Home & Appliance

External Audience Protocol (EAP)

Space Heaters

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Heating Performance

Two tests are conducted; the room heating test and the spot heating test, both intended to evaluate how effectively the heater could increase the temperature starting at a cool 60 degrees in a short time period of 15 minutes (radiator heater types that are typically oil-filled are also run for 30 minutes).

The room heating test uses a standard size room area (12’ wide by 17’ long by nearly 8’ high) to evaluate how high the heater could raise the room temperature in 15 minutes.

The second test – the spot heating test – is focused on heating an individual’s body rather than the room, and starts with a person sitting in a 60-degree room. In this test, a mannequin is fitted with sensors and the heater is placed 4-½ feet away. The heater is turned on, and body surface heat measurements are taken for 15 minutes.

Hot Surface

This test is to determine the “burn potential” of a heater. After running the unit for 15 minutes, temperature measurements are taken at the hottest areas of the heater’s discharge (which are determined by scanning the grill/outlet of the heater with a hand held thermometer with surface probe thermocouple) as well as any handles,
the control panel and any areas on the unit which present hot surfaces (i.e. sides). The temperature measurements are combined with the likelihood of contacting the hot surface area, which has two components – the surface area and accessibility – how easy it is to contact the hot area or the actual heating element. Combined these evaluate the risk of getting burned by the heater. This score is termed “hot surface”.

**Safety**

Consists of the following components, which are combined into a single attribute called “fire safety”.

**Tip over test** – one of a series of three tests to evaluate “fire safety”. For many heaters, a switch is designed to turn off the heater if knocked over. All models will be set on high heat for three minutes and tipped over in a manner typical of accidental contact, onto a piece of carpet. Models incorporating a tip over switch with proper operation receive a high score, while those lacking this feature will receive a lower score. Additional factors considered are the surface temperatures of the carpet and the presence of any scorching.

**Drape test** - The drape test is a longstanding CU test for electric heaters. A piece of terry cloth fabric with a polyester content not more than 20%, and having a pile weave and a nominal weight of 9.5 ounces per square yard content (320 gm/m2), is folded into a 6” wide by six layer thick pad. This pad is draped across approximately 1/3 to ½ of the heater’s outlet. The heater is operated for ½-hour while the fabric is monitored for charring or ignition. If there is ignition or the development of serious smoke, the test is halted. The more charring of the fabric, the lower the score.

**Over-temperature simulation test** - According to the UL standard, heaters must not create a fire or safety hazard when operating under abnormal conditions. Many heaters claim to have an overheat protection safety feature. In practice, this protection should prevent the heater’s temperature from getting too high and
resulting in a potential fire hazard. The product should shut off, limit its operating
temperature or sound some type of alarm when such a condition occurs. This test is
intended to evaluate the functionality of this safety feature and not to create a fire.
Consumer Reports does not verify compliance to the UL standard, but rather
performs a test based upon the UL standard.

For this test, the heater is completely wrapped in a heavy terry cloth cotton towel
with a polyester content not more than 20%, and having a pile weave and a
nominal weight of 9.5 ounces per square yard content (320 gm/m2). The towel is
intended to trap the heat generated by the heater. This procedure is not meant to
simulate any consumer use experience, but rather to force a failure within the
heater by building up excessive trapped heat. First, each heater is warmed up for 3
minutes prior to covering it up (10 minutes for oil filled radiator models). A
watt-meter is used to determine how each heater’s controls respond. Since the user
adjustable thermostat is typically mounted far from a heater’s heating element, it
does not respond to this test’s high temperature condition. The heater is operated
for up to 15 minutes. Heaters typically shut down or cycle their heating elements
on and off, controlled by a high-temperature thermostat (safety control). Heaters
that properly shut down receive a high score. Those heaters without this feature
receive a lower score. The temperature of the inside of the cloth is also recorded at
the point when the unit cycles off – or the test completion time is reached. Any
scorching, burner, ignition or melting of the unit should also be identified, as it will
affect the model’s score.

**Ease of Use**

Consists of the presence and/or usability of the following:

**Controls**

§ Automatic mode
§ Timer
§ Temperature Settings
§ Fan Settings
§ Remote
§ Control size
§ Control location
§ Control markings
§ Extra features

Ease of moving or carrying
§ Weight
§ Wheels
§ Handles
§ Lift or Carry

Noise

The loudest heaters tend to be fan-forced air models, though even those are relatively quiet. The quietest heaters are the natural-convection baseboard and upright radiator models. The radiant heaters tend to create rattles and buzzes as they warm-up. Noise measurements are taken within the 12’ wide by 17’ long by nearly 8’ high room used for the temperature control test. Loudness is measured in sones rather than dBA (sound pressure) to provide a linear differentiation of noise.

Odor

In looking at user reviews there were many comments about heaters emitting odors especially when new. It is expected that there would be some odor from new paint and metal being heated for the first time, something that even happens in homes central heating system when the heat is turned on for the first time of the season. We will note any units that emit especially strong odors the first time they are turned on and any that continue to emit odors.