



# Climatics Testing

E-Labs, Inc provides a wide variety of environmental exposure testing services that have the ability to simulate and control most climatic conditions including temperature, humidity, altitude, pressure, combined environment, temperature cycling, solar heating, exposure to UV light, corrosive atmospheres, and other climatic variables.

These climatic testing services play an important role in product and component testing to ensure that stringent custom and industry standard specifications are met. Items tested range from test samples, parts, and components, to finished products. Industries we have served for climatics testing include Aerospace / Avionics, Appliances, Automotive, Electronics, HVAC, Industrial / Machinery, and Life Science / Medical.

The effects of product exposure to climate-related conditions are modeled through the use of special test chambers. These chambers have the ability to cover extreme environmental variations as well as constant temperature and humidity levels.

With over 20 chambers, the climatics department of E-Labs offers a wide range of chamber sizes from 2 to 3,500 cubic feet. All chambers are equipped with microprocessor controllers and product savers that allow for continuous monitoring and data collection that allow for safe and accurate operation at any temperature or humidity level.

Fungus Testing - E-Labs has retired FDA scientists on staff and test control samples are included to show growth while units are under test.

E-Labs, Inc can also provide assistance with the interpretation of specifications as well as the design of proper climatic test programs based on your product application.

- **Altitude Testing**
- **Combined Environment Testing**
- **Explosive Atmosphere Testing**
- **Fluid Contamination Testing**
- **Fungus Testing**
- **Green Water Loading Testing**
- **Humidity Testing**
- **Ice Testing**
- **Immersion Testing**
- **Inclination Testing**
- **Rain, Spray and Drip Testing**
- **Rapid Decompression Testing**
- **Salt-Fog & Salt-Spray Testing**
- **Sand & Dust Testing**
- **Solar Testing**
- **Temperature Testing**
- **Wind Testing**

**E-Labs Inc.**  
**5150 Lad Land Drive, Fredericksburg, VA 22407**  
**Phone: 540-834-0372 - Fax: 540-834-0373**  
**Info@E-LabsInc.com - www.e-labsinc.com**

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ICE TESTING

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## Altitude Testing

The higher the altitude, the lower the atmospheric pressure that gets exerted. Vacuum chambers are used to test the effect of atmospheric pressure on components that may be damaged or behave differently due to pressurization changes. This is particularly useful for components that may be shipped via air freight, communication equipment used in high altitudes, as well as for testing engine and propulsion systems designed to operate in space. Our environmental chambers can simulate altitudes from 0 to 100,000 feet with temperature extremes from -150° to 350° F. We have performed altitude tests for durations from 1 hour to 26 days with around the clock support. Cycling tests have also been done to study the effect of repetitive pressure changes.

## Combined Environment Testing

We have the flexibility to turn any of our vibration systems into combined environments, combining temperature/humidity chambers with electro-dynamic vibration shakers. The chambers can perform rapid rates of temperature change and the vibration facilities can handle 20,000 force-pounds, at frequencies up to 2000 Hz.

## Explosive Atmosphere Testing

This environmental testing assures the safety of a component exposed to explosive vapors or to other dangerous environments. Our environmental testing facility can be used to show proper operation of a test item in the explosive atmosphere environment. It can help determine whether the test item will safely operate in a highly volatile environment without igniting and causing an explosion or if it is able to contain a flammable reaction within an enclosure. Testing can be performed at various altitudes and temperatures and is suitable for electronic equipment, aircraft components, and medical equipment.

## Fluid Contamination Testing

The chemicals used around aircraft, ships and ground based vehicles can be detrimental to a wide range of materials. We test materials for resistance to chemicals such as jet fuel, hydraulic fluids, cleaners, de-icing and antifreeze, and degreasing chemicals, to name a few. This test is performed in accordance with MIL-STD-810G/F and DO160.

## Fungus Testing

Fungus can cause equipment damage and limit the operational reliability of equipment in the field. We can simulate these effects in a controlled environmental test. E-Labs has retired FDA scientists on staff that assure fungus viability prior to inoculation and test control samples are included to show growth while units are under test. This environmental testing can be performed to MIL-STD-810 US and European fungus or a combination of, to meet most any needs.

## Green Water Loading Testing

Green Water Loading per MIL-HDBK-2036 is another shipboard test within our capabilities. To ensure that your equipment can withstand the rigorous conditions on deck, let us splash some water on it... A lot of water!

## Ice Testing

Ice can be produced on items from small to large components and from a thin glaze to more than an inch thick depending on your requirements. Using our large drive-in and walk-in chambers, we can produce this ice on a wide variety of test items.

## Immersion Testing

This test is performed on a wide variety of test item sizes to ensure proper sealing for water intrusion. We can perform the testing and measure the exact amount of water if any that has leaked inside a unit and provide documented results.

## Rain, Spray and Drip Testing

Whether it is a drizzle or steady rain or even a torrential wind-driven downpour, our rain systems can produce levels to meet any need. All rain tests go through a calibration process before one drop touches the test item to ensure proper fall out.

## Rapid Decompression Testing

Using our altitude chambers we can simulate a wide range of rapid decompression requirements. Large volume chambers combined with rapid control valves give us the flexibility to produce many decompression rates.

## Salt-Fog and Salt-Spray Testing

Accelerated corrosion atmospheres for salt spray testing can be applied to items as large as 16ft by 15ft by 15ft. We have portable chambers that can be configured to a multitude of shapes and sizes to meet all our customers' needs.

## Sand and Dust Testing

We can create desert like conditions or the air blast from a helicopter rotor blades with the abrasion and erosion of sand and dust, combined with temperature to meet the high operating environments, of electronic assemblies. MIL-STD environmental testing is performed in our facility using 2 separate sand and dust chambers and an outdoor set up for items as large as a pickup truck. The outdoor facility uses a large fan capable of wind speeds in excess of 200 mph.

## Solar Testing

E-Labs uses many solar light set up configurations ranging from a one light to a multi light set up in our drive in chamber. This gives us flexibility depending on the coverage needed to meet the size of any test item. This permits meeting the most demanding environmental testing schedules.

## High / Low Temperature Testing

E-Labs chambers range in size from 2 to 4,700 cubic feet, with capabilities of -150° to 350°F, all computer controlled with redundant safeties to assure product safety while in test. All chambers have feed through holes ranging in size from 2 to 6 inches for test item cabling to aid in functional testing.

## Humidity Testing

All humidity chambers range in size from our large drive-in environmental testing facility that is 25ft deep by 14ft wide by 14ft tall, to our smaller 1ft by 1ft chamber. All chambers meet the requirement of MIL-STD-810 and use digital controller and humidity probes to accurately record the environment. They can reach temperatures as high as 185°F (85°C) and Relative Humidity up to 100%.

## Wind Testing

Our wind testing capabilities will blow you away! At E-Labs we have the ability to produce winds at speeds up to 180MPH. If you are concerned about wind damage to your product, check us out.

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