



YUYANG INDUSTRIAL CO., LIMITED

China Manufacturer of Fire Testing Equipment

Cone Calorimeter Heat Release Rate Flammability Testing Equipment With ISO 5660 GB/T 16172



ISO 5660 GB/T 16172 Cone Calorimeter Heat Release Rate Flammability Testing Equipment

Description:

The Cone Calorimeter is the most significant bench scale instrument in the field of fire testing.

Heat release is the key measurement required to assess the fire development of materials and products. Traditionally it has been very difficult to measure and more recently full scale testing of items (e.g. furniture) has been possible by burning these

articles and measuring the evolved heat using a technique called oxygen depletion calorimetry.

The Cone Calorimeter has been produced to meet all existing Standards (including ISO 5660, ASTM E1354, ASTM E1474, ASTM E1740, ASTM F1550, ASTM D6113, CAN ULC 135 and BS 476 Part 15) and can also be purchased in modular form so that those laboratories with particular interests such as heat release, mass loss, smoke production, etc. can initially purchase the sections they require and later add further instrumentation into the same cabinets in order to complete a full specification instrument. This is just one of the advantages of the Cone Calorimeter.

Application:

Combustion product stream through the oxygen concentration of the oxygen consumption and calculate the heat release rate, heat release rate of the material is also the material properties of the combustion products of the combustion burner of the most important parameters, more accurately measure the material during combustion heat release rate, for predicting fire hazard prevention and fire-retardant treatment is extremely important.

Standards:

ISO 5660 : Reaction-to-fire tests -- Heat release, smoke production and mass loss rate.

ASTM E1354 : Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter.

BS 476: PART 15: Fire tests on building materials and structures.. Part 15: Method for measuring the rate of heat release of products.

GB/T 16172-2007: Test method for heat release rate of building materials

Specification:

1. Cone-shaped radiant electrical heater, which is capable of heating power 5kw, radiation intensity: 100kw / m², equipped with three thermocouples to measure the temperature.

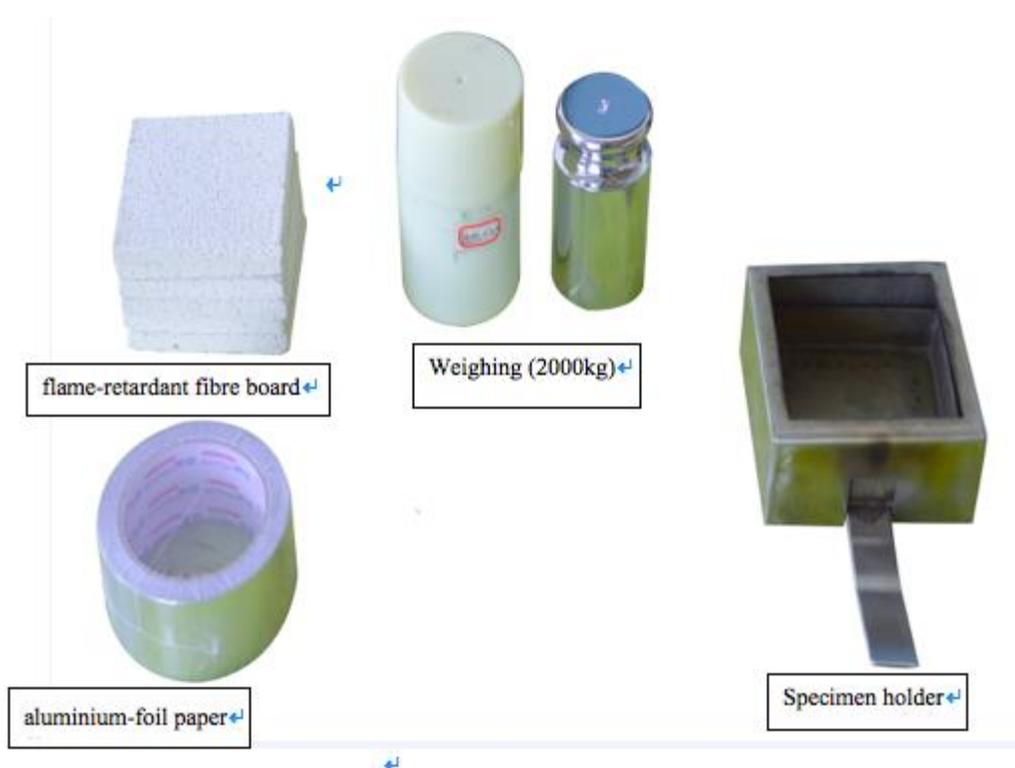
2. Radiation shield, which is not-water cooled, is consisted of stainless steel, with a total thickness not exceeding 12mm.
3. Irradiance control, the system shall be properly tuned so that it maintains the average temperature of the heater thermocouples at the preset level to within $\pm 10^{\circ}\text{C}$.
4. Weighing device, which shall have an accuracy of 0.1g, with a range of 0~2000g.
5. Specimen holder, which shall have the shape of a square pan with an opening of $(106\pm 1)\text{mm} \times (106\pm 1)\text{mm}$ at the top, and a depth of $(25\pm 1)\text{mm}$. The holder shall be constructed of stainless steel with a thickness of $(2.4\pm 0.15)\text{mm}$.
6. Retainer frame, shall be constructed of stainless steel with a thickness of $(1.9\pm 0.1)\text{mm}$, in the shape of a box with an inside dimension of each side $(111\pm 1)\text{mm}$ and a height of $(54\pm 1)\text{mm}$. The opening for the specimen face shall be $(94.0\pm 0.5)\text{mm} \times (94.0\pm 0.5)\text{mm}$.
7. Exhaust gas system, which shall consist of a centrifugal exhaust fan, a hood, intake and exhaust ducts for the fan.
8. Gas sampling apparatus, includes a pump, a filter to prevent entry of soot, a cold trap to remove most of the moisture, a by-pass system set to divert all flow except that required for the gas analyzers, a further moisture trap.
9. Ignition timer, shall be capable of recording elapsed time to the nearest second and shall be accurate to within 1 s in 1 h.
10. Oxygen measurement:
 - 10.1 Measuring range: 0-25%
 - 10.2, the signal output: 4-20mA;
 - 10.3, the response time: $\leq 2\text{S}$;
 - 10.4 Ambient temperature: 0-45 $^{\circ}\text{C}$;
 - 10.5 Relative humidity: <90% (non-condensing);
 - 10.6, linearity: $<\pm 0.1\% \text{O}_2$;
 - 10.7 Zero drift: 0.05% O_2 (one week);
 - 10.8 Repeatability: $<\pm 0.02\% \text{O}_2$;
11. Optical smoke density analyzer, consist of light source, lens, photoelectric element.
12. Data collection and analysis system, collect and record oxygen concentration, temperature, heat release rate, thermocouples, heat smoke duct air flow velocity, sample ignition time and extinguish time, total oxygen consumption, mass lose rate, total heat release, carbon dioxide generated curves and carbon monoxide generated curves, all the procedure curves and real-time data, can be printed and saved.

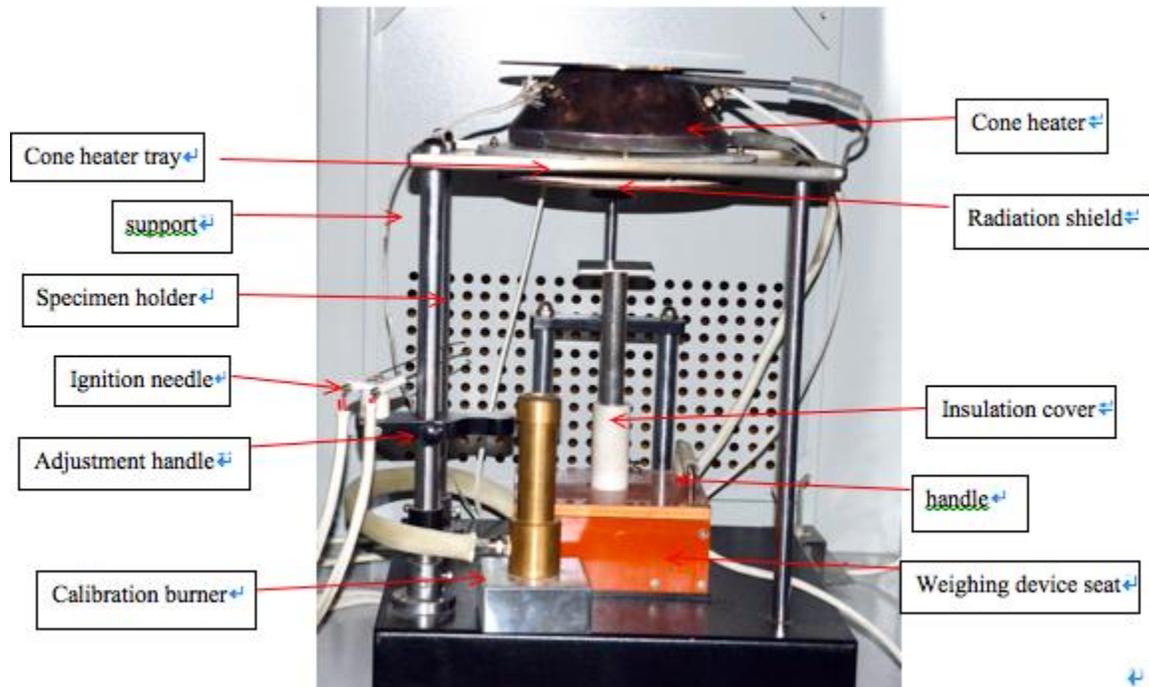
13. Smoke process system, adopts powerful exhaust system, the equipment is equipped with powerful fan; after finish test, start draught fan to exhaust waste-gas, do concentration purification treatment, in order to meet the standard.

14. Control chamber dimension: L700 * W600 * H1920mm

Test chamber dimension: L1680 * W700 * H2410mm

15. Power supply: AC 380V 50HZ total power:6KW.





Calibration time setting(S)	180
Exhaust flow rate setting(m ³ /s)	0.0240
Average CH ₄ release rate(kw)	5.00
Methane flow rate setting(L/Min)	9.00
Baseline oxygen concentration(%)	20.945
Methane flow(L/Min)	8.97
Average oxygen concentration(%)	0.000
Average pressure differential(Pa)	0
Average exhaust temperature (°C)	0.0
orifice constant C	0.00000
CH ₄ flow rate write in	Exhaust flow rate write in
Methane open	Methane run
Calibration start	Methane stop

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	X	Y
1	Heat release rate test report																							
2	Test report number 1																							
3	Commission unit XXX																							
4	address XXX																							
5	Telephone																							
6	Sample																							
7	Name																							
8	Mark																							
9	State																							
10	Specification model XXX																							
11	Production unit XXX																							
12	Sample delivery date 2016/9/19 11:45																							
13	Test date 16/09/19 11:45																							
14	project																							
15	According to the standard GBY 26172-2007 建筑材料热释放速率试验方法																							
16	See equipment																							
17	test result																							
18	Sample exposure area 0.0088 m ²																							
19	Orifice plate constant C 0.1079																							
20	Time 1920s																							
21	Minimum transmittance 99.06%																							
22	Start time of combustion 0s																							
23	Combustion timing 0s																							
24	Sample initial mass 0.0671 kg																							
25	Final sample quality 0.0668 kg																							
26	Average heat release rate 0.72kw																							
27	Mass loss rate 0.0005 kg/MP.s																							
28	Total heat release 1.36723																							
29	The average heat release rate per unit area 80s 22.40kw/m ²																							
30	The average heat release rate per unit area 300s 22.30kw/m ²																							
31	Average heat release rate per unit area 80s 80.20kw/m ²																							
32	Heat release rate per unit area 300s 30.60kw/m ²																							