Press the record key when flash point appearing. The screen will display and save flash point value.
- It is newly design and small structure. Stainless steel working table make it elegant and beautiful. The operator can do determination as long as connecting with coal gas or other civil gas. Easy to use and results are exact.
- It is equipped with wind-shelter and flame extinguishing cover which are accord with requirements of test. Accurate heating rate. The instrument can do test automatically.
- Operator only need to observe the flash point appearing. The cost performance is high.

Model	FP-536-1
Power supply	AC 220 V±10%, 50 Hz
Heating device	Electric furnace heating, no naked fire, explosion prevented. The power is adjustable from 0W to 600W. The max heating temperature can reach 400°C
Temperature control	Single chip microcomputer. The heating rate can meet requirements of standards GB/T 3536-2008 & ASTM D92
Temperature display	LCD shows temperature parameters. The display range is 0°C ~ 400°C, display accuracy is 0.1°C
Flash point detecting device	It applies the test flame automatically
Temperature sensor	RTD, PT100
Igniting device	- Ignition source: coal gas (or civil gas) - Flame diameter is 3.2mm ~ 4.8mm
Ambient temp.	-10°C ~ 50°C
Relative humidity	≤85%
Maximum power consumption	650W
Dimension (mm)	340×320×450 (Temp. sensor is included)



**Characteristics:**

- Advanced true-color VGA touch screen is easy for operation and observation.
- 8-level linear temperature rise design is satisfactory for varied temperature rise options.
- Wider temperature control scope and higher temperature accuracy.
- Optimal cooling rate and sample test speed.
- Exclusive integral design.
- It's completely in line with pharmacopeia and GLP requirements. (MPA-3 only)
- Three independent temperature detection systems ensure the detection of three samples of varied melting points. (MPA-3 only)
- The variation curve of tested sample can be displayed in a timely manner. (MPA-3 only)
- RS232 interface, associated computer software and external computer control are available.
- Detailed test data can be stored. (MPA-3 only)

**MPA-3, MPA-12 Melting Point Apparatus**

MPA-12/3 Digital Melting Point Apparatus are integrated with photoelectric detection, digital temperature display and other technologies, boasts automatic display of initial and final melts and other functions. In the temperature system, linearly calibrated platinum resistor is used as the detection device, offering efficient and accurate test process and results. The apparatus can be widely used in the chemical industry and medicine research and is essential for the production of medicines, spices, dyes and measurement of other organic crystal substances.

Model	MPA-3	MPA-12
<b>Melting point range</b>	Room temperature - 400°C	
<b>"Initial temp." setting</b>	≤7min. from room temp. to 400°C ≤7.5min. from 400°C to room temp.	
<b>Min. displayed temp.</b>	0.1°C	
<b>Temp. accuracy</b>	±0.4°C (<200°C), ±0.7°C (<300°C)	
<b>Linear temperature rise</b>	0.1°C/min, 0.2°C/min, 0.5°C/min, 1°C/min, 2°C/min, 3°C/min, 4°C/min or 5°C/min	
<b>Standard capillary size</b>	Inside dia. 1.0mm, outside dia. 1.4mm	
<b>Power supply</b>	220V 50Hz	
<b>Power</b>	100W	

**MPA-42/43/45/47, Auto Melting Point Apparatus****Guide Line:****1. Which field does Melting Point Apparatus mainly used in?**

In general, the melting point of substance is a common physical property test, is the basic means to identify the physical nature, also is one of the important methods to measure purity. Therefore, Melting Point Apparatus occupy an important position in chemical industry & medicine research. It is a necessary instrument for production of medicines, spices, dyes and other organic crystal substances.

**2. Which temperature sensor does Melting Point Apparatus adopt?**

Our series Melting Point Apparatus temperature system adopts linearly calibrated platinum resistor as detecting element. The platinum resistor has the technical characteristics of short response time and long-time high stability, which let the experiment process more efficient and accurate.

**3. Among the numerous parameters of Melting Point Apparatus, which one is more crucial?**

Accuracy, Repeatability, Measuring range. The three parameters basically clear the main use scope and performance of the instrument. Measuring range must be able to meet the requirement, accuracy and repeatability is the higher the better.

**4. What facilitation advanced true-color VGA touch screen can provide us during use?**

Advanced true-color VGA touch screen offering user the comfortable sense of manipulation is unprecedented, will be more closer to the user's habit and more convenient for the user to manipulate instrument freely.

**5. How to choose a Melting Point Apparatus?**

First user should choose the Melting Point Apparatus for suitable sample testing condition, such as, if the sample in powder form user can choose capillary testing, then decide to choose silicone method visual Melting Point Apparatus or automatic Melting Point Apparatus according to the sample whether is transparent after melted and whether have any requirements on initial melting and melting range. If the sample in flake or block form user should choose micro Melting Point Apparatus. Second, according to result accuracy requirement users decide to choose Melting Point Apparatus which belongs to what grade. Basically each Melting Point Apparatus can clearly indicate the accuracy, repeatability and measuring range.

## MELTING POINT Automatic

6. Generally how many samples can be tested by automatic Melting Point Apparatus every day?

Basically every sample testing time is around 5-7 minutes. If uses test 10 samples per hour, 1 day 8 hours can test 80 samples . But because the instrument is a fully automatic measurement, User can have a lot of time to deal with other work during testing melting point of substance, to improve work efficiency.

7. When we use the Melting Point Apparatus used for a long time. should we calibrate it? How to calibrate?

It is recommended that Melting Point Apparatus re-calibrate after using for year. Thereafter basically it need calibrate every year. If User need to calibrate it, we should sent it to the local Bureau of Technical Supervision which can issue a report according to verification result, or we buy the standard sample for calibration by oneself.

8. What are the main consumables of instrument?

Only one: capillary. Users can purchase from our company or go to market to buy directly if need, But on the present market the capillary standard are different, some are two heads opening, some are too big or too small. So we suggest user purchase directly from our company, because the improper dimension of the capillary can caused unnecessary loss.

MPA-42/43/45 Automatic Melting Point Apparatus perfectly integrate video technology Into melting point measuring. It not only provides users with reliable melting point test result. But also intuitively displays temperature curve & real-time video image. & achieves the function of save. replay the video etc. It provides better help for users to observe melting process of sample.

The instrument can be widely used in the chemical industry and pharmaceutical research. It is the essential equipment for production of drugs, spices dyes . and measurement of other organic crystal substances.



### Characters:

- Automatic Video Melting Point Apparatus perfectly integrate video technology into melting point measuring
- Vast amounts of storage space, can achieve 300 minutes of continuous shooting or nearly 10000 photos storage
- 0.1°C--20.0°C linear temperature rise design is satisfactory for varied temperature rise options.
- Store up to 80 sets of customers eperimental method, 40 sets atlas and test data
- Data can be printed via USB and RS232.

Model	MPA-42	MPA-43	MPA-45	MPA-47
Temperature Range	Room Temp. up to 300°C	Room Temp. up to 350°C	Room Temp. up to 400°C	Room Temp. up to 400°C
Temperature Resolution	0.1°C			
Repeatability	0.2°C at heating rate of 0.2°C/min			
Temperature Accuracy	± 0.4°C (<200°C) ± 0.7°C (<300°C)			
Temperature Gradients	0.1°C--20°C			
Standard Capillary Size	I.D. 1.0mm, O.D. 1.4mm			
Display	TFT 5.6" Touch Screen + TFT 3.5" Color Screen			
Interface	USB, SD card, RS 232, Enternet			
Video Output	SD Card	•	•	•
Magnification	7	•	•	•
Capacity per Batch	4pc./batch	•	•	•
Operator Account	-	4	8	15
Camera & Video	Camera	Camera & Video		
Video Reply	-	Yes	•	•
Curve Storage	50 Groups	200 Groups	600 Groups	1000 Groups
SD Card Capacity	2G	4G	8G	16G
Method Storage	-	-	30	80
Power Supply	220V ±10% 50Hz	•	•	•
Power	120W	•	•	•
Dimension	350x220x230mm	•	•	•



MSS-B

### MSS-A/B, Salt Spray Testers

**Testing Chamber:** It is made of P.V.C. sheet, its internal structure uses advance technical of stainless steel pipe. The feature is well-reinforced, temperature well kept, and deformed free & keep temperature stable

- Heat-up method of chamber is "5 direction heat-up method", able to control constant temperature inside chamber ( $\pm 1^{\circ}\text{C}$ )
- Saturated air tank: The heating air purpose saturated air tank for mist spraying is made of stainless steel SUS 304, its feature with press-resistant, water-leakage free, air-leakage free, and deformed free, This installation also included auto-deleted when over pressure, to ensure a longer life span
- Heating constant temperature installation: It using 5 directions heating up by water type to control temp. Ensure temperature kept and constantly. It is also help to prevent the Choppy temperature- Electricity saving for long period use

- Specimen placement: The specimen angle is  $15^{\circ}/30^{\circ}$ . Place them average ready to test, standard specimen size is 150 x 70mm or 100 x 65mm, finished-products test directly is also available. It is use glass-made nozzle and conformed to Bernoulli theorem to make salt a mist shape & fallen mist capacity is adjustable. (Generally use 1-2cc/hour) **Usage:** Salt spray tester is used for testing rust-proof treatment of material, such as metal surface that after painting, coating, electroplating, anodizing, films of organic and non-organic...etc. It's a corrosion and Rust-Resistant test. It is for checking the corrosion-resistant of products (specimen) under long time corrosion after treatment like anodize, rustproof oil, chemical, etc.

**Accessories:** 1) Air compressor: 1Set. 2) Testing purpose pharmaceutical products: NaCl (Sodium chloride), NaOH (sodium hydroxide), CuCl (copper (I) chloride), and CH<sub>3</sub>COOH (glacial acetic acid) each one bottle. Adjust appliances: Litmus paper, spoon, straw, and concoct tank for each

- The main difference between the above stated types are the testing chamber's capacity. Other functions are the same
- The industrial standard request the testing capacity reached 0.43m<sup>3</sup> or above. Selecting proper type according to consumer's specimen size requirement.

Model		MSS-A	MSS-B
Internal Dim. (cm)		W60xD40xH45	W90xD50xH60
External Dim. (cm)		W125xD106xH94	W155xD120xH105
Quantity of collecting cup		1PC	2PC
Power of heater (Watt)		1000W	2000W
Temp. range	Chamber	Room temp. $\sim 50^{\circ}\text{C}$	
	Air	Room temp. $\sim 63^{\circ}\text{C}$	
Features	Temp. constancy	$\pm 0.5^{\circ}\text{C}$	
	Saturated air pressure (kg/cm <sup>2</sup> )	0.8~2.0 $\pm 0.01$	
	Spray volume (ml/80cm <sup>2</sup> /hr)	0.5~0.3	
	PH-salt spray test	6.5~7.2	
	PH-CASS test	3.0~3.2	
Material	Exterior	P.V.C or P.P	
	Interior	P.V.C or P.P	
System	Salt spray vehicle	Air+acid (base) liquid	
	Heating	SUS#316 Stainless steel heater+Teflon coating	
	Control	Digital electronic control	
Power source		AC 1Ø, 220V $\pm 10\%$ , 50/60Hz	