Home & Appliance

External Audience Protocol (EAP)
Dehumidifiers

©2021 Consumer Reports, Inc. This document is the property of Consumer Reports and is intended for the recipient's internal use only. You may not republish this document or provide copies to third parties or authorize anyone else to do so without Consumer Reports' prior written consent. You may not use or authorize any third party to use Consumer Reports' names, ratings or trademarks (i) in any form of advertising, marketing or promotion; (ii) in any manner that may be construed as an endorsement by Consumer Reports; or (iii) in any manner inconsistent with CR's No-Commercial Use Policy without Consumer Reports' prior written consent.

This document's contents may not be used in connection with any legal proceedings (including but not limited to litigation involving warranties, marketing claims, product liability, market share, injury or property), regulatory standard setting, administrative investigations or enforcement proceedings, or in connection with any other type of proceedings to which Consumer Reports is not a party. This document is otherwise subject to the terms of Consumer Reports' User Agreement. Learn more at CR.org.
This protocol outlines the testing of Dehumidifiers conducted at Consumer Reports. Performance tests to evaluate the units include:

**Water Removal**

The water removal test is patterned after an AHAM standard test and is conducted at 65 degrees F and 60% relative humidity in an environmental chamber though such variables as room size and air flow may differ from AHAM procedures. Two unique samples of each model are tested two different times in two different locations inside a test chamber. The samples are set to high fan and the “continuous” option (run continuously without regard to ambient humidity) and allowed to run for seventeen hours. Large external collection bins are used to collect the water. The external bins are weighed at the beginning and end of the run, and the number of pints calculated from the weight of the water (the weight of the dry bin is subtracted). The pints per 24-hour water removal is then calculated. Comparisons are made between the 24-hour removal from the test and the claimed 24 hour removal to generate a water removal score.

**Energy Efficiency**

Watts/Pint is determined by measuring the amount of water removed and the total energy used by each test unit while it is continuously running in an environmental chamber set at 60% relative humidity and 65 degrees F for seventeen hours. This data is used to extrapolate the watts per pint per 24 hours. This calculation does not include the compressor turning off and on. It is an index of efficiency rather than an exact calculation of efficiency.

**Humidistat Accuracy**

Humidistat accuracy is tested by setting each dehumidifier to maintain 50% relative humidity. The test sample is then placed into an environmental chamber that is set to 80°F and is programmed to evenly rise from 35% relative humidity to 65% relative humidity in one hour and then evenly drop from 65% relative humidity back down to 35% relative humidity for a total cycle time of two hours. This two hour up/down cycle is repeated two more times for a total of 6 hours. During this test data loggers are used to record the energy used by the dehumidifier and the temperature and relative humidity in the chamber. At the end of the test the data is used to determine the humidity in the
test chamber when the compressor turned “on” and “off”. These “on” and “off” points are averaged and then compared to the 50% relative humidity setting of the test unit. The closer the test units compressor cycles “on” and “off” to the target of 50% relative humidity the more accurate the humidistat. We also note the ambient humidity level displayed by the unit and compare it to that measured by a digital psychrometer.

The mechanically controlled humidistats (those controlled by a dial without numerical target humidity—just “low”, “medium”, “high”) cannot be tested for accuracy but can be tested for consistency. These units are tested using the same test method as the digital units; the only difference is that we manually adjust its dial until it turns “on” and then “off” when the test chamber is at 50% relative humidity. We then mark the location on the face of the dial where the unit came “on” and we mark where it turned “off”. We then adjust the dial to be halfway between the “on” mark and “off” mark. For scoring purposes it has been determined that any model that does not have the ability to set and display a target humidity setting can not score higher than a “good” in accuracy.

Noise
This test is done in an environmental chamber that has a room built within it that is constructed of aluminum framing with plastic panels. After conditions in the simulated room are stabilized, the chamber controls are turned off to eliminate background noise. Next we take a background noise level measurement to ensure that the ambient noise is at an acceptable level. Then a test sample is turned on to the highest fan setting and the greatest mode for moisture removal. Once the test units compressor comes on, a noise meter is used to measure the noise levels at two feet from the front of the unit and three feet from the floor.

Convenience
This test is essentially a measure of how often a user would need to empty the dehumidifier tank in order to keep it operating continuously. We take the calculated pints per hour measured in the water removal test and divide that by the tank capacity. Internal storage tank capacity is measured by weighing the internal tank empty. The tank is then installed back into the dehumidifier and the dehumidifier is placed in the test chamber set to 65 degrees F and 60% relative humidity. The unit is then left to run until it shuts off automatically. The internal tank is then removed and weighed. The difference between the dry and full weight is used to calculate the total number of pints the tank can hold.
Auto-restart (simulated black-out conditions)

Each sample is tested to see what it will do after power is interrupted to the dehumidifier. Each sample's humidistat is set to 50% relative humidity and the fan is on its highest speed setting. Next the electrical power is turned off for approximately 5 minutes. Then the power is turned back on and we note if the sample came back on to the setting it had before it lost power, or if it went to a default setting, or did not come back on at all. The worst case is if the sample does not come back on at all. If you are away when this happens the result would be no dehumidification until you return and re-set the dehumidifier.