



Environment-Laboratory Ambient Conditions

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FOR CLIENT LABS

Purpose	<ul style="list-style-type: none"> To assure laboratory conditions are stable during the performance of testing and data collection.
Why this requirement is important?	<ul style="list-style-type: none"> Environmental conditions have a direct impact on test results. Accuracy and consistency of test data are affected by the laboratory conditions.
Records	
Certificates, Approval Forms, and Other Documentation	<ul style="list-style-type: none"> Records demonstrating monitoring and control of laboratory conditions <u>specified by the testing requirements</u> are to be acquired throughout the testing process for proof of compliance. The specified information is to be recorded on the test data package.

This document is intended to provide general information about environmental measurements within the testing area.

All testing of products is to be performed in a controlled environment as specified by the test standard or test program.

Where environmental parameters are not specified by the test standard or program, default values are as follows. Environmental parameters are to be held at stable condition such that the test data will not be adversely affected.

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Temperature (<i>recommendation</i> , not a requirement)	23 degrees C (±5 degrees C)
Humidity (<i>recommendation</i> , not a requirement)	<70 % RH
* Required Parameters for: 120V 60Hz up to 20A, 240V 60Hz up to 15A, 230V 50Hz up to 16A	
Nominal Voltage:	+/- 3%
Nominal Frequency:	+/- 2%
Total Harmonic Distortion:	5% max

*NOTE – Power quality measurement guidelines (voltage, frequency, total harmonic distortion) are provided in the document 00-OP-C0036: “Laboratory – Power Quality”.

Temperature notes:

1. Ambient temperature measurements are to be made with calibrated indicators such as a thermocouple meter or a calibrated mercury thermometer.
2. Where ambient air measurements are made with thermocouples having exposed tips, variations in temperature readings may be observed due to air movement. Attaching the ambient thermocouple tip to a thermal mass with appropriate thermocouple adhesive will reduce short-term (e.g. within 3 minutes) variations during testing. A coin, or a glass test tube filled with mineral oil may be used as a thermal mass. The assembly may be suspended by a string or wire to reduce effects from contact with surrounding surfaces.
3. The ambient thermocouple should be located away from the device under test to prevent any heating effects of the device from giving false ambient readings.
4. Mercury-in-glass thermometers (calibrated) are acceptable and usually have sufficient mass to prevent short-term temperature reading fluctuations.

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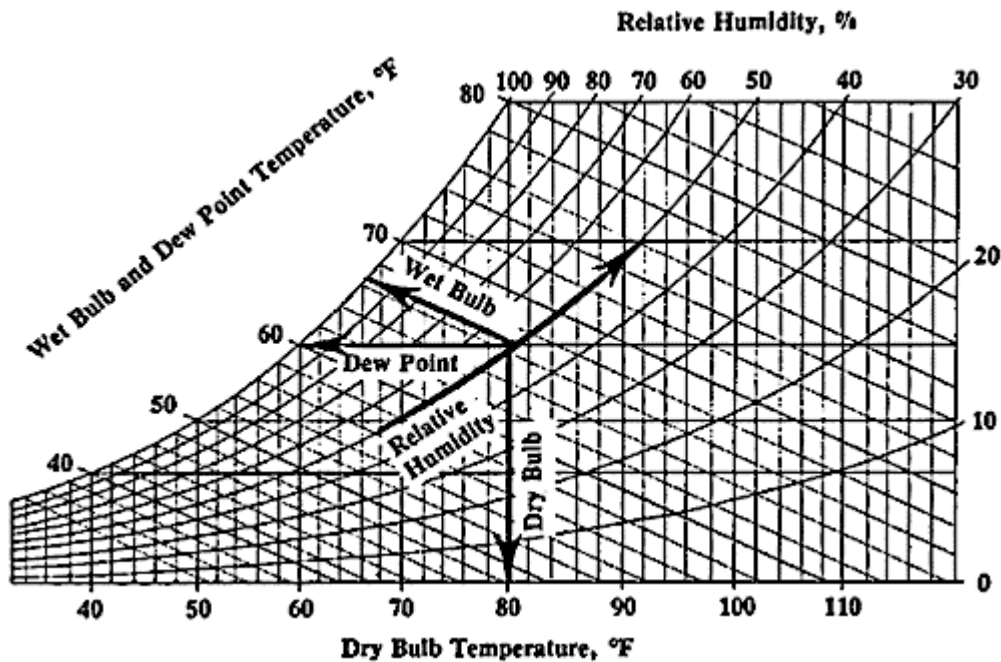
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Humidity notes:

1. Humidity may be measured with a psychrometer (hygrometer) or through dry bulb and wet bulb thermometers and the use of a psychrometric chart (see below).
2. Where possible, it is best to make the humidity measurements at the same height from the floor as the product under test, preferably in the same location – especially where tests are performed in humidity chambers or specialty rooms.



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Barometric Pressure notes:

- a. Where barometric pressure readings are required, it is recommended that a barometer be located within the test area. Where this is not possible, barometric readings values may be obtained from local airports, from the U.S. National Weather Service at <http://www.weather.gov/view/national.php?thumbs=on> or;
- b. From the National Oceanic and Atmospheric Administration (U.S. Department of Commerce) <http://weather.noaa.gov/weather/current/KRDU.html> or;
- c. the United Nations World Metrological Organization World Weather Information Service <http://worldweather.wmo.int/> .
- d. Note that the barometric readings from the above sources will be sufficient for most tests; however, critical test conditions will require use of a barometer inside the test room due to internal building environmental controls or natural variations between the weather reporting station and the barometric pressure at the testing location.

Other potential environmental influences:

Other relevant conditions are to be monitored and recorded, as appropriate, for the technical activities concerned, such as:

1. Electric discharge or magnetic fields
2. Electrical supplies used in powering laboratory measuring equipment
3. Air movement
4. Vibration
5. Light and optical reflections
6. Biological sterility
7. Dust

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Appropriate action shall be taken when environmental conditions stray from required specification (e.g., power outage). These events shall be recorded, evaluated, and appropriate corrective actions taken with consideration of the test being performed, the particular sample being tested, and the duration of the event (see ISO/IEC 17025, Cl. 4.9 – Control of nonconforming testing and /or calibration work). Where the evaluation shows that these events could recur, then further corrective action shall be taken as to prevent the event from recurring (see ISO/IEC 17025 Cl. 4.11, Corrective Action).

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