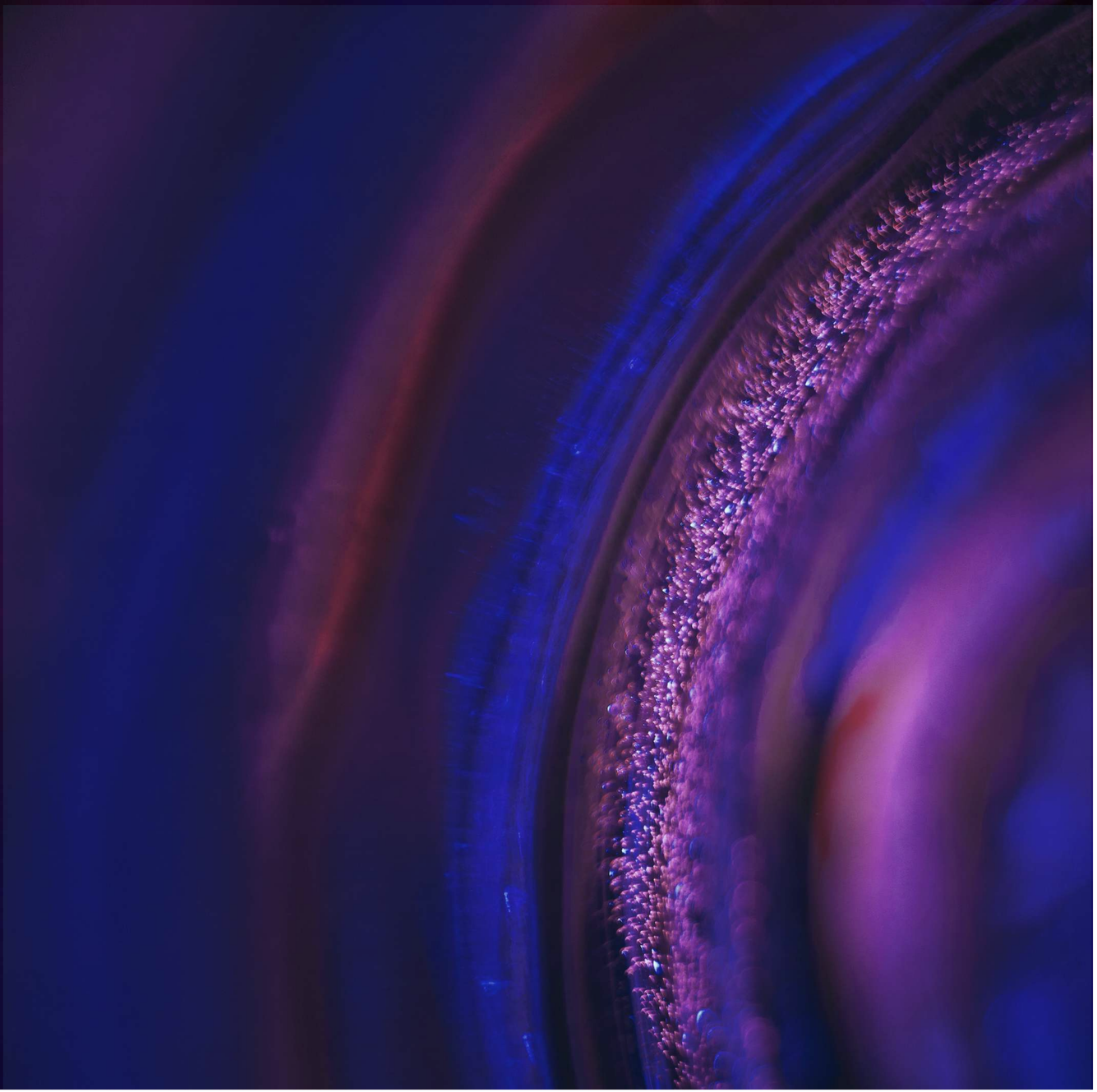
QUALITEST™
ADVANCED TESTING TECHNOLOGIES

ULTRAVIOLET

Test Chamber & Accelerated Weathering Testers



UV Light Accelerated Test Chamber

Qualitest-UV200

UV Light Accelerated Test Chamber Model Qualitest-UV200 harnesses the power of fluorescent UV lamps as its light source, providing precise control over internal temperature and humidity. This allows us to induce periodic condensation on samples, enabling a comprehensive evaluation of the factors that can damage materials due to sunlight, moisture, and temperature. These aging phenomena encompass fading, loss of luster, diminished intensity, cracking, flaking, chalking, and oxidation.

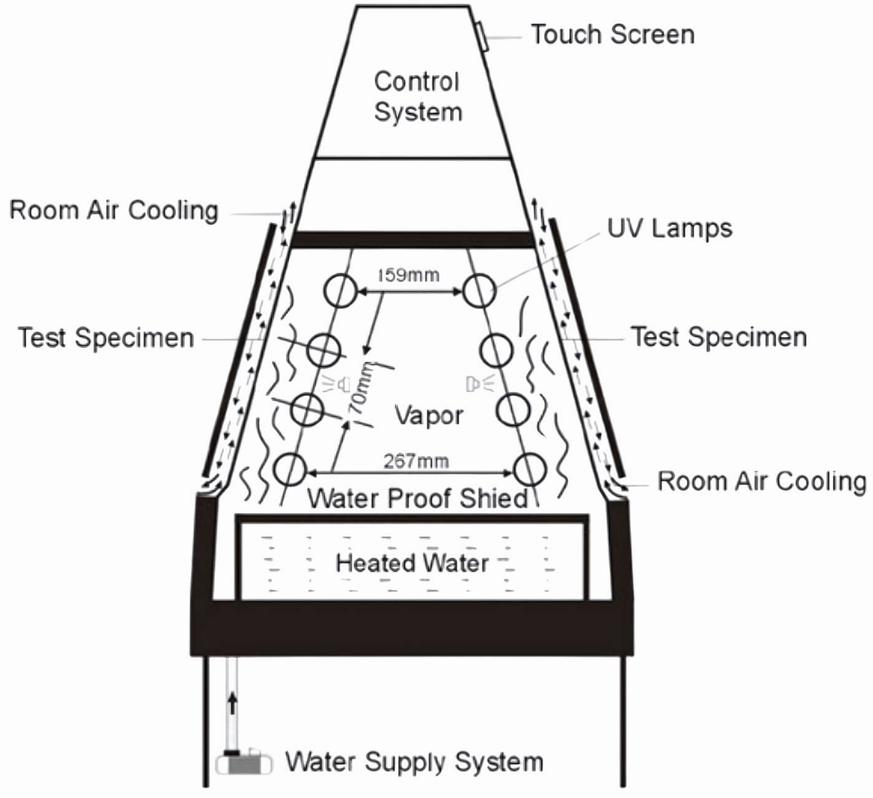
The fluorescent UV light in this chamber effectively replicates the effects of natural sunlight, while the integrated condensation and water spray system mimics the impact of rain and dew. Throughout the testing process, we maintain full control over radiation energy and temperature. A typical testing cycle involves subjecting samples to intense UV light exposure or simulating dark, damp condensation periods with a 100% relative humidity setting.

UV Light Accelerated Test Chamber Model Qualitest-UV200 find applications in a wide range of industries, including paint and coatings, the automotive sector, plastics, wood products, and adhesives, among others.

STANDARDS

- **ISO 16474-1** Paints and varnishes--Methods of exposure to laboratory light sources -- Part 1: General guidance
- **ISO 16474-3** Paints and varnishes--Methods of exposure to laboratory light sources -- Part 3: Fluorescent UV lamps
- **ISO 11507** Paints and varnished--Exposure of coatings to artificial weathering- Exposure to fluorescent UV lamps and water
- **ISO 4892-1** Plastics-Methods of exposure to laboratory light sources-Part 1: General Guidance
- **ISO 4892-3** Methods of exposure to laboratory light sources-Part 3: Fluorescent UV lamps
- **ASTM D 4587** Standard Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings
- **ASTM D 4329** Standard Practice S for Fluorescent UV Exposure of Plastic
- **ASTM G 151** Standard Practice for Exposing Non-metallic Materials in Accelerated Test Devices that use laboratory light
- **ASTM G 154** Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Non-Metallic Materials
- **BS 2782**: Part5, Method 540B (Methods of Exposure to Lab Light Sources)
- **SAE J2020** Accelerated Exposure of Automotive Exterior Malts Using a Fluorescent UV/Condensation Apparatus
- **JIS D 0205** Test Method of Weather-ability for Automotive Parts

TEST METHODS



FEATURES

- Original UVA or UVB lamps made in the USA ensure the comparability of test results.

  Qualitest-UV200 UV Light Accelerated Test Chamber utilize US-made fluorescent UV lamps as the light source for testing. Compared to other lamp types, including Xenon lamps, UV lamps offer greater stability. The power distribution of their spectrum remains constant, even after weathering for up to 6,000 hours. This results in more consistent test outcomes, reduces the frequency of lamp replacements, and lowers operational costs. These US-made lamps are the result of 40 years of experience and expertise in fluorescent technology. They are specially designed and rigorously tested to meet the highest quality standards.

- Irradiance can be automatically controlled through a closed-loop system, ensuring precise and steady irradiance values.

  Similar to other lamps, the energy of Qualitest-UV200 UV lamps decreases with prolonged use. The control system compensates for this by increasing the voltage to the lamps. However, over time, the energy of the lamps diminishes continuously. For high setpoints of irradiance, Qualitest-UV200 may no longer maintain the desired irradiance, and the system will generate an error message indicating that the irradiance deviation is too significant, prompting the machine to shut down. In such cases, the operator should calibrate the chamber using a standard calibration radiometer. If the machine still doesn't achieve the setpoint after calibration, the user should replace the two lamps corresponding to the relative sensor and recalibrate.

- Irradiance can be automatically controlled through a closed-loop system, ensuring precise and steady irradiance values.

  The Qualitest-UV200 UV Light Accelerated Test Chamber stands out due to its automatic control and adjustment capabilities during the testing process. As is widely recognized, energy plays a pivotal role in the aging of polymer materials during testing. To ensure the reproducibility and comparability of test results, UV energy serves as a critical technical indicator. The system continually monitors the energy value throughout the testing process. When the lamp's energy falls below the expected level, the system detects the variance and automatically replenishes the energy.

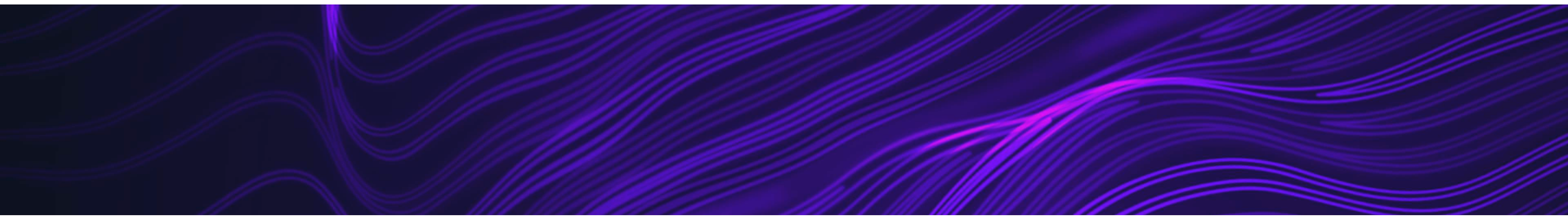
ADVANTAGES

UV Accelerated Test Chamber Model Qualitest-UV200 comes calibrated with the provided Calibration Radiometer, which can be used to calibrate multiple units. This radiometer can assess fluorescent UV lamps, calibrating both UVA and UVB lamps separately. The UVB lamps are calibrated at a wavelength of 313 nm with units of $W/m^2/nm$, while the UVA lamps are calibrated at 340 nm with units of $W/m^2/nm$.

The Calibration Radiometer consists of a radiometer and a sensor. The sensor is highly sensitive to ultraviolet rays but does not respond to visible light, and only exhibits minimal reactivity to infrared light, which can be disregarded. This makes the radiometer immune to the influence of other types of radiation.

THEORY/METHOD

Water Spray and Condensation Function



- Water Spray: In certain applications, water spray can better simulate end-use environmental conditions. Water spray effectively mimics the effects of heat shock or mechanical erosion resulting from rapid temperature changes or rain. For instance, a sudden rainstorm on a sunny day can cause heat shock due to extreme temperature fluctuations, severely testing the properties of many materials. Qualitest-UV200's water spray system features 12 nozzles, with six on each side of the test chamber. The system can run for a few minutes before shutting down, rapidly cooling the samples and creating heat shock conditions.

- Condensation: In many outdoor environments, materials are exposed to wet conditions for over 12 hours each day. Studies have revealed that this outdoor moisture exposure is primarily caused by dew, rather than rain. BUV simulates outdoor moisture erosion using its unique condensation capabilities. During the condensation cycle, water at the bottom of the chamber is heated to produce superheated steam that fills the test chamber. The hot steam maintains 100% relative humidity within the chamber, along with a relatively high temperature. Samples are affixed to the chamber's wall, with one side exposed to the ambient air inside the chamber and the other side exposed to the natural environment, creating a temperature difference. This temperature difference results in constant condensation, causing water droplets to form on the test surfaces.

THEORY/METHOD

Automatic Temperature Control with a High-Precision Pt 100 Temperature Sensor

In each cycle, the temperature can be precisely controlled at a set value. The black panel thermometer, consisting of a PT100 sensor and a metal panel coated in black paint, monitors the temperature of the test panels. Temperature adjustments can accelerate the aging process, and maintaining precise temperature control is crucial for test reproducibility. The BST Black panel thermometer allows users to set values according to their specific requirements, with automatic control throughout the test. Periodic calibration is also supported.

Touch Screen Control with User-Friendly Interface

UV Light Accelerated Test Chamber Model Qualitest-UV200 features an intuitive high-definition color touch screen for all controls and data displays. The menu operation interface is user-friendly, providing easy access for operators to operate and maintain the unit. During operation, all parameters are readily visible on the touch screen.

Compliance with Multiple Test Standards and User-Editable Test Programs

Operators can freely edit different test programs to meet various standards and test methods. Each program can consist of up to 10 segments, each with different work conditions related to irradiation, water spray, condensation, and finishing, along with relevant test parameters. Qualitest-UV200 allows operators to save up to six test programs for future use. Once a program is set and saved, users can easily select it for subsequent tests without the need for reconfiguration.

Real-Time Data Collection and Conversion to Excel Format

Qualitest-UV200 can collect and store data in real-time, and all testing data can be automatically converted into Excel format and saved. A USB interface on the Qualitest-UV-200 UV Light Accelerated Test Chamber allows operators to export running parameters at any time, simplifying data retrieval and analysis. This feature enables unattended operation and data analysis.

THEORY/METHOD

TCP/IP Ethernet Interface for Remote Monitoring

With the TCP/IP Ethernet interface, users can remotely monitor Qualitest-UV200's status through the internet.

Import Data Window

MCGS_Time	Sensor 1#	Sensor 2#	Sensor 3#	Sensor 4#	Blackboard Tem.	Water Tem.
2011-7-8 12:04	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:06	0.77	0.77	0.77	0.77	59.9	32.4

Format of Import Data

TECHNICAL SPECIFICATIONS

Light Source	UVA (wavelength 340 nm) or UVB (wave length 313 nm); 40W × 8 pcs (The normal use-life is 6,000 hours)
The range of Irradiance	0.3 W/m2~ 1.55 W/m2
Temperature Range	Black Panel temperature（BPT）：RT+10℃~80℃
Interior of cabinet	Stainless steel -SUS 304 material
Exterior of cabinet	Powder coating on SUS 304
Insolating Area	5,175cm2/828in2
Sample Capacity	48 pieces of standard specimen（75mm×150mm standard samples）or 15 pieces of 100mm×300mm
Adjustable range for water supply	0-4LPM
Water Consumption	7L/day（for condensation）,3L/minute（for spray）
Overall Size	1,360mm×560mm×1,290mm（L×W×H）
Net Weight	161 kg
Total Max. Power	2kW

Available Options:

- UVB Lamp (40KW / 313nm)
- UVA Lamp (40KW / 340nm)
- Calibration Radiometer (310nm and 340nm)
- Sample Shelf

QUALITEST™

ADVANCED TESTING TECHNOLOGIES

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