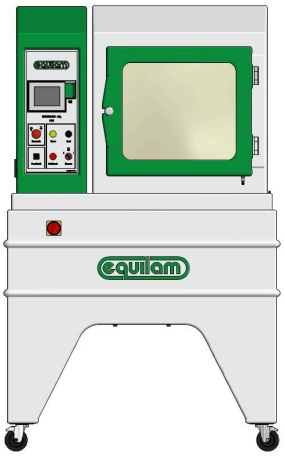
WATER RESISTANCE / HUMIDITY TESTING

Humidity Test Chambers

Water Resistance Test Chamber - Condensation / Water Fog



SSUMe Series · 600 to 3,000 L



KEQUM 300 · 300 L, touch screen



Walk-In · built to size

Equilam North America humidity chambers test metallic and non-metallic specimens in a humid atmosphere of constant water condensation, or in alternating atmospheres. They reveal corrosion, blistering, loss of color and gloss in coatings, and defects in whole products or parts.

The inner and outer cabinet is built entirely in fiberglass with a special resin of high chemical and thermal resistance. No metal part is exposed to the test environment, avoiding distortion of the final test result.

STANDARDS

ASTM D2247	Water resistance of coatings in 100% RH
ASTM D1735	Water resistance of coatings, water fog
ISO 6270-2	Condensation · CH, AHT and AT **AHT / AT: programmable HMI**

Other standards on request

300–3,000 L
Bench models · **Walk-In and Drive-In: consult us** (p. 5)

Up to 60 °C (140 °F)
Chamber temp. from ambient +4 °C (+7 °F). **Other temperatures: consult us**

Non-metallic
Inner and outer cabinet built entirely in fiberglass, **avoiding distortion of the final test result**

How the test works per ASTM D2247 / ISO 6270-2

01
Saturate
Water in the chamber tray is heated, filling the cabinet with saturated air at about 100% RH.

02
Condense
Specimens are slightly cooler than the saturated air, so condensation forms on all their surfaces.

03
Hold or cycle
Constant condensation (CH), or 24 h cycles of 8 h at 40 °C and 16 h cool-down (AHT, AT).

04
Evaluate
Specimens are wiped dry and rated for blistering, rust, adhesion and color changes.

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TEST STANDARDS

Test conditions at a glance

ASTM D2247
100% RELATIVE HUMIDITY

Air next to specimens	**38 °C (100 °F)***
Tolerance	**±2 °C**
Humidity	**100% RH, condensing**
Water	**ASTM D1193 Type IV**
Flat specimens	**≈15° from vertical**
Spacing / walls	**≥ 30 mm**
Rating	**5 to 10 min after removal**

ASTM D1735
WATER FOG

Chamber	**38 ±2 °C (100 ±4 °F)***
Fog	**Reagent water, Type IV**
Collection rate	**1.0 to 3.0 mL/h**
Collector	**100 mm diameter**
Averaged over	**≥ 16 h**
Flat specimens	**15° to 30°**
Temperature	**Continuous recording**

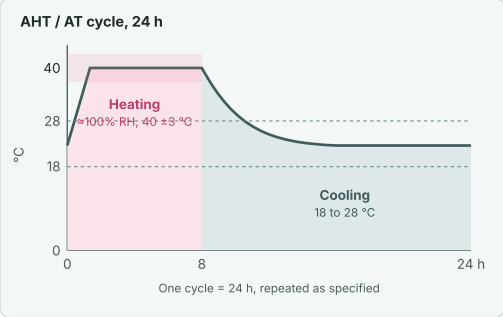
ISO 6270-2
CONDENSATION · CH, AHT, AT

Chamber air	**40 ±3 °C**
Humidity	**≈100%, condensing**
Water in tray	**≥ 10 mm deep**
Specimen angle	**≥ 60° to horizontal**
From walls	**≥ 100 mm**
Above water	**≥ 200 mm**
Between specimens	**≥ 20 mm**

* Unless otherwise specified. A different set point must be stated in the test report.

ISO 6270-2 test atmospheres

Code	Test periods	Air temp.	Humidity
CH Constant humidity	From warm-up to end of exposure	40 ±3 °C	≈100%, condensation on specimens
AHT Alternating humidity and air temperature	8 h, including warm-up	40 ±3 °C	≈100%, condensation
	16 h cool-down, chamber **open or ventilated**	18 to 28 °C	Approaching ambient
AT Alternating air temperature	8 h, including warm-up	40 ±3 °C	≈100%, condensation
	16 h cool-down, chamber **closed**	18 to 28 °C	≈100% (saturated)



AHT and AT run 24 h cycles. For AT, shorter 12 h or 16 h cycles may be used. The chamber is installed in a room at 23 ±5 °C and at most 75% RH, protected from drafts and sunlight.

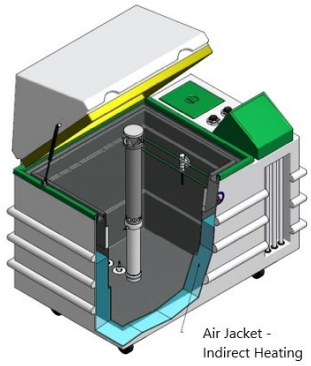
AHT and AT need a programmable chamber with HMI to run the heating and cooling periods automatically.

Condensation must form on every specimen. ASTM D2247 asks for even droplets on all specimens at all times and recommends verifying uniformity with at least 17 specimens across the exposure area. ISO 6270-2 requires that condensation forms on all specimens and that none drips onto them from walls, ceiling or other specimens.

Summary of ASTM D2247-20, ASTM D1735-21 and ISO 6270-2:2017 for reference only. Always follow the current edition of each standard and the agreement between the contracting parties.

CONSTRUCTION

Why Equilam North America



Illustrative cutaway: air jacket and indirect heating around the test chamber.

Inner and outer cabinet entirely in fiberglass

Built entirely in fiberglass with a special resin of high chemical and temperature resistance, avoiding distortion of the final test result. No stainless steel, brass or aluminum part interferes with the test.

Air jacket, indirect heating

An air jacket with thermal insulation surrounds the test chamber, protecting it from room temperature changes and keeping temperature homogeneous.

Green performance

Designed to meet "Green Performance" sustainability requirements, reducing electrical energy consumption.

Patented technology

Composite chamber construction protected by U.S. Patent No. 10,371,623.

STANDARDS COVERAGE

Which chamber for which test

Standard / test atmosphere	SSUMe Series	KEQUM 300
ASTM D2247 100% RH condensation	STANDARD	CONSULT US
ISO 6270-2 CH Constant humidity condensation	STANDARD	STANDARD automatic cycle
ISO 6270-2 AHT Alternating humidity and air temperature	OPTIONAL EQOP.2000 HMI	STANDARD HMI touch screen
ISO 6270-2 AT Alternating air temperature	OPTIONAL EQOP.2000 HMI	STANDARD HMI touch screen
DIN 50017 Condensation water atmospheres	STANDARD KK	STANDARD
ASTM D1735 Water fog	OPTIONAL EQOP.0099	CONSULT US
ASTM D1735 + ASTM D2247 Water fog and condensation in one chamber	OPTIONAL HMI consult us	CONSULT US

HMI REQUIRED

Programmable chamber with HMI required

- **ISO 6270-2 AHT and AT:** the 24 h cycle alternates 8 h of heating at 40 ±3 °C with 16 h of cooling to 18–28 °C. The chamber must be programmable, with PLC and HMI (touch screen), to switch periods automatically. SSUMe Series: option EQOP.2000 (cooling system and PLC program). KEQUM 300: standard.
- **ASTM D1735 + ASTM D2247 in a single chamber:** a chamber that runs both water fog and condensed humidity must also be programmable, with PLC and HMI, to select and control each test mode.
- **ISO 6270-2 CH or ASTM D2247 only:** constant conditions; the standard digital controller is sufficient.

SSUME SERIES

Humidity test chambers, 600 to 3,000 L

The SSUMe Series tests metallic and non-metallic specimens in constant condensation per ASTM D2247 and ISO 6270-2 CH. Four sizes cover panels, parts and complete assemblies.

- Fiberglass cabinet with special resin, inert, inside and outside
- Air jacket and thermal insulation around the whole test chamber
- Chamber homogeneity ±0.5 °C
- Optional water fog mode per ASTM D1735; combined with ASTM D2247 in the same chamber, it requires PLC with HMI
- Optional ISO 6270-2 AHT and AT cycles with cooling system, PLC and HMI (EQOP.2000)



Technical specifications

Model	SS 600UMe	SS 1000UMe	SS 1300UMe	SS 3000UMe
Internal volume	600 L 159 gal	1,000 L 264 gal	1,300 L 343 gal	3,000 L 793 gal
Chamber temperature	Ambient +4 °C to 60 °C (ambient +7 °F to 140 °F); other ranges on request			
Chamber homogeneity	±0.5 °C			
Chamber RH	97% ±3%			
Lab conditions	17 °C to 27 °C (63 °F to 81 °F)			
Standards	ASTM D2247 · ISO 6270-2 CH · DIN 50017 KK			
Operating voltage	208 to 220 V, 60 Hz, 1 Ø (other voltages on request)			
Current	16 A	16 A	32 A	45 A
Internal dimensions W × D × H	820 × 650 × 780 mm 32.3 × 25.6 × 30.7 in	1,200 × 810 × 850 mm 47.2 × 31.9 × 33.5 in	1,300 × 780 × 900 mm 51.2 × 30.7 × 35.4 in	2,080 × 1,080 × 1,000 mm 81.9 × 42.5 × 39.4 in
External dimensions W × D × H	1,890 × 1,150 × 1,460 mm 74.4 × 45.3 × 57.5 in	1,940 × 1,120 × 1,600 mm 76.4 × 44.1 × 63.0 in	2,480 × 1,250 × 1,645 mm 97.6 × 49.2 × 64.8 in	3,400 × 1,600 × 1,800 mm 133.9 × 63.0 × 70.9 in
Crate dimensions W × D × H, approx.	2,000 × 1,200 × 1,550 mm 78.7 × 47.2 × 61.0 in	2,050 × 1,300 × 1,750 mm 80.7 × 51.2 × 68.9 in	2,600 × 1,300 × 1,850 mm 102.4 × 51.2 × 72.8 in	3,550 × 1,700 × 2,100 mm 139.8 × 66.9 × 82.7 in
Net weight, approx.	185 kg 408 lb	210 kg 463 lb	290 kg 639 lb	350 kg 772 lb
Shipping weight, approx.	238 kg 525 lb	280 kg 617 lb	350 kg 772 lb	650 kg 1,433 lb

Specifications may change without notice.

WALK-IN AND DRIVE-IN

Large humidity chambers, built to size

Walk-In and Drive-In humidity chambers are available for large components, assemblies and vehicles. The chamber size, access, floor and environmental equipment are designed around the specimen and the test method. **Consult us.**

WALK-IN



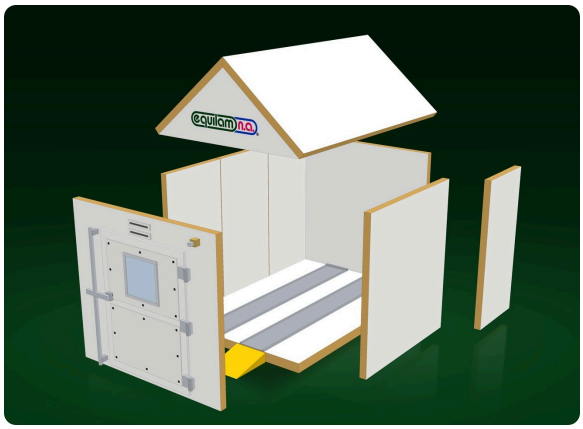
Exterior and interior

DRIVE-IN



Exterior and illustrative interior

Modular panel construction



Modular assembly illustration. Construction details vary by project.

Sized by panels

The enclosure is made of fiberglass (FRP) panels sized to the application, so the chamber can be built to the dimensions the specimen needs.

Assembled on site

Panels are assembled at the installation site, with construction details defined by each project.

Entirely in fiberglass

Inert, non-metallic inner and outer cabinet, avoiding distortion of the final test result (U.S. Patent No. 10,371,623).

Sloped roof

Keeps condensate from dripping onto the specimens.

Engineering input	What we need to know
Specimen	Dimensions, mass, support points and handling route
Test method	Standards, test modes, sequence and set points
Installation	Available space, utilities, exhaust, drains and service access

HMI STANDARD

Programmable

PLC with 10" color touch screen for test programs, set points, alarms and trend history. Humidity per ISO 6270-2 and ASTM D2247 can be combined with salt spray in the same chamber.

KEQUM 300

Automatic humidity chamber, 300 L



The KEQUM 300 runs ISO 6270-2 CH, AHT and AT and DIN 50017 cycles fully automatically, without operator intervention. At the end of each round the tray water is discarded and the next round starts on its own.

The cabinet is fiberglass with no metal parts, surrounded by an air jacket and thermal insulation for a homogeneous chamber temperature.

Construction details



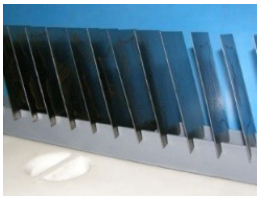
PLC control panel

PLC (programmable logic controller) with a 5.7" color touch screen.



Water tray

Non-metallic 2 L DI water tray at constant level, with low-water and overheating protection. Cooling by air circulation.



Specimen supports

8 supports in 12 mm non-metallic round bars. Front door with tempered glass, built to the standards.



Supervisory system

Optional, two types: RS 232 or USB to a PC connected full time, or SD card logging on the touch screen.

Control and programming

- Program loops: 20 modes, each repeated up to 100 times
- Independent PID control of temperature and relative humidity for each mode and ramp, to meet the standard
- Independent auto-tuning for each mode
- Resolution 0.1 °C; °C or °F selectable on the display
- Events: ON/OFF outputs, 220 V, 10 A
- Online graphs of the test parameters on the touch screen
- Displays executed and programmed modes; records date and time of alarms
- Timer showing test time and interruption time
- Scheduled test start by date and time
- Preventive and corrective maintenance warnings on screen, avoiding unscheduled downtime
- Fiberglass inner cabinet with no metal parts



KEQUM 300 · STANDARD EQUIPMENT

Technical specifications

TEST PERFORMANCE	
Standards (automatic cycles)	ISO 6270-2 CH, AHT and AT · DIN 50017
Chamber temperature	Ambient +4 °C to 60 °C (ambient +7 °F to 140 °F); other ranges on request
Temperature homogeneity	±1 °C
Chamber relative humidity	95% to 100%
Program	20 modes, up to 100 repetitions each; ramps and plateaus with independent PID

CONSTRUCTION	
Internal volume	300 L (79 gal)
Internal dimensions (W × D × H)	720 × 510 × 890 / 760 mm (28.3 × 20.1 × 35.0 / 29.9 in)
External dimensions (W × D × H)	1,200 × 1,200 × 1,980 mm (47.2 × 47.2 × 78.0 in)
Net weight	65 kg (143 lb)
Cabinet	Fiberglass inside and outside, no metal parts; air jacket and thermal insulation
Water tray	2 L (0.53 gal) DI water at constant level; emptied automatically after each round
Specimen supports	8 round bars, 12 mm, non-metallic

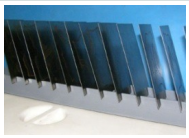
UTILITIES AND INSTALLATION	
Power supply	208 to 230 Vac, 60 Hz, 1 Ø, 10 A
DI water	2 L (0.53 gal) per 24 h cycle
City water	For cleaning
Exhaust	Air of the room where the chamber is installed
Drain	1" drain, sent to sewage treatment
Lab conditions	17 °C to 28 °C (63 °F to 82 °F)

Designed to meet "Green Performance" sustainability requirements, reducing the cost of electricity. Specifications may change without notice.

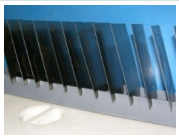
OPTIONAL ACCESSORIES

Accessories and upgrades

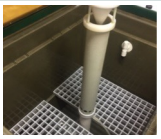
Tags show the series each item is offered for. SSUME KEQUM 300



EQOP.0003
Specimen rack
One rack, 15° or 20° inclination.
SSUME



EQOP.0006
Plate holder, 15° or 30°
One specimen holder for plates, for the 300 L chamber.
KEQUM 300



EQOP.0118
Grid-type brackets
Support 120 kg (265 lb) of distributed load.
SSUME



EQOP.0169
Inclined screw holder
36 screws, nylon threaded bushings defined by the customer (max. Ø 22 mm).
SSUME



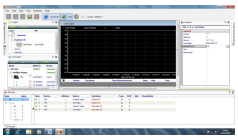
EQOP.0011
Fiberglass fume hood
Smooth inside and outside for easy cleaning. KEQUM 300 hood: 20 kg (44 lb).
SSUME KEQUM 300



EQOP.0012
Exhaust fan
Fiberglass fan, 1,940 cfm, 208 to 220 V; WEG IP 64 motor. 40 kg (88 lb).
SSUME KEQUM 300



EQOP.0013
DI water assembly
Activated carbon filter, DI column and LED water quality indicator.
SSUME KEQUM 300



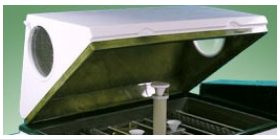
EQOP.0044
Supervisory software
Data acquisition by PC (RS 232 / 485 – USB).
SSUME



EQOP.0047
Digital RH indicator
Relative humidity (RH%) shown on the control panel.
SSUME KEQUM 300



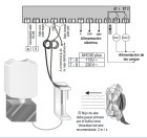
EQOP.0035
Cable port, Ø 2"
Access for cables. Other diameters on request.
SSUME KEQUM 300



EQOP.0007
Side window in lid
Prevents dripping on specimens.
SSUME



EQOP.0009
Pressure regulator
With water and oil filter and pressure gauge.
SSUME



EQOP.0112
Condensate drain
Drain compartment with pump for the chamber.
KEQUM 300



EQOP.0113
Safety cabinet
Polycarbonate doors and sides, air intakes, 130.66 cfm motor, fiberglass hood.
KEQUM 300



EQOP.0153
Dynamic specimen holder
Per ASTM D1748.
KEQUM 300



EQOP.0017
Conductivity meter
Digital, with standard solution, to check water quality.
SSUME

OPTIONAL TEST MODES AND SERVICES

More options

Code	Description	SSUMe	KEQUM 300
EQOP.0099	Water fog mode per ASTM D1735. **Combined with ASTM D2247 in one chamber: programmable PLC with HMI required.**	●	Consult us
EQOP.2000	ISO 6270-2 AHT and AT: cooling system, PLC software program and **HMI touch screen (required for the cycles)**	●	Standard
EQOP.0005	Special rack or support for customer-supplied specimens, per drawings	●	●
EQOP.0014	Spare DI water column	●	●
EQOP.0015	Spare activated carbon water filter	●	●
EQOP.0056	CSA certificate (Canada) — consult us	●	Consult us

For other special items, contact us for further information.

Supplied with every chamber

Manuals
Instruction, installation and maintenance manuals to get the chamber up and running.

Support
On-site assembly and training are available on request (travel expenses not included).

Custom sizes
Other temperature ranges, voltages and dimensions on request.

Equilam NA corrosion and humidity test chambers

Test	Reference standards
Humidity / condensation	ASTM D2247 · ASTM D1735 · ISO 6270-2 · DIN 50017 · ABNT NBR 8095
Salt spray	ASTM B117 · ISO 9227 · JIS Z 2371
CASS / acetic acid salt spray	ASTM B368 · ISO 9227
Cyclic corrosion (CCT)	ASTM G85 · GM 9540P · VW PV1210 · Honda / Nissan CCT cycles
Kesternich (SO_2)	ASTM G87 · DIN 50018

One chamber, one solution. Use each chamber only for its own test. A salt spray, CASS, acetic acid or SO_2 (Kesternich) cabinet should not be used as a humidity chamber: chemical contamination distorts the result (see ISO 9227, item 4.6).

Request a quote

Ask us about other standards, voltages and custom configurations.

Phone 754.900.7816
Email frojo@equilamna.com
Web www.equilamna.com

Equipment appearance and specifications are subject to change without notice. Product images are illustrative.