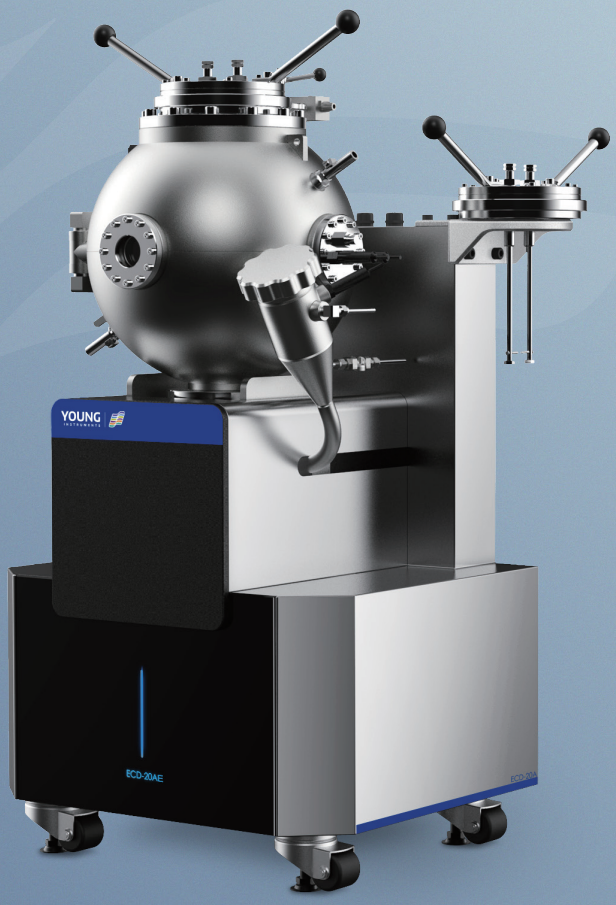
YOUNG INSTRUMENTS

ECD-20AE

20L Spherical Explosion Tester

Advanced Technology | Accurate | Safety | Automated Operation



The ECD-20AE is a professional instrument for determining the maximum explosion pressure maximum rate of explosion pressure rise, and explosion index of dust clouds under specific test conditions. Suitable for assessing dust explosivity in production sites of aluminum powder, zinc powder, plastic powders, and organic synthetic pharmaceutical intermediates, it accurately measures parameters like maximum explosion pressure, maximum rate of explosion pressure rise, explosion index, lower explosion limit, and limiting oxygen concentration.

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Product Features

- Tests the explosion parameters of dusts, gases and mixed solid/gas systems.
- Built-in international common test standards, either according to the standard parameters of the test, can also be customised.
- Chemical ignition and electrostatic ignition, suitable for different testing purposes.
- Explosion vessel with water-circulating jacket for constant temperature of the test environment.
- Input the target concentration value, automatic cleaning, evacuation, and complete gas distribution as required.
- Dust dispersing device capable of completely and uniformly dispersing the dust into the explosion vessel.
- Experiments are carried out automatically without human intervention.
- Real-time display of time and pressure, more intuitive testing process.
- Experimental results include time-pressure curves, providing detailed information about the explosion.
- Remote control, to ensure the personal safety of experimental personnel.
- Adopt computer control, strong data analysis ability, accurate judgement of curve characteristics.

Test Standards

ASTM E1226 | ASTM E1515 | EN 14034-1 | EN 14034-2 | EN 14034-3 | EN 14034-4 | GB/T 16425 | GB/T 16426 | GB/T 803 | ISO/IEC 6184/1 | ISO/IEC 6184/2 | ISO/IEC 80079-20-2

Application Fields

Chemical Industry

Pharmaceuticals

Coal Industry

Technical Specifications

Operating Environment	5 °C – 45 °C, <85% RH
Explosive Container	20 L Ball with jacket
Vessel Pressure Resistance	Design pressure 3.0 MPa @ 25°C
Ball Material	Stainless steel 316
Ball Working Temperature	Maximum temperature 220 °C
Sphere Volume	20 L
Mezzanine Volume	1.5 L
Diffusion Pressure Sensor	Range 0–3.5 MPa, overload pressure 10.5 MPa, accuracy ±0.1% FS, operating temperature -40–105 °C
Gas Pressure Sensor	Range 0–200 kPa, overload pressure 600.0 kPa, accuracy ±0.1% FS, operating temperature -40–105 °C
Explosion Pressure Detection	Detection range 0–10.0 MPa, resolution 0.001 MPa, accuracy ±0.5% FS, response time < 20 μs
Explosive Pressure Detection Channels	2
Explosion Temperature Sensor	Detection range 0–1000 °C, resolution 0.01 °C
Dust Diffusion Vessel	Capacity 0.6 L, pressure resistance 2.5 MPa
Powder Spraying Pressure	2 MPa
Nozzle Type	Bounce Nozzle
Powder Spraying Delay Time	30–50 ms
Ignition Delay Time	60 ms

Ignition Method	Chemical ignition (customer's own); Electrostatic Ignition (15 kV, 0.5 s)
Gas Pressure Sensor	Range 0–200 kPa, Overload Pressure 600.0 kPa, Accuracy ±0.1% FS, Operating Temperature -40–105 °C
Explosive Pressure Data Acquisition	Maximum acquisition rate 100 ks/s, recording time 1 s
Ignition Control	Support remote wireless ignition
Automatic Air Distribution	2 gas inlets, 1 air inlet; adopts partial pressure method of air distribution, with independent pressure sensors and solenoid valves, air distribution accuracy ± 0.1%
Vacuum System	Rotary vane vacuum pump, equipped with double impact filters to prevent residual substances from clogging and contaminating the pipeline, and easy to replace
Snap Ring Diameter	95 mm
Cleaning Hole Diameter	150 mm
Viewing Window	Armoured glass, 40 mm diameter
Interface	RJ45
Power Supply	90-260 VAC, 47-63 Hz
Power	600 W
Dimensions	700 mm × 540 mm × 1210 mm