QCT®

Condensation Tester

The Original Cleveland Cabinet™

Q-LAB

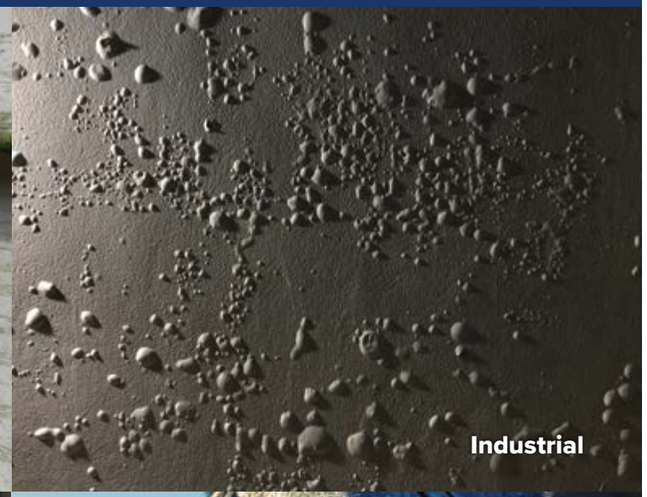
Moisture Damage

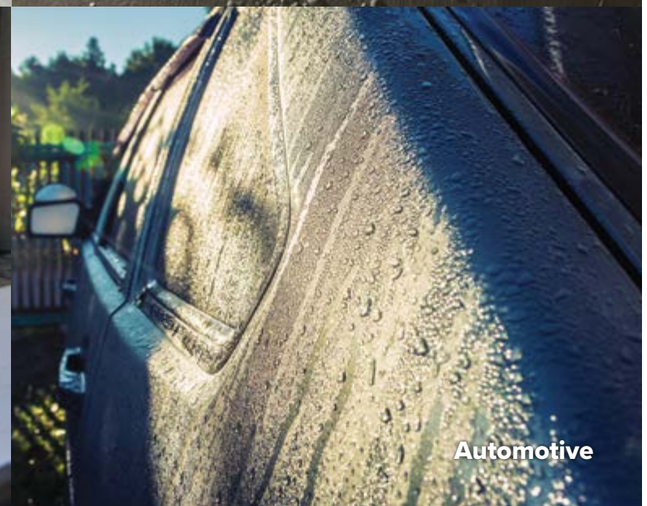
Moisture causes millions of dollars of material damage every year. The QCT condensation tester simulates the damaging effects of outdoor water attack. In a few days or weeks, the QCT tester can reproduce the damage due to moisture that occurs over months or years outdoors.

The QCT tester is fast, easy to use, and affordable. It uses 100% condensing humidity to simulate and accelerate damage caused by rain and dew on metals, paints, and organic materials. It accelerates relative to natural exposures by increasing moisture temperature. The QCT tester replaces water immersion and ordinary (non-condensing) humidity tests.

The QCT condensation tester is used in thousands of labs in over 50 countries. It is the simplest, most reliable, and easiest-to-use condensation tester available.

Will your product last outdoors? Don't guess when you can test!





WHY QCT?

History and Pedigree

The Cleveland Society for Paint Technology designed the QCT after years of study. It was originally called the "Cleveland Condensing Humidity Cabinet". Since 1965, thousands of laboratories throughout the world have successfully used (and continue to use) the QCT for research and quality control, including paint, automotive and appliance manufacturers, oil producers, chemical and paint companies, and researchers.

To this day, the QCT remains the gold standard for testing the moisture resistance of paint and coatings.

Variable Exposure Cycles

The user is able to program the QCT tester via a simple user interface to create static, 100% condensing humidity or to cycle between hot condensation and dry-off. The temperature's range extends from room temperature to as high as 70 ˚C. The system allows for the selection of almost any desired wet/dry exposure cycle, ranging from the subtle wetness of an almost invisible dew a few degrees above room temperature, to a continuous, high-temperature, running condensate.

Freezing accelerates some failures. For a freeze/thaw cycle, panels can be manually removed from the QCT while wet and immediately frozen, and then reinserted into the tester.

Fast and Versatile

- screen paints for blister resistance over a weekend at 55 ˚C
- evaluate oil-based rust inhibitors in less than 120 hours at 38 ˚C
- rate effectiveness of mill-applied oils in only a day
- test surface reactivity of cold-rolled and galvanized steel in hours
- test wood finishes for blistering, moisture, and mold resistance

Simple to Install, Simple to Use

The QCT tester provides instant blister or corrosion testing - just plug it in and add water. The unit can be placed anywhere in your office, lab, or plant. The heat and water vapor produced by the QCT tester is about the same as that produced by one additional person in the room. Also, the test panels on a QCT unit may be inspected as often as you want, without altering test conditions. Just remove the panel and put a blank in its place.

Conforms with Global Standards

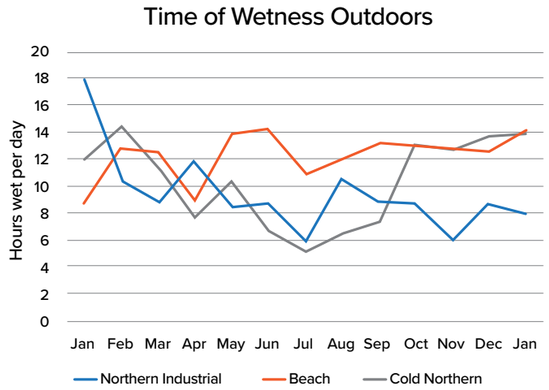
- **ASTM D4585** Standard Practice for Testing Water Resistance of Coatings Using Controlled Condensation
- **ISO-6270-1 (and BS 3900 F9):** Paints and varnishes — Determination of resistance to humidity — Part 1: Condensation (single-sided exposure)
- **ISO 6270-2** Paints and varnishes — Determination of resistance to humidity — Part 2: Condensation (in-cabinet exposure with heated water reservoir).

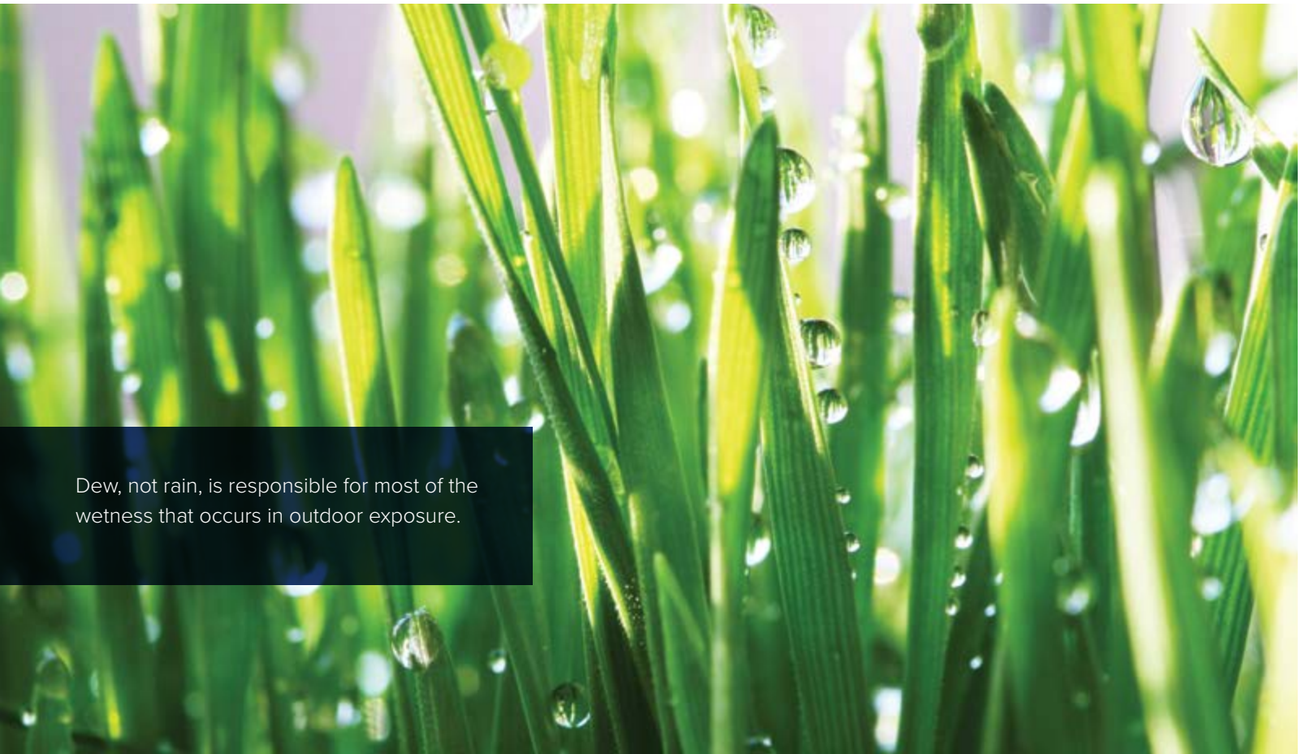
Condensation

Water is an Enemy to Most Materials

Water causes metals to corrode, organics to decompose, and structures to disintegrate. Condensation is water that has been distilled from impure water, mixed with the atmosphere, and saturated with oxygen. This type of moisture has also been called “aggressive water”, because it carries oxygen with it as it contacts a material or diffuses through a coating. Studies show that materials outdoors are exposed to an average of 12 hours per day of condensed water in the form of dew.

The QCT tester uses 100% condensing humidity to simulate and accelerate damage caused by dew. It accelerates relative to natural exposures by increasing moisture temperature.





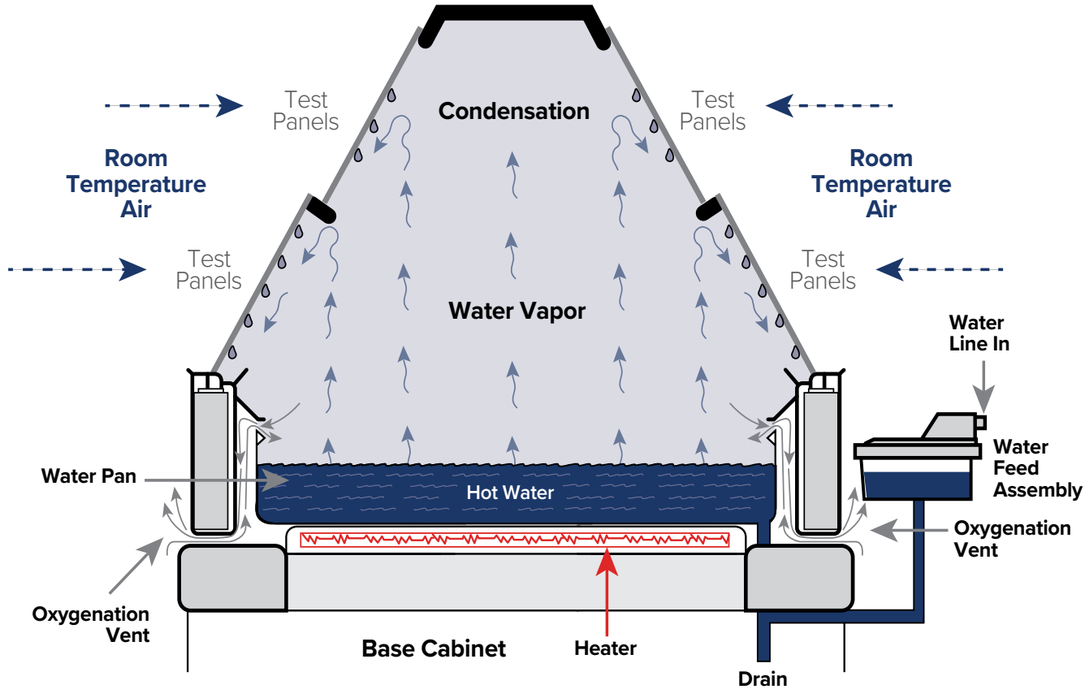
Dew, not rain, is responsible for most of the wetness that occurs in outdoor exposure.

How Does the QCT Work?

Principle of Operation

Water in the bottom of the QCT test chamber is heated to generate hot vapor. This vapor mixes with air and creates 100% Relative Humidity. Test panels form the walls of the chamber and are cooled on their reverse side by laboratory air. The resulting temperature differential allows vapor to condense on the specimens’ front side. This condensation is in the form of distilled water that is saturated with oxygen. Condensate is drawn into coatings during condensation by osmotic pressure and removed during 1-2 hour drying phases in cyclic testing.

The tester’s innovative design utilizes room air cooling to create a temperature differential across the thickness of the specimens. This temperature differential is a necessary element for condensation to occur. It is important to note that the QCT tester is fundamentally different from a typical humidity tester.



The QCT’s automatic controls regulate the rate of condensation and allow for pre-programmed exposure sequences. The QCT tester requires only ordinary tap water. This is because the tap water becomes pure distilled water in the process of evaporation from the water pan and condensing onto the specimens.

QCT Features

EASY CALIBRATION
Using any calibrated temperature probe

LARGE SPECIMEN CAPACITY
Up to 62 panels 75 × 150 mm (3 x 6 in.) or 48 panels 100 × 150 mm (4 x 6 in.)

FULL-COLOR TOUCH SCREEN DISPLAY
In multiple languages

USB PORT
Easy data transfer and software updates

MULTI-COLOR LED LIGHT
Conveniently indicates tester status at a glance

DURABLE CONSTRUCTION
Anodized and painted aluminum construction won't rust

STANDARD CASTER WHEELS
Increases mobility when lab space is at a premium

Optional Enclosed Humidity Accessory

QCT condensation testers typically produce one-sided condensation by cooling the backs of specimens. The optional Humidity Enclosure accessory enables testing of specimens in a fully saturated humidity environment. This testing meets the requirements of ISO 6270-2 and is a widely-used method for moisture testing of three-dimensional assemblies and products.

Operation

QCT accelerated weathering testers are simple to operate. Programming is intuitive. All models are completely automated and can operate continuously, 24 hours per day, 7 days per week.

Designed to be both functional and easy to use, the QCT controller can be programmed in 17 user-selectable languages (English, French, Spanish, Italian, German, Chinese, Japanese, Korean, Czech, Dutch, Polish, Portuguese, Russian, Swedish, Thai, Turkish, and Vietnamese). Additional languages are being added on an ongoing basis. Users can program and store up to 13 tests in memory, which has a battery back-up feature.

The full-color touchscreen display on QCT testers allows for real-time viewing of test parameters and performance along with control of tester operation and settings. The multi-color LED light indicates, at a quick glance, the tester's operational status. Tester performance data is recorded automatically and is easy to export via USB drive. Software updates can also be performed quickly using the USB port without interrupting tester operation.

The QCT has automatic controls to regulate the condensation rate and allow the cycle to go from wet to dry in a pre-programmed exposure sequence. Chamber temperature calibration is simple via any user-supplied calibrated thermometer.

Easy temperature calibration allows for precise test control

Q-LAB

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We are committed to provide world-class technical, sales, and repair support in each of the 120 countries in which we operate. Visit **Q-Lab.com/support** for contact information specific to your location and inquiry type.

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