

# Electric Heaters

## Tip-over protection

**Q: Section 605.10 of the International Fire Code requires portable electric space heaters to be listed and labeled, but does not specify that the heaters need to be provided with a tip-over switch. Are portable listed electric heaters required to have a tip-over switch to prevent them from starting a fire if they are tipped over?**

A: UL Listed portable electric heaters must pass a tip-over test that simulates the most severe tip over orientation. This is one of many abnormal operation tests that Listed heater must pass without creating a risk of fire, electric shock or injury to persons. For this test, a risk of fire is created if there is any emission of embers, flame or molten metal from the heater, or if there is any glowing or flaming of the combustible material (terry cloth) upon which the heater is tipped.

Manufacturers of portable electric heaters may use temperature limiting controls or a switch to satisfy the requirements of the “tip-over” test. The Standard specifies that if a switch is employed in a heater to de-energize the heating elements in the event the heater is tipped over, the “tip-over” switch shall function before the heater has tipped in any direction beyond the angle of critical balance. Critical balance is defined as the minimum angle through which a heater must be tipped to cause it to tip over due solely to the force of gravity.

Portable electric heaters are Listed under the product category “Air Heaters, Movable and Wall- or Ceiling-Hung (KKPT).” The standard used to investigate products in this category is ANSI/UL 1278, “The Standard for Safety for Movable and Wall- or Ceiling-Hung Electric Room Heaters.”

