TORONTECH

XENON ACCELERATED WEATHERING TEST CHAMBER - TORONXTC™-2800H

Xenon Accelerated Weathering Test Chamber - ToronXTC™-2800H simulates the effects of full-spectrum sunlight, temperature, and humidity to accelerate the aging process of materials. Equipped with high-powered xenon lamps and precise environmental controls, it is ideal for testing the durability and weather resistance of coatings, plastics, and other materials in a variety of industries.

APPLICATIONS

Standards

1. **ASTM C1442**: Standard Practice for Conducting Tests on Sealants Using Artificial Weathering Apparatus
2. **ASTM C1501**: Standard Test Method for Color Stability of Building Construction Sealants as Determined by Laboratory Accelerated Weathering Procedures
3. **ASTM D4355**: Standard Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
4. **ASTM D6695**: Standard Practice for Xenon-Arc Exposures of Paint and Related Coatings
5. **ASTM G151**: Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices That Use Laboratory Light Sources
6. **ASTM G155**: Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials
7. **ISO 105-B06**: Textiles - Tests for Colour Fastness - Part B06: Colour Fastness and Ageing to Artificial Light at High Temperatures: Xenon Arc Fading Lamp Test
8. **ISO 105-B10**: Textiles - Tests for Colour Fastness - Part B10: Artificial Weathering - Exposure to Filtered Xenon-Arc Radiation
9. **ISO 4892-1**: Plastics - Methods of Exposure to Laboratory Light Sources - Part 1: General Guidance
10. **ISO 4892-2**: Plastics - Methods of Exposure to Laboratory Light Sources - Part 2: Xenon-Arc Sources
11. **ISO 10977**: Photography - Processed Photographic Colour Films and Paper Prints - Methods for Measuring Image Stability

12. **ISO 11341**: Paints and Varnishes - Artificial Weathering and Exposure to Artificial Radiation - Exposure to Filtered Xenon-Arc Radiation
13. **ISO 11431**: Building Construction - Jointing Products - Determination of Adhesion/Cohesion Properties of Sealants After Exposure to Heat, Water, and Artificial Light Through Glass
14. **ISO 11979-5**: Ophthalmic Implants - Intraocular Lenses - Part 5: Biocompatibility
15. **ISO 16474-2**: Paints and Varnishes - Methods of Exposure to Laboratory Light Sources - Part 2: Xenon-Arc Lamps
16. **AATCC TM169**: Weather Resistance of Textiles: Xenon Lamp Exposure

Simulated sunlight

1. **Realistic Full-Spectrum Sunlight Simulation**: In natural climates, solar radiation is a primary cause of coating aging. The **ToronXTC-2800H**'s xenon lamp provides the most realistic simulation of full-spectrum sunlight, including ultraviolet (UV), visible, and infrared light. This full-spectrum exposure is essential for accurately replicating the aging effects of sunlight on materials, particularly for color change and sun fastness testing.
2. **Controllable and Adjustable Radiation Energy**: The **ToronXTC-2800H** stands out from other domestic brands due to its ability to control and automatically adjust the radiation energy throughout the test. The energy involved in the test process is a crucial factor in polymer material aging. To ensure reliable and comparable test results, radiant energy becomes a key technical indicator. The **ToronXTC-2800H** uses a principle similar to the sun's eye to automatically monitor the energy value during the test cycle. If the xenon lamp’s aging causes the energy to fall short of the pre-set value, the system can automatically replenish the energy to ensure the integrity of the test.

Simulated humid condensation environment

1. **Effective Water Spray Simulation**: In many outdoor environments, materials are subject to erosion caused by rain or moisture. The **ToronXTC-2800H**'s water spray system effectively simulates these environmental conditions, recreating the impact of moisture on materials in a controlled test environment.
2. **Simulating Thermal Shock and Mechanical Erosion**: Water spray is highly effective in simulating the thermal shock or mechanical erosion caused by rapid temperature fluctuations and rain. For example, under sunlight, materials can experience accumulated heat that rapidly dissipates due to sudden showers, causing temperature changes and resulting in thermal shock. This rapid change is a key factor in testing material durability and weather resistance.
3. **Water Spray for Thermal Shock and Stress Corrosion**: The **ToronXTC-2800H**'s water spray feature can simulate both thermal shock and stress corrosion, which are common challenges for materials exposed to varying environmental conditions. This helps in assessing the resilience of materials in real-life scenarios.
4. **Sprinkler System Design**: The **ToronXTC-2800H** is equipped with a specialized sprinkler system consisting of two nozzles, one placed on each side at the top of the test chamber. The sprinkler system operates for a few minutes and then shuts off. This short-duration spray cools the sample quickly, mimicking the conditions that create thermal shock. Additionally, the spray can be programmed to function during either the light or dark cycle, depending on the test requirements.
5. **Purified Water Requirement**: It’s important to note that only purified water should be used in the spray system to ensure the accuracy and consistency of the test results.

Main performance features of the ToronXTC-2800H Xenon Accelerated Weathering Test Chamber

1. **Realistic Full-Spectrum Sunlight Simulation**: The **ToronXTC-2800H** uses a xenon lamp source that conforms to international standards. This provides a highly realistic simulation of the full spectrum of sunlight, which is crucial for replicating natural outdoor conditions during testing. The stable light source ensures comparability and reproducibility of test results.

2. **Unique Reflective System Design**: The chamber is equipped with a unique reflective system that ensures a more even distribution of radiant energy inside the test chamber, allowing for consistent and accurate exposure of test samples.
3. **Automatic Irradiation Energy Control**: The irradiation energy is controlled automatically through a closed-loop system, ensuring precise and stable energy levels. This system compensates for any changes in radiation energy caused by lamp aging or other factors, maintaining consistent testing conditions throughout the test cycle. The controllable range is wide, and energy control points (such as 340nm, 420nm, or 300-400nm) can be easily selected and set via the operation interface in line with ISO standards.
4. **Long-Lasting and High-Energy Xenon Lamp Tubes**: The **ToronXTC-2800H** uses xenon lamp tubes, known for their high radiation energy output. These lamps have an impressive lifespan of over 2,000 hours, ensuring long-term, cost-effective testing.
5. **Flexible Optical Filters**: A variety of optical filters can be selected to meet various domestic and international testing standards, providing flexibility to suit different materials and requirements.
6. **Spray Functionality**: The chamber features a spray function to simulate rain or moisture exposure during testing. The spray time and interval can be adjusted to meet specific test conditions, offering greater control over the testing environment.
7. **Multiple Test Programs**: The **ToronXTC-2800H** allows for the creation and storage of multiple test programs. Up to 6 user preset programs can be stored, each allowing the configuration of 10 different data points for varied testing scenarios.
8. **Real-Time Data Collection and Storage**: Test data is collected and automatically saved in EXCEL format, which can be exported via USB. This eliminates the need for constant manual monitoring, making it a more efficient process.
9. **User-Friendly Touchscreen Interface**: The test chamber features a simple and intuitive touchscreen interface that allows operators to easily set and monitor test parameters. The interface provides a convenient way to manage the entire experiment process.
10. **Precise Temperature Control**: The **ToronXTC-2800H** uses a high-precision Pt100 black panel temperature sensor to automatically control the black panel temperature. The temperature range is from room temperature +20°C to 90°C, ensuring accurate temperature simulation during the test.
11. **Easy Sample Installation**: The chamber includes a unique slide-out tray that makes it easy to install and evaluate samples, improving efficiency and convenience.

12. **Quick Results**: The chamber enables faster aging of samples compared to natural outdoor exposure. Unlike the limited hours of direct sunlight in real-world conditions, the **ToronXTC-2800H** can simulate full-sun exposure 24 hours a day, accelerating the aging process for more rapid results.
13. **Affordable Price and Low Operating Costs**: The **ToronXTC-2800H** offers a great price-to-performance ratio, with low purchase costs, affordable xenon lamp prices, and low operating costs. This makes it accessible even for small laboratories wishing to perform xenon arc testing.

FEATURES

- **Real-Time Data Collection and Storage**: The USB interface enables real-time data collection, automatically saving experimental data in EXCEL format. The data can then be exported via USB, allowing for unattended touch screen menu operation control.
- **User-Friendly Touch Screen Interface**: The touch screen menu is intuitive and easy to navigate, enabling operators to set test parameters and monitor the entire experimental process at any time.
- **Precise Temperature Monitoring**: Equipped with a high-precision Pt100 black panel temperature sensor and black scale thermometer, the chamber continuously monitors both black panel temperature and black scale temperature inside the sample room.
- **Powerful Xenon Light Source**: Three 1.8KW xenon lamp tubes, packaged in their original form, provide a strong and consistent radiation intensity to simulate sunlight effectively. The chamber’s door-type design allows for quick and convenient lamp tube replacement.
- **Easy Sample Handling**: The unique slide-out tray makes sample installation and evaluation quick and simple, accommodating up to 25 standard-sized samples (150x70mm) at once.
- **Automatic Temperature and Humidity Control**: The working room temperature is automatically set, displayed, and controlled. Humidity ranges from 30% to 75% during illumination and 50% to 95% during spraying or darkness phases.
- **Full-Spectrum Sunlight Simulation**: The xenon lamp optimally simulates the full spectrum of sunlight, while appropriate humidity control generates periodic moisture for realistic testing. This combination of sunlight, moisture, and temperature exposure helps assess material aging effects such as fading, strength reduction, cracking, flaking,

chalking, and oxidation.

- **Comprehensive Environmental Simulation**: The xenon lamp weathering test chamber mimics the effects of sunlight and rain through xenon irradiation at high temperatures and periodic rainfall. The test cycle fully integrates sunlight, moisture, and temperature exposure, providing an accurate simulation of real-world weathering conditions.

TECHNICAL SPECIFICATIONS

Chamber Overall Dimensions	970 mm (L) x 920 mm (W) x 1860 mm (H)
Number of Sample Holders	25 standard sample holders
Black Panel Thermometer	Heat insulation type black standard thermometer + black panel thermometer
Black Panel Temperature Range	Indoor temperature +20°C ~ 90°C
Temperature Fluctuation	±3°C
Humidity Range of the Interior	30% ~ 75% (During illumination) 50% ~ 95% (During spray or dark cycles) 0.3 ~ 0.8 W/m² (@ 340 nm) 0.50 ~ 1.35 W/m² (@ 420 nm) 30 ~ 100 W/m² (@ 300 ~ 400 nm)
Xenon Lamp Power	3 x 1.8 KW air-cooled xenon lamps
Rated Power of the Whole Chamber	4 KW (maximum instantaneous power can reach 6 KW)
Lamp Tube Lifespan	1,500 to 2,000 hours
Flow of Pure Water	Humidifying: 0.2 L/min Spraying Sample: 0.3 L/min
Filter	Optional Ultraviolet extended filter, Daylight filter, Window glass filter
Humidification Method	Ultrasonic humidifier controls humidification

Interior Material	SUS304 stainless steel
Total Net Weight of the Chamber	335 kg (excluding packaging material)
Power Supply/Frequency/Current	Three-phase 380V 50/60Hz 12A

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