TORONTECH

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HIGH TEMPERATURE CONSTANT HUMIDITY TEST CHAMBER TORONTTHC™ 250G

High Temperature Constant Humidity Test Chamber ToronTTHC™ 250G is designed for advanced material testing across academic institutions, research centers, and industrial facilities.

This chamber supports tests under both high and low temperature conditions, enabling tensile, compression, bending, and shearing evaluations on metal and non-metal materials. It’s especially suitable for specialized industries such as plastics and rubber.

Engineered for flexibility, it works in tandem with your existing testing system—no modifications to the main testing machine are needed. Built-in tracks allow the chamber to be easily moved for ambient temperature tests, simplifying operation and saving time.

APPLICATIONS

- **Plastics & Rubber Industry** - Thermal and humidity resistance testing of polymers, elastomers, and composites for durability and quality assurance.
- **Metals & Alloys** - High and low temperature evaluations of tensile, compression, bending, and shearing properties for strength and performance validation.
- **Electronics & Semiconductor Industry** - Reliability testing of circuit boards, components, and assemblies under varying temperature and humidity conditions.
- **Automotive Industry** - Environmental simulation for testing automotive materials, coatings, and components to ensure long-term stability.

- **Aerospace & Defense** - Qualification of high-performance materials and assemblies under extreme environmental conditions.
- **Academic & Research Institutions** - Controlled testing for advanced studies in materials science, polymer engineering, and applied physics.
- **Independent Testing & Certification Labs** - Standardized environmental testing for compliance, certification, and quality verification.

FEATURES

Key Features

1. The chamber exterior features a durable electrostatic powder-coated finish, while the interior is constructed from mirror-finished stainless steel. An observation window with an anti-fog function is built into the front door, along with interior lighting to facilitate clear monitoring during tests.
2. The temperature control system uses PID control with a display accuracy of 0.1°C, ensuring precise and stable temperature regulation.
3. A centrifugal fan enables forced air circulation within the chamber, maintaining uniform airflow and ensuring temperature consistency that meets test standard requirements.
4. The chamber is equipped with a built-in guide rail system, allowing smooth movement in and out of the main testing machine space.
5. “U”-shaped cutouts on the top and bottom ends, along with integrated seals, make it easy to position the chamber within the testing machine without compromising the test environment.

6. A constant humidity system is included, enabling tests to be conducted in a controlled temperature and humidity environment.

TECHNICAL SPECIFICATIONS

Specification	Value
Dimensions of the chamber (mm) (W x D x H)	420 × 1500 × 670 mm (subject to actual product)
Inner chamber size (mm) (W x D x H)	280 × 430 × 530mm
Temperature fluctuation	≤ 1℃
Temperature control accuracy	≤ ±2℃
Temperature uniformity	≤ 2℃ (axial center 300 mm)
Humidity fluctuation	≤ 5% RH
Humidity control accuracy	≤ ±3% RH (humidity ≥ 50%); ≤ ±5% RH (humidity ≤ 50%)
Heating rate	Room temperature to 250℃ (when unloaded within 40 minutes)
Cooling rate	Natural temperature recovery from 250℃ to 50℃, compressor cooling from 50℃ to room temperature, 1-3℃ per minute
Equipment cavity air outlet direction	Upward air outlet and downward return air
Observation window	W120 × H400mm on the box door, multi-layer hollow electric heating coated glass for insulation and anti-condensation
Cooling method	Air-cooled
Power cord configuration	Power cord is led out from the side of the equipment, with a length of 5 meters, and uses a national standard three-phase five wire cable

Configuration

1. **Observation Window**: Double-glazed electric heating glass for clear viewing.
2. **Temperature Control**: PID automatic temperature regulation for precise control.
3. **Exterior Material**: Cold-rolled steel with a durable powder-coated finish.
4. **Interior Material**: Mirror-finish stainless steel for corrosion resistance and easy cleaning.
5. **Insulation**: Constructed with flame-retardant thermal insulation materials.
6. **Lighting**: One internal lamp positioned for optimal visibility, controlled via external switch.
7. **Air Circulation & Temperature Adjustment System**:
    1. PID-controlled automatic temperature system
    2. Centrifugal fan for consistent air circulation
    3. Stainless steel electric heater with forced ventilation and internal circulation
    4. Sensor designed to withstand high temperature and humidity
8. **Sealing & Reliability**: Fully sealed cooling system piping ensures operational reliability.
9. **Door Sealing**: Door and chamber body are sealed with high-quality silicone strips for excellent insulation.
10. **Mobility**: Integrated guide rails allow smooth linear movement for easy positioning and installation.
11. **Humidity Control**: Includes both cooling-based dehumidification and a built-in humidifier for controlled humidity testing.
12. **Safety Features**:
    1. Protection against power overload and short circuits
    2. Ground fault protection
    3. Leakage protection
    4. Over-temperature protection

Technical indicators of the temperature chamber

Temperature Range: ~ 250 °C
Humidity Range: 30% to 80% RH

A detailed temperature and humidity correlation chart is provided below:

High Temperature Constant Humidity Test Chamber ToronTTHC-250G

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