

## 1.Wire and Cable Fire Resistance Tester



### Product introduction

This test apparatus is used for testing cables required to maintain circuit integrity when subject to fire alone or fire with shock where the test condition is based upon flame with a controlled heat output corresponding to a temperature of at least 750°C or fire with shock at a temperature of at least 830 °C.

### Technical parameters

- 1.Heat Source : AGF Ribbon Type Propane Gas Burner
- 2.Structured with 3 rows of cross holes, Average front width of burner: 15mm, Hole diameter: 1.32mm, Distance between the center: 3.2mm.
- 3.A polished hole row in pilot hole for flame preservation in both faces of Burner plate.
- 4.Two thermocouples are horizontally installed separated 45mm left and right of burner center-line to check temperature.
- 5.Mass flow controllers to regulate the gas and air flow, the accuracy is not less than 1.5%.
- 6.Software can show the burner calibration temperature, propane and air flow rate etc.
- 7.The current is provided by a three-phase star transformer with sufficient capacity to maintain the required test voltage when circuit integrity cannot be maintained.
- 8.Conductor connection indicator (LED indicator) to form a current.

9. The voltage value is automatically set by software and adjusted by a panel controller.

10. Digital display of the current and voltage data, accuracy of current is 0.001A.

11. Current protection using fuse with 2A.

12. The real-time measurement data of all current and voltage are collected by computer, and the curves of current and voltage are generated.

13. When circuit integrity cannot be maintained, the corresponding indicator lamp is extinguished, the computer automatically determines the state and records the time, and sends out the sound and light alarm.

## Product Features and Application

1. The sample support device shall be such that the sheath or the protected end of the cable or cable sample is supported horizontally. One end of the sample is clamped by a fixed clamp to prevent movement, and the other end supports the sample, cable or The middle part of the cable is supported by two metal rings 300 mm apart. The metal ring and other metal parts of the supporting device are well grounded. The inner diameter of the metal ring is about 150 mm, and the round bar with a diameter of  $10\pm 2$  mm is used.

2. The ignition source is American AGF propane ribbon burner with nozzle length of 500mm and nozzle nominal width of 15mm. The nozzle has three rows of staggered nominal diameters of 1.32mm and a center distance of 3.2mm. There is one on each side of the nozzle. The small holes serve as guide holes to maintain flame combustion, and the dimensional tolerance is  $\pm 5\%$ ;

3. The imported mass flow controller regulates the gas and air flow, and the reading accuracy is not less than 1.5%;

4. Imported pressure reducing valve can provide an outlet pressure of  $0.1\text{Mpa}\pm 3\text{pa}$ ;

5. Imported pressure gauge, can provide 0-200kpa pressure range;

6. Imported Omega thermocouple with a diameter of 1.5mm for burner temperature calibration;

7. Can set the burning test time, and automatically cut off the gas;

8. Standard test software, can display burner calibration temperature, propane flow, air flow;

9. The test is applicable to cables with rated voltage of 0.6/1.0 KV and below;

10. During the test, the current used for continuity inspection shall pass through all the conductors of the cable. This current is provided by a three-phase star transformer. The transformer has sufficient capacity to maintain the required test voltage when the leakage current is allowed. At the other end of the sample, each conductor or each set of conductors is connected to a pointing device (LED indicator) to form a current through which the data can be obtained in computer software;

11. The voltage setting can be entered by the computer, automatically set the voltage value. The voltage can also be fine-tuned through the panel buttons;

12. The test circuit current protection adopts a fuse and conforms to the D II type specified in GB 13539.5. Fuse standard 2A. Easy to replace. And use imported miniature circuit breakers to protect each test circuit;

13. The current and voltage data of the test cable are all passed through the secondary instrument, digitally displayed, the test current accuracy is 0.001A, and the actual current is 0.25A is the best test current;

14. Real-time measurement data of all currents and voltages are collected by computer and generate current and voltage curves, showing the current and voltage curves of each cable under fire conditions, and determining the fire resistance performance. Further analysis of the cable as a function of fire time can be made. The final data is stored in a computer database and a standard report is generated for easy access;

15. Calibration of the flame temperature before the test, the imported armored thermocouple is calibrated, the calibration temperature is collected by the computer for at least 10 minutes, and the fire mode is selected in the computer. According to the fire supply mode, the computer performs steady-state sampling and difference calculation according to the collected temperature, and gives a verification report. Save the report and store it in the database to ensure the reliability and authority of the verification;

16. During the test, the gas and auxiliary air are both mass flow controllers, and the venturi is mixed, the computer automatically controls the flow valve, and the data is recorded in real time in the database. The computer automatically controls the gas and auxiliary air ratio to make the combustion Fully, producing a stable flame and stabilizing the flame temperature;

17. When the circuit is normally energized, each circuit adopts the imported indicator light. When the line is incomplete under the flame condition, the corresponding circuit indicator is extinguished. The computer automatically determines the current state and controls the sound and light alarm.

Application: The wire and cable fire tester is used to test the fire resistance of the cable for wiring or grid, and burns in a flame of not less than 750 ° C and 950 ° C to test the integrity of the cable to maintain the circuit.

## Product Details

### Standards

IEC: IEC 60331-11&12: 2002, IEC 60331-21~23: 1999

IEC 60331 Test for electric cables under fire conditions Circuit integrity

IEC 60331 Part 11 Fire alone at a flame temperature of at least 750°C

IEC 60331 Part 21 Cables of rated voltage up to and including 0.6/1kV

IEC 60331 Part 12 Fire with shock at a flame temperature of at least 830°C

IEC 60331 Part 31 Fire with shock Cables of rated voltage up to and including 0.6/1kV

Dimension: 1750 mm (W) x 680 mm (D) x 1400 mm (H)

Weight: 160kg

### Installation requirements

Electrical: AC 380V 3-phase, 50/60Hz, 30A

Ambient Temperature: Operating 10°C to 35°C

Testing room: 3,000 mm (W) x 3,000 mm (D) x 3,000mm (H)

Gas: Air and Propane

## 2.ISO 6722 Automotive Wires Flammability Testing Equipment



### Product introduction

Single wire / cable vertical combustion tester mainly for the conductor diameter greater than 8mm (section area is greater than 0.5mm<sup>2</sup>) or less than 8mm (section area less than 0.5mm<sup>2</sup>) of single wire and cable flammability evaluation. Suitable for lighting equipment, low-voltage electrical appliances, household appliances, electrical tools, electric motor, electric tools, electronic instruments, electrical instruments, electrical connectors and accessories such as electrical and electronic products and components of the research, production and quality inspection department. This section adopts the recommended product structure of the air mixing structure in Appendix B of GB18380.12-2008, and also meets the requirements of the quality inspection unit in detail.

## Standards

ISO 6722

## Application

Rated voltage 60 V MMS or below ground vehicles with low voltage electrical system of primary cable flame retardant test, automotive wires.

## Main parameters

Dimension	500x650x400 mm
Burning gas using high purity propane gas	liquefied petroleum gas
Tested wires length:600mm(24 in)	Sample clamping Angle:45 degree
The bunsen burner has 13mm inlet hole and 10mm (3/8 in) nominal diameter, spray fire pipe outer flame diameter is 100mm (4in)	inner flame is 50 mm(1/2in),temperature of inner flame as least 900 degree celsius
The Bunsen burner flame should be put in the bottom of the samples and perpendicular to the axis of the sample	The tip of the inner flame role should be in the midpoint of the sample
Automatic ignition	flame burn the sample continue 15 seconds and be off automatically
After burning 15 seconds	will time the continued burning, complete the continued burning time until the continued burning crush out and put off the stop button
Burning gas is not supplied with the tester	it should be supplied by customer

## Features

Single cable vertical burning test is set by size Bunsen (Bunsen burner) and the specific gas source (Bing Wan), according to a certain flame height and some application of flame angle on the vertical state of the sample application to test ignition timing, ignition, combustion duration and combustion to assess its length flammable and fire hazard.

## 3.Wire and Cable Heat Release Test Device



### Product introduction

EN 50399 specifies the apparatus and methods of test for the assessment of vertical flame spread, heat release and smoke production of vertically-mounted bunched wires or cables, electrical or optical, under defined conditions. EN 50399 details the apparatus and the arrangement and calibration of the instrumentation to be installed in order to measure the heat release and the smoke production during the fire test. Test procedures to be used for type approval testing for classification of cables in Euroclasses B1ca, B2ca, Cca and Dca are given.

### Product parameters

1. Test chamber has the dimension of  $1,000\pm 100(W) \times 2,000\pm 100(D) \times 4,000\pm 100(H)$  mm. The bottom surface of the test chamber is higher than the ground while the rear side is supplemented with insulated material to insulate it from heat.
2. At the lower section of the test chamber, there is a  $800\pm 20(W) \times 400\pm 10(D)$  sized hole at the  $150\pm 10$ mm position from the front side of the chamber to supply the air.
3. There is a  $300\pm 30(W) \times 1,000\pm 100(D)$  sized exhaust hole at the rear corner of the top section of the test chamber to allow emission of the smoke during the test.

4. A flame trap is installed at the front side of the burner of the vertical flame spread tester to prevent backfire by propane to ensure the utmost safety.
5. Unlike the conventional IEC60332-3 equipment, the vertical flame spread tester records all control and test conditions with the computer to add user friendliness.
6. If stop the excessive combustion test due to Water Spray device installed for extinguish.
7. The program on the requirement on standard and 70,000Btu/h can be program.
8. Wide stainless steel ladder dimensions: 500(W) ×3, 500(H) mm.
9. Standard stainless steel ladder dimensions: 800(W) ×3, 500(H).
10. Two sets of standard propane burner and venturi mixtures.
11. Follow the standard category can program for select a test.
12. Exhaust system consists of smoke collection hood, exhaust duct, air inlet system, Centrifugal fan and frequency converter.
13. The duct section houses all gas sampling probes, temperature and mass flow probes and has ports for the smoke measuring system.
14. Paramagnetic oxygen analyzer, using the method of paramagnetic change to measure the concentration of oxygen in the gas. Concentration range of 0-25%.
15. Carbon Dioxide Analyser (infrared) for use in heat release measurement. Concentration range of 0-10%.
16. Soot filter, cold trap, drying column, pump and waste regulators for conditioning the sample gases prior to analysis.
17. Data acquisition system and software.
- 2.

## Product Feature and Application

1. Standard 19 cabinet unit, including paramagnetic O<sub>2</sub>, non-dispersive infrared CO<sub>2</sub> gas analyzer;
2. Taiwan Advantech data acquisition board 1 set, can collect temperature, gas pressure difference and gas analyzer data, etc.;
3. Stainless steel two-way speed probe, with a set of wind pressure detection devices such as micro differential pressure sensor;
4. The United States OMEGA K-type thermocouple 3, detecting the flue gas temperature 1 set;
5. Equipped with a set of gas collection probe device, connected by PTFE pipe, can collect corrosive gas;
6. Dehumidifying cold trap, gas steady flow and voltage regulator, 1 set of American CAST gas collection pump device, equipped with stainless steel pipe and PTFE hose connection;
7. An incandescent lamp smoke density measuring system comprising an incandescent light source and a silicon photodiode receiving device;
8. Equipped with 5 neutral filters, optical density range of 0.1-2;
9. 4 imported mass flow controller devices, equipped with pressure reducing valves, solenoid valves, etc.;

10. Standard test software, including calibration procedures, and can be used for monomer burning test;
11. Equipped with 1 set of computer and printer devices;
12. Test equipment such as exhaust pipe and centrifugal fan;
13. Two propane mass flow controllers;
14. Two air mass flow controllers;
15. 22.5KW and 30KW flame calibration can be performed by a mass flow controller acting on a single burner;
16. Bundle wire and cable burning test device.

Application: The test system is a medium-scale fire test simulating bundled cable or fiber optic cable. The test cable is installed on a vertical standard steel ladder and ignited by a specified ignition source to evaluate the combustion behavior and combustion performance of the cable. Combustion performance data for the early stages of a cable fire, The test of the heat release rate reflects the danger of the flame spreading along the cable and the potential impact of the fire source on the adjacent area. The smoke density test shows the visibility of the fire area and the danger of the smoke to the personal safety.

## Product Details

EN 50399 Test apparatus is consist of IEC 60332-3 apparatus, heat release measurement, smoke density measurement and modified air inlet system. This is accomplished by fitting a small instrumented section of ducting into the exhaust system of the rig and using this with associated gas analysis instrumentation and software. The duct section houses all gas sampling probes, temperature and mass flow probes and has ports for the smoke measuring system.

The test can obtain the following characteristics of the cable or cable under certain combustion conditions:

Flame spread Flame Spread FS

Heat Release Rate Heat Release Rate HRR

Total heat release Total Heat Release THR

Smoke production rate Smoke Production Rate SPR

Total smoke production Total Smoke Production TSP

Burning Growth Rate Index Fire Growth Rate FIGRA

Standards

DIN: DIN EN 50399: 2017

EN: EN 50399

GB/T 31248: 2014

Dimension: 1120 mm (W) x 2200 mm (D) x 5600 mm (H)

Weight: 1200kg

Installation requirements



Electrical: 110V AC 60Hz / 230V AC 50Hz, 5A

Ambient Temperature: Operating 10°C to 35°C

Gas: air and propane

## 4. Single Insulated Wire and Cable Vertical Flame Test Equipment



### Description of the instrument

IEC 60332 Single Insulated Wire or Cable Vertical Flammability Tester is used for conductor diameter greater than 8mm (cross-sectional area greater than 0.5mm<sup>2</sup>) or less than 8mm (cross-sectional area less than 0.5mm<sup>2</sup>) of the single wire and cable flammability assessment. It is suitable for the research, production and quality inspection departments of electrical and electronic products and components such as lighting equipment, low voltage electrical appliances, household appliances, machine tools, electrical appliances, electric tools, electronic instruments, electrical instruments, electrical connectors and accessories. In line with IEC 60332.

## Application

Tests on electric and optical fiber cables under fire conditions—Part 1-2: Test for vertical flame propagation for a single insulated wire or cable—Procedure for 1 KW pre-mixed flame

## Specifications

Outside diameter of wire and cable tested: conductor diameter greater than 0.8mm or cross-sectional area greater than 0.5mm<sup>2</sup>

The device should be placed in an unventilated and temperature (23±10)°C environment

Burner	Inner diameter $\Phi 9.5\text{mm} \pm 0.5\text{mm}$
Test inclination angle	45° style beam can move back and forth, adjust the position of the Bunsen burner according to the Specimen thickness;
Flame height	20mm $\pm$ 2mm to 190mm $\pm$ 1mm adjustable
Flame time	0-999.9s $\pm$ 0.1s adjustable
Combustion gas	95% propane gas (usually replaced by liquefied petroleum gas)
Gas	high-purity propane gas or liquefied petroleum gas (user-supplied)
The length of the tested wire and cable	600±25mm
Burning torch standard power	1KW
Supply voltage	220V/50Hz
Gas flow	0-1L/min
Air flow	1.5-15L/min
Box material	steel electrostatic spraying
Dimensions	length 60 cm wide 45 cm high 156 cm

## Test Standards

IEC60332 MT818 MT386 ISO5656

## 5. Glow-Wire Fire Testing Equipment



### Standards

According to IEC60695-2-10~13, UL746A, IEC829, DIN695, VDE0471etc.

### Features

- 1.The flaming chamber and control part of the integrated design, convenient installation and operation.
- 2.The shell of chamber and main parts made of stainless steel, which resistant smoke and withstand the rust of gas
- 3.SCR automatic control system to automatically adjust the current to achieve the purpose of control the precise of temperature;
- 4.Time and temperature display by digital, convenient for observation and records, stabilization and reliable for use.

### Technical parameters

Special of test chamber	0.5 CBN (W1000 * D600 * H1260mm)
Temperature range	500~1000°C, can be adjust and digital displayer.

Temperature error	$\pm 10^{\circ}\text{C}$ (500~750 $^{\circ}\text{C}$ ) and $\pm 15^{\circ}\text{C}$ (750~1000 $^{\circ}\text{C}$ ), the accuracy class of $\pm 0.5$ .
Temperature sensor	K-type thermocouple which size is $\Phi 0.5$ , from oversea.
Pressure to specimen	0.8N~1.2N, and the depth of press must not less than 7mm
Timer	0~99min 99s, can be adjust in range
There are 3 timer for this machine, respectively BURNING TIMER (Ta),	normal setting it of 30s as standards, Duration burning timer (Ti) and flame die timer.
Time error	$\pm 1\text{s}$
Special layer	Smooth wooden board (thickness is 10mm) with a layer wrapping tissue (12g/m <sup>2</sup> ~30gm <sup>2</sup> ) on the board, and the position at a distance of $200 \pm 5\text{mm}$
Simple operation, the measuring temperature system is	stabilization and reliable, auto temperature compensation.
Power supply	220V/AC $\pm 10\%$ , 50Hz

## 6.UL Cable Vertical-Tray Flammability Testing Equipment



## Application

Apply to check the vertical-tray fire test for determining values of cable flame propagation and smoke release when the cables are subjected to a flaming ignition source. (It is nothing to the purpose of cables, such as the electric power, telecommunications etc.)

## Main components

Main consist of Ignition source & supply fire control system, collection hood & exhaust duct flux control system, pressure measurement instrumentation of gas, smoke measurement instruments & temperature measurement system, flame height measurement system etc.

## Standards

According to the clause 9.6 & 9.7 of UL1685-2007, UL2556-2007

## Main parameter

Test room	Fire resistance bricks for walls and which density is 1698kg/m <sup>3</sup> , Interface spray black paint, and the outer size of the room is W2438×D2438×H3353mm
Door	Stainless steel frame and wired-glass door, the overall size is W0.9× H2.0m
Smoke collection hood	Which made by stainless steel, each side is to be sloped 400, the hood as a cube and each side length is 914mm, there is a dust mesh under the hood and each side length is 610mm
Observation window	Which as a square and each side length is 457mm, 1295mm distance from the lower side of the window to floor, 1143mm distance from right of the window to the wall
Air inlets	which size are 559×343mm, 914×305mm, 2438×343mm
Exhaust duct	L9000×φ406mm, install it at the centered in on the right side of the cube hood
Cable tray	H2400mm, the rundle as a square which size is L305×W25×D25, and both rundles distance is 299mm
Burner	L341mm×D30mm with 242 holes
Gas flux	13.2L/min, 0.1Mpa for gas pressure
Flux checking	The differential pressure flowmeter sense smoke pipeline flow speed , provide basis for the control of fan speed

Light transmittance	photocell sense the smoke density during the flaming
Height of flame	Infrared visible light show the current height of the flame real-time
Special software	Draw up the curve by the pip flow, smoke density, height of the flame ,and form a table automatically, through the printer printing
Control system	5.7inch color touch screen, PLC from Japanese Panasonic, SCM, 16 bits high-performance AD transform etc

## 7.IEC60695-11-03 Single Cable Vertical Flammability Tester



### Product information

Single Cable Combustion Tester is the most widely used and lower cost of cable fire performance test equipment, which can meet the standards IEC 60332-1-1:2004 in the provisions of technical indicators and requirements. Single cable combustion Tester is used to test the flame retardant property of the cable's insulating layer under abnormal conditions

such as overheat and overcurrent. It can be used in vertical cable or fiber flame spread test, also can be test the state of flaming droplets during combustion.

## Application

Applies to check the single insulation wire and cable vertical spreading test which total section area less than 0.5mm<sup>2</sup>

## Standards

According to IEC60332-1-1:2004, IEC60332-1-2:2004, IEC60332-1-3:2004, EN50265-1, EN50265-2-1

## Main parameters

Vertical burning chamber	W300xH1200xD450mm
Gas	Use high purity propane gas or liquefied petroleum gas (provide by user-self)
Specimen length	600±25mm
Area of specimen	Total section area less than 0.5mm <sup>2</sup>
Testing temperature	This device is located in a stuffiness room and the temperature keeping the 23±10°C for testing
Burning time	continuously setting between 0.1-999.9S, during the setting time flame could continuously burning the specimen
Control function	Switch can choose to be manual or automatically according to the actual needed
Gas flow range	0.1-1L/min
Area flow range	0.1-1m <sup>3</sup> /h
Burner	500W for standards power, 125±25mm for total height of the flame
Temperature measurement system	according to GB/T5169.14-2007 and IEC60695-11-03 standard requirements, including temperature copper (10g), K type thermocouple and diameter is 0.5 mm with stainless steel sheathed, stopwatch and thermometer etc.

## 8.Oxygen Index Tester (Paramagnetic)



### Product introduction

Oxygen Index Tester measures minimum oxygen concentration as necessary when specimen combustion. This equipments the oxygensensor is adapted Paramagnetic Type which has a precise, long life, less error rate and high reliability. This meets the contents of standards like ASTM, ISO 4589-2, NES and so on.

### Technical Parameters

Size	420 mm (W) x 350 mm (D) x 560 mm (H)
Weight	9KG
Electrical	115 Volts AC 60Hz / 230 Volts AC 50Hz.
Ambient Temperature	Operating 10°C to 35°C.
Gas Supplies	Oxygen,Nitrogen and Propane



Standards	ASTM D2863,ISO 4589-2,NES 714
Applications	Buliding Materials,Wire & Cable,Upholstered Furniture,Other

## Features

Paramagnetic Oxygen Cell for assessing accurate oxygen (< 0.1%) levels.

Digital display of nitrogen gas flow, total flow of oxygen and nitrogen.

Digital display of oxygen percentage in atmosphere during test (no calculations needed).

High temperature resistant quartz glass tube, can withstand a higher test temperature.

Gas ignition device, easily adjust the length of the flame.

Sample holders for both rigid and flexible samples supplied.

Shortened gas path for rapid response.

Paramagnetic Oxygen Sensor: Range:0 to 100% Oxygen

Repeatability (typical):  $\pm 0.1\%$  Oxygen

Linearity (typical):  $\pm 0.1\%$  Oxygen

## 9.NBS Smoke Density Chamber



## Product introduction

The NBS Smoke Density Chamber test method is from the National Institute of Standards and Technology NIST (predecessor of NBS) and has been promoted and applied in many test fields. This test method can be used to detect plastic products and non-metallic materials for rail transit. Smoke density grades of non-metallic materials, wire and cable products, etc.; according to the test method, the generally applicable standards are ASTM E662, ISO 5659-2, and the NES 711 smoke density test method in the military standard; The previous building material smoke density tester method has more accurate test results, and the optical sensor uses a more precise photomultiplier tube to capture the slight change of flue gas content in the box; if other test devices are selected, such as Dräger gas detection Tube, can carry out aviation standard smoke toxicity test, and dock with FTIR Fourier transform infrared device, can complete the qualitative and quantitative analysis of flue gas content.

## Product parameters

Temperature of sample	23±2°C
Relative humidity	50±5%
Size of sample	Length and width of sample all are 75±0.5mm, thickness is 1±0.2mm, thickness of foam and plastic is 8±0.5mm
Irradiance level of furnace	Surface of sample is 2.5±0.05W/cm <sup>2</sup>
Distance between the furnace and sample surface	38mm
Burning gas	Propane gas and the purity is ≥95
Measurement of chamber	L1110mm * W750mm * H2040mm
Smoke box size	L914mm * W610mm * H914mm
Diameter of light beam	Approx. 38mm
Test range	1) Optical transparence is 100%-0.00001%2) Smoke density grade is 0-924 for 6 shelves, automatic transmission
Test mode	Non-flaming mode and flaming mode

Accuracy of photometer	±3%
Exchange shelves accuracy	±7 for smoke density value
Power supply	3-phase is 380±10%V/AC, 50Hz

## Product Feature and Application

- 1.The inner dimensions of the chamber is 914mm±3mm long, 914mm±3mm high and 610mm±3mm deep.
- 2.The inner surface is consist of Teflon coating, which is resistant to chemical attack and corrosion and easily cleaned.
- 3.Test chamber with full width opening door, allowing easy access for sample loading and chamber cleaning.
- 4.Provided with a hinged front-mounted door with an observation window and a removed opaque door cover to the window to prevent light entering into the chamber.
- 5.Chamber walls are pre-heated for easier start-up and convenient equipment operation.
- 6.Safety blow-out panel, easily replaceable, allows for safe operation of test method.
- 7.Two optical windows, each with a diameter of 75mm, mounted in the top and bottom of cabinet.
- 8.The light measuring system is consist of Incandescent lamp and photomultiplier tube.
- 9.Provided with range-extension filter in the light path, adjusting the accuracy of instrument under the any scale.
- 10.Conical Heater - is wound in the form of a truncated cone, rated 2600 W at 230 V with a heat output of 50 kW/m<sup>2</sup>.
- 11.Auto Split Shutter automatically opened to transmit radiation to the sample, Spark Igniter to ignite the sample.
- 12.Heat Flux Meter - for setting the irradiance level at the surface of the specimens, the range from 0-100KW/m<sup>2</sup>.
- 13.Furnace Heater, rated 550W at 110 V with a heat output of 25 kW/m<sup>2</sup>.
- 14.The movement of sample is controlled by air cylinder automatically.
- 15.Air Cooled calorimeter for setting the irradiance level at the surface of the specimens.
- 16.Provided with no pilot flame and pilot flame modes. Digital display flow rate of air and propane.
- 17.Gas measurement ports are provided, for optional measurements of toxic gases.
- 18.19 analysis rack, 15 touch screen panel type PC for the whole control and automatic testing.

19. DAQ (Data Acquisition) Program controllable with the touch screen panel PC.

20. Testing results: Light transmission, Optical density, Mass optical density (MOD), Mass loss rate, the Clear-beam correction factor etc.

Application : It is the most widely accepted apparatus for the measurement of smoke from burning materials and measures specific optical density under flaming and non-flaming conditions. It is also used for the extraction of toxic gas.

## Product Details

1. Install an explosion-proof aluminum foil device inside the box to reduce the personal risk of the tester when an accident occurs;
2. The top of the box has a pressure relief port, which is connected with the pressure regulating volume bottle to adjust the internal pressure of the box;
3. The top of the box and the bottom of the box are equipped with cylinders that can be automatically moved for inhaling and discharging flue gas;
4. Equipped with ASTM E662 radiant furnace unit to provide 25KW/M2 heat radiation output;
5. Equipped with ASTM E662 standard six-head burner, combined with radiant furnace for flaming combustion test;
6. Provide air-cooled copper plate calorimeter, which can be adjusted by using the back cooling method during testing;
7. Equipped with ISO 5659-2/GB/T8323 radiation cone device, which can provide 50KW/M2 heat radiation output;
8. Provide ISO 5659-2/GB/T8323 standard open flame burners, which can be tested with flaming flames in conjunction with radiation cones;
9. Provide SB water-cooled heat flow meter with standard measurement certificate attached;
10. Can be equipped with self-circulating cooling water source, no need for external cooling water source, easy for users to use;
11. Equipped with weighing device for MOD smoke density test and thermal weight loss test of materials;
12. The sensor range is 0-2000g, the accuracy is 0.1g;
13. Equipped with NES 711 open flame burner and mixing fan;
14. The switching between the radiant furnace and the radiation cone is connected by aviation joints, and the user can complete the replacement between different standard test devices by simply plugging and unplugging;
15. The optical box is installed on the top of the box, the light source is accepted as a side window type photomultiplier tube, S-4 frequency response, the transmittance accuracy can reach 0.0001%;

16. According to the change of the smoke density state, automatically switch to Clear, Filter and Dark three gear positions;
17. The ND2 neutral expansion filter is installed in the cassette, which is convenient for the user to self-calibrate, and can automatically switch the gear position during the test;
18. The lower part of the box is an incandescent light source, which can provide uniform spot output;
19. The smoke density test box is an integrated design, equipped with a touch screen computer, the user can use the test software, the whole process is set and controlled for the computer;
20. Comes with a printer device, the test is over, the user can print a test report according to the test software.

## Standards:

ASTM:ASTM E662

ISO:ISO 5659-2

IMO:FTPC Part 2

NES:NES 711

This equipment is satisfied with standards (ASTM E 662, BS6401, ISO 5659, NES 711, NEPA 258, etc).

Using ISO 5659 conical radiant heat furnace, We can change the heating condition from 10KW/m<sup>2</sup> to 5KW/m<sup>2</sup> by user.

In the test of NES 711, there are non-flaming test and flaming test in test conditions different from ASTM E 662.

Dimension:1560 mm (W) x 2220 mm (H) x 1060 mm(D)

Weight:210kg

## Installation requirements

Electrical: 110V AC 60Hz / 230V AC 50Hz, 30A

Ambient Temperature: Operating 10°C to 35°C

Dimensions: 1560 mm (W) x 2220 mm (H) x 1060 mm(D)

Gas Supplies: mixture of air & propane

## 10.Steiner Tunnel Test Apparatus



### Product introduction

UL910 covers the test method for determining values of flame-propagation distance and optical smoke density for electrical and optical-fiber cables that are intended to be installed in ducts, plenums, and other spaces used to transport environmental air without the cables being enclosed in raceways in those spaces.

### Technical parameters

- 1.The fire test chamber is exactly the same as that of UL fire lab.
- 2.The fire test chamber is a rectangular horizontal duct with a removable lid.
- 3.The sides and base of the chamber are lined with an insulating firebrick.
- 4.One side of the fire testing chamber is provided with double quartz observation windows with the inside pane flush mounted.
- 5.Multiple windows are located along the tunnel so that the entire length of the test sample is observable from outside the fire chamber.
- 6.The lid is consist of a removable noncombustible metal and mineral composite structure.

7. The lid covers the fire test chamber and the test samples maintains in an unwarped and flat condition.
8. Two NFP elbow gas burners delivering flames upward against the surface of the test samples.
9. Remote spark ignition mode, to ensure the safety.
10. An air intake shutter is located upstream of the burner.
11. Six refractory firebricks along the side walls of the chamber for proper combustion.
12. The static pressure meter inserted through the top at the midwidth of the tunnel below the ceiling.
13. The exhaust end is fitted with a gradual rectangular-to-round transition piece.
14. The exhaust duct is insulated with high temperature mineral composition material.
15. An exhaust fan is installed at the end of the exhaust duct.
16. The air flow and draft pressure are controlled by automatically damper and Frequency converter.
17. A photometer system consisting of a lamp and photocell mounted on a horizontal section, and with the light beam directed upward along the vertical axis of the vent pipe.
18. Thermocouples installed inside and outside the floor of the test chamber.
19. Data acquisition system and software.

## Product Feature and Application

1. The stainless steel combustion test box body has a brick structure inside, which can resist the flame impact and has good thermal insulation performance;
2. Double-layer quartz glass observation window, can observe the flame spread distance, and record;
3. Using the indicator light recording method, the flame spread distance can be recorded more intuitively;
4. The cooling water circulation support bracket can support the combustion cover such as calcium silicate board;
5. Equipped with 2mm thick 304 stainless steel water seal groove to ensure that the smoke does not leak during the test;
6. 304 stainless steel insulation body cover, filled with high temperature insulation material;
7. Equipped with an escalator sample installation platform to facilitate the installation, removal of samples and inspection of the furnace;
8. Independent multi-function exhaust pressure detecting device: real-time monitoring of exhaust pressure changes during testing. Detection range 0~250Pa, accuracy  $\pm 0.5\text{Pa}$ , system indication pressure test accuracy  $\pm 2\text{Pa}$ ;
9. Fan: 380V, 50Hz, 3Kw equipped with frequency converter can change the wind speed, the flow rate is at least 8000m<sup>3</sup>/h, and the flue gas generated by the sample

combustion can be discharged out of the room in time to ensure the safety of the test;

10. Double-head gas burner: It can output standard 5.3MJ/min heat, and can control the gas flow rate by mass flow meter according to different standards. The measuring range is 0~160L/min, which can change the calorific value output of the burner and the maximum output. Energy up to 100MJ/min;

11. Automatic ignition system: to ensure the safety of the test, high-voltage igniter, 44KV, 50mA, the minimum high voltage of the ignition electrode is 1.8kVp;

12. Smoke density system: Provide a separate signal processing system to ensure that the sensor is linear;

13. Automatically record temperature and smoke sensing signals, and the sample collection frequency is 1 Hz;

14. Mass flow controller: 316 stainless steel material, the maximum pressure of 1000psig (70bar), leakage rate is less than  $1 \times 10^{-7}$ sml / s, NIST calibration, 0 ~ 5VDC and 4 ~ 20mA signal, loop protection, propane flow range 0 ~ 2.3g / s, control speed  $\leq$  2s, control accuracy of  $\pm 1\%$  FS, repeatability  $\pm 0.5$ FS, temperature range 0 ~ 50 ° C, humidity range 0 ~ 90%, digital display, automatic The gas supply meets the 5000Btu (5.3MJ)/min heat requirement during the control test, and the software automatically records the amount of gas used;

15. Standard test software can automatically record test data such as system wind speed, temperature and smoke density.

## Product Details

UL910/NFPA262 Steiner horizontal tunnel furnace is mainly used for the flame retardant performance test of CMP grade wire and cable. It is mainly used for cables in horizontal subsystems that are directly laid in ventilation or forced ventilation without metal pipelines. The flame retardant test standard represents the most stringent flame retardant test standard for UL and even the entire wire and cable flame retardant test. Only the fluorine material sheath cable can pass the flame retardant test method. Due to the high decomposition temperature of fluoroplastics (greater than 400 degrees), the ignition point is also high (800 degrees or more), and it is not easy to burn when the fire is not strong, so it has better fire resistance than other organic materials.

The purpose of this test is to determine whether the flame-propagation and smoke-generating characteristics of cables without raceways are within the limits specified in the National Electrical Code (NEC). Cables having adequate fire-resistant and low-smoke-producing characteristics need not comply with general wiring methods when the cables are installed (without raceways) in environmental-air ducts, concealed hollow building spaces used as ducts for environmental air, and other environmental-air-handling spaces not specifically excluded (areas involving grease



and flammable dust, vapor, and the like). This test method is essentially the same as the test method described in the Standard Method of Test for Fire and Smoke Characteristics of Wires and Cables, NFPA 262.

Application: It is mainly used for cables in horizontal subsystems that are directly laid in a ventilated or forced air environment without using metal pipelines.

Standards: NFPA 262 UL910

Dimension: 21300 mm (L) x 1100 mm (D) x 2100 mm (H)

Weight: 1770kg

Electrical: 115 Volts AC 60Hz / 230 Volts AC 50Hz.

## Installation requirements

Electrical: 380 Volts AC, 20KW

Ambient Temperature: Operating 15°C to 35°C.

Gas: Methane and air compressor

Utility: Crane

## 11. Single Cable Vertical Flame Tester



## Product introduction

Single Cable Vertical Flame Tester is used for the vertical flame propagation of a single insulated wire or cable is a bench scale test to determine the resistance of a single cable to a 1kW flame application. It conforms to IEC60332-1-2 (flame propagation) and IEC60332-1-3 (test for flaming droplets).

## Product parameters

- 1.Stainless steel box, the height of 1300mm, width of 300mm, depth of 450mm.
- 2.Two stainless steel rods, can bind single wire cable or optical cable sample.
- 3.1KW mixed standard burner, can provide the standard test fire source.
- 4.Regulating gas and air flow rate of the rotor flow meters.
- 5.Pressure gauge and pressure relief valve to ensure that the pressure output is 0.1MPA.

## Product Feature and Application

- 1.Electric spark ignition device.
- 2.Flame height measuring tool.
- 3.Up to four time modes can be selected according to different sample diameters.
- 4.Calibration kit for the testing flame.

Application:Single wire and cable burning tester for vertical flame spread testing of single wire and cable or fiber optic cable, and to verify the burning of drip in flame conditions.

## Product Details

Standards:

GB/T 18380.1~2:2011,GB/T 18380.11~13:2008

IEC 60332-1-1~3:2004

Dimension:560 mm (W) x 380 mm (D) x 1400 mm (H)

Weight:36kg

## Installation requirements

Power requirements: 220V, 5A

Ambient temperature: 10 ° C to 35 ° C

Gas requirements: industrial propane, compressed air

## 12. Corrosion Test Apparatus



### Product introduction

The International Electrotechnical Commission IEC 60754 Part 1 and Part 2 test is performed to determine the degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring the pH & conductivity. IEC 60754-1 is halogen-free cable came from and including the polymer to halogenated compounds on the basis of the additive compounds emitted during combustion, except the fluoridation hydracids, it is measure for gas of halogen volume, IEC 60754-2 for electrical or optical cable from compounds emitted during the combustion of measure the gas of oxidation limit.

### Technical parameters

1. 1200°C Split-Hinge Tube Furnaces for horizontal use.
2. Heating element modules for superior radial and linear temperature uniformity and fast heat up and cool down.
3. Long-life, energy-efficient elements require little or no maintenance.
4. Mode conversion switch (Test method of IEC 60754-1&2 could be selected).
5. Alarm Temperature Controller: Temp controller to protect overheating of furnace.
6. Quartz work tube and sample lading assembly.
7. pH and conductivity measuring instruments with digital display and electrodes Stirrer.
8. Mass flow meter control the flow rate of air and digital display.
9. Activated Charcoal (air filtering): Filter for filtering the supplied air (activated charcoal).
10. Silica Gel (air drying): Device for drying the supplied air.
11. 100 ceramic sample boats.

## Product Features

1. The mass flow meter adjusts the air flow, the range is 0-3L/min, and the air flow is numerically displayed, and can be precisely adjusted, and the adjustment precision is 0.1L/min;
2. Equipped with air filter device, containing 1 activated carbon and silica gel filter column;
3. Including two temperature control modes, one is the temperature programming mode, the other is the single-point heating mode, all adopt PID temperature control mode, the user can choose according to the test;
4. Over-temperature protection device, when the temperature of the tube furnace exceeds 1100 degrees, the heating can be automatically cut off to protect the furnace body;
5. Openable tube furnace device, easy for users to clean and replace the quartz heating tube;
6. Using imported thermoelectric tube furnace device, with excellent product performance and longer product life;
7. It is equipped with auxiliary devices such as magnetic stirrer, PH meter and conductivity tester.

## Product Details

Corrosion Test Apparatus, designed and manufactured according to the test method GB/T 17650, IEC 60754-1/2, used to test the content of halogen gas released during the combustion of wire and cable, pH (hydrogen ion content), conductance Rate, etc.,

can be extended to EN 50305 and BS 6853 Appendix B, smoke toxicity test, in line with standards: GB/T 17650.1~2-1998, IEC 60754-1/2-1994, EN 50305, BS 6853 Appendix B, etc. standard test.

Standards:

IEC:IEC 60754-1&2: 2011

GB/T 17650-1&2:1998

Dimension:

Dimensions: 889 mm (W) X 432 mm (D) X 406mm (H)

Control Unit: 430 mm (W) × 370 mm (D) × 320 mm (H)

Weight:76kg

## Installation requirements

Electrical: 110V AC 60Hz / 230V AC 50Hz, 15A

Ambient Temperature: Operating 10°C to 35°C

## 13.Cone Calorimeter



## Product introduction

Cone Calorimeter measures heat release rate(H.R.R), smoke release, ignition time, oxygen consumption, carbon monoxide and carbon dioxide generation and mass loss rate when specimen is exposed to resource of conical heater.

## Technical parameters

Power supply voltage	AC220V AC 50Hz
Maximum operating power	≥5KW
Cone heater power	≤5KW
Heat output heat	0~120KW/m <sup>2</sup>
The maximum placement of the sample box	100mm × 100mm × 50mm
Exhaust flow rate	0.012m <sup>3</sup> /s~0.035 m <sup>3</sup> /s (adjustable)
Timing value resolution	1s error <1s/n
Oxygen analysis	paramagnetic oxygen analyzer, concentration range 0-25%
Smoke density analysis	(optional)
Infrared analyzer	CO: 0-1% CO <sub>2</sub> : 0-10% (optional)

## Product Features and Application

- 1.Cone Calorimeter with movable analysis cabinet, can be connected with a large heat release rate test system such as ISO 9705, EN 13823 etc, complied with ISO 5660, ASTM E1354,BS 476 Part 15 etc. testing standards.
- 2.Integrated test body and 19 inches analysis cabinet, embedded PC 15 Inch Touch screen computer, for the whole control and automatic testing.
- 3.Conical heater rated power 5000W, the heat output of 0 ~ 100kW/m<sup>2</sup>, using PID temperature controller, while the radiation cone can be horizontal or vertical.
- 4.Exposed to the central part of the surface of the sample 50 x 50mm range, radiation at the center of the deviation is not more than 2%.
- 5.The sample weighing range 0 ~ 3000g; accuracy: 0.1g.
- 6.Auto Split Shutter automatically opened to transmit radiation to the sample.
- 7.ABB EL3020 Paramagnetic oxygen analyzer, using the method of paramagnetic change

to measure the concentration of oxygen in the gas. Concentration range of 0-25%.

8. Smoke density analysis using laser system, the system consists of a 0.5mW He Ne laser, the main detector and auxiliary detector.

The exhaust system consists of the fan, the smoke collection cover, the exhaust pipe and orifice plate flow meter and so on. Exhaust fan flow rate of 0 ~ 50g/s, precision 0.1g/s.

9. Ring sampler have been installed from the smoke collecting hood at 685 mm, with 12 holes.

10. The exhaust flow rate should be determined by measuring the pressure difference on both sides of the sharp edge orifice 350 mm above the fan, the inner diameter of the sharp edge orifice plate is 57mm + 1mm.

11. ABB SCC-S Gas sampling system comprises sampling pump, filter, cold trap, waste water discharge, water filters and CO<sub>2</sub> filters;

Portable water cooling system without need for waterworks and plumbing when using the Heat Flux meter (for ISO 5660).

12. In order to calibrate the response of the whole test system, the use of a square opening brass calibration burner, used to measure the value of C- coefficient.

13. The data acquisition system be able to record oxygen analyzer, orifice meter, thermocouple and other instruments of the output.

Application: Suitable for testing the heat release rate of building materials, Rail, Wire Cable

## Product Details of the Cone Calorimeter

The name of Cone Calorimeter is derived from the conical heater as used by Dr. Vytenis Babrauskas to inspect test specimen (100mm x 100mm) with flux up to 100kW/m<sup>2</sup> for the bench scale oxygen depletion of his development. Cone Calorimeter test is based on the theory that pure combustion calories are in proportion to a necessary amount of oxygen for combustion and 13.1 MJ/kg is generated whenever oxygen 1kg is consumed, and heat emission, ignition time, oxygen consumption, CO and CO<sub>2</sub> generation, and flow of ignited gases as generated from test materials are measured.

Standards

ASTM: ASTM D6113, ASTM E1354, ASTM E1740, ASTM F1550

BS: BS 476-15

ISO: ISO 5660

EN: EN 45545-2: 2013

GB: GB/T 16172:2007

## Installation Requirements

Electrical: 230 volts Nominal 50 Amps

Ambient Temperature: Operating 10°C to 35°C

Dimensions: Apparatus: 1800mm (W) x 900mm x (H) x 2600mm (D)  
Gas Supplies: Methane, Nitrogen, Compressed Air

## 14.3 Metre Cube Smoke Density Apparatus



### Product introduction

3 Metre Cube Smoke Density Apparatus is used for measuring the emission when the cable or optical cable is placed horizontally under the definite fire condition. The equipment comprises a cubic enclosure and a photometric system.

The specified standard fire source (ethanol  $90\pm 1\%$ , methanol  $4\pm 1\%$  and distilled water  $6\pm 1\%$ )  $1L\pm 0.01L$  is burned.

IEC 61034 - 1 & 2 Measurement of Smoke density of cables burning under defined condition

BS 6853 Code of practice for fire precautions in design and construction of passenger carrying trains



## Product parameters

1. Chamber internal size is 3,000mm(W) × 3,000mm(D) × 3,000mm(H).
2. Its configured with a door with test glass windows and in both faces of the opposite side there's a sealed transparent window (minimum 100mmX100mm) .
3. Support system to allow separate fitting of Light Source and Photocell in the outer wall.
4. The Light Source is Dedolight Classic Series Tungsten with 100W.
5. The Dedolight Tungsten power supply is 12V DC.
6. Velocity of light : 2000 lm~3000 lm, and color temperature : 2800K~3200K.
7. The Receptor Photocell is silicone type and has a spectrum reaction conform to Photopic Observer (similar to a human eye) of the International Commission on Illumination (CIE).
8. Supplied with customised extraction facilities and all instrumentation, fans, stands and sample mounting frames.
9. Software shows testing results including the inner chamber temperature, light transmission etc.

## Product Feature and Application

### 1. Smoke density box test box part:

- a. The internal dimensions of the box is 3000mm X 3000mm X 3000mm, the total internal volume is 27 cubic meters;
- b. The inside of the box is made of SUS 304 stainless steel and the outside is made of iron spray. Due to the burning test process, corrosive gas is continuously released. The inner wall of the box is treated with Teflon dark color, which is not only resistant to corrosive gases. Erosion, while testing, will not cause failure of test results due to reflective;
- c. The test box is equipped with a laboratory door and an observation window, so that the user can observe the state in the combustion chamber;
- d. On the left and right sides of the wall, a transparent glass plate is installed, and the light source and the optical receiving device can be respectively installed on both sides;
- e. Open several ventilation holes near the ground to ensure the balance of atmospheric pressure inside and outside the box.

### 2. Smoke density test box measurement and data acquisition part:

- a. Prepare a desktop fan to evenly agitate the smoke in the combustion chamber;
- b. The top of the box is equipped with a centrifugal fan to eliminate the smoke generated by the test;
- c. Surface ignition device, remote ignition to ensure the safety of test personnel;
- d. In the preparation of combustion test brackets and stainless steel alcohol trays;
- e. The light source is an imported light source, and the test light source is controlled by a constant current source, and has higher stability;
- f. The light source is accepted as a silicon photocell, equipped with a cosine calibration device and a color filter. Through this measure, a higher human eye matching degree can be achieved;
- g. Standard transmittance, using 19 cabinet floor installation, built-in touch screen computer and printer.

### 3. Smoke density test box optical technical parameters:

- a. Using a constant current source to control the light source, the data is more stable and reliable than the constant voltage mode;
- b. Can automatically obtain the optical gear position, the general accuracy is 0.01%;
- c. Matching error:  $f1 \leq 4\%$ , the overall linear accuracy is 1%.

## Product Details

27 cubic meters wire and cable smoke density test box, developed according to IEC 61034, BS 6853, GB/T17651.1~2 test standards, mainly used for wire and cable and optical cable smoke density performance testing. During the test, when the smoke is generated, the light path is blocked by the smoke, and the optical transmittance is continuously changed, thereby obtaining the minimum transmittance value and the test time for achieving the minimum transmittance.

Standards:

BS: BS 6853

IEC: IEC 61034-1&2: 2005

Dimension: 3150 mm (W) x 3150 mm (D) x 3150 mm (H)

Weight: 240kg

## Installation requirements

Electrical: 110V AC 60Hz / 230V AC 50Hz

Ambient Temperature: Operating 10°C to 35°C

## 15.Oxygen Index Tester



### Product introduction

(Oxygen Index tester) measures minimum oxygen concentration as necessary when specimen combustion. This equipments the oxygen sensor is adapted Electrochemistry Type which has a precise and less error rate. But it has short life and will be replaced once ten months. This meets the contents of standards like ASTM, ISO, NES and so on.

## Product parameters

Internal diameter of the combustor	100mm
Height of the combustor	450mm
Pipe hole diameter of the long pole igniter trailing end diameter	2±1mm
Flowmeter	160~1600L/Hadjustable
Precision of the pressuregauge	level 2.5
Resolution of the pressure gauge	0.01Mpa
Resolution of the Oxygen concentrate indicator	0.1%
Oxygen sensor	imported from Germany with high precision
Gas source	the GB3863 specified oxygen, the GB3864 specified nitrogen
Experiment environment temperature, humidity	10~35℃,45-75%
Input pressure	0.2-0.3Mpa
Working pressure	0.05-0.15Mpa
Sample type	self-supporting materials and non-self-supporting materials
Overall dimensions	700mm(W)×400mm(D)×600mm(H)
Power supply	AC220V, 50/60Hz 1A
Air source source	oxygen, nitrogen( prepared by users)

## Product Feature and Application

1. Electrochemistry Oxygen Cell for assessing accurate oxygen (< 0.1%) levels.
2. Display of nitrogen and oxygen gas flow by flow meters.
3. Digital display of oxygen percentage in atmosphere during test (no calculations needed).
4. High temperature resistant quartz glass tube, can withstand a higher test temperature.
5. Gas ignition device, easily adjust the length of the flame.
6. Sample holders for both rigid and flexible samples supplied.
7. More quicker response time.
8. Repeatability (typical):  $\pm 0.1\%$  Oxygen
9. Linearity (typical):  $\pm 0.1\%$  Oxygen

Application: Under the specified test conditions, such as indoor temperature conditions, in the oxygen-nitrogen mixed gas stream, just measure the minimum oxygen concentration required to maintain the sample combustion, the result is defined as the oxygen index

## Product Details

According to the different ambient temperature during combustion, it can be divided into room temperature oxygen index method and high temperature oxygen index method. It is generally believed that the higher the oxygen index, the better the flame retardant performance of the material, and the lower the oxygen index, the easier the material is. ignite.

1. Using modern oxygen sensor technology, the percentage of oxygen can be automatically obtained;
2. Digital display of oxygen percentage concentration, reading accuracy of 0.1%;
3. Using a precision metering gas flow valve to adjust the gas flow, can accurately adjust the flow of oxygen and nitrogen;
4. Oxygen percentage step adjustment, adjustment accuracy can be 0-0.2L / Min;
5. Equipped with nitrogen and air pressure reducing valve, the output pressure can be adjusted to 0.1mpa;
6. External electrochemical sensor, easy for users to replace;
7. High temperature quartz glass cylinder, can withstand higher test temperatures;
8. Equipped with a gas igniter device, can easily adjust the length of the flame and has the function of cutting off the combustion gas;

9. Modern design appearance, with a more exquisite design than similar products;
10. Provide relatively simple instrument installation manual files and operation files for users to use.

Standards:

ASTM: ASTM D2863

ISO: ISO 4589-2

NES: NES 714

Dimension: 370 mm (W) x 300 mm (D) x 480 mm (H)

Weight: 8kg

## Installation requirements

Power requirements: 220V, 10A

Ambient temperature: 10 ° C to 35 ° C

Installation space: fume hood placement

Gas requirements: nitrogen, oxygen