



U.S. CONSUMER PRODUCT SAFETY COMMISSION  
5 RESEARCH PLACE  
ROCKVILLE, MD 20850

Arthur Lee  
Electrical Engineer  
Division of Electrical Engineering  
Office of Hazard Identification and Reduction

Tel: 301-987-2008  
Email: alee@cpsc.gov

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Mr. Joe Musso  
Chair for STP 858  
Underwriters Laboratories Inc.  
333 Pfingsten Road  
Northbrook, IL 60062

Dear Mr. Musso:

As a result of a U.S. Consumer Product Safety Commission (CPSC) staff analysis of range tip-over incident scenarios, which is documented in the May 2011 report, *Range Tipovers: An Evaluation of Range Stability* (<http://www.cpsc.gov/library/foia/foia11/os/rangestability.pdf>), CPSC staff is submitting three proposals for review and solicitation of comments by the Underwriters Laboratories (UL) 858 Standards Technical Panel. The views expressed in this letter are those of CPSC staff, and they have not been reviewed or approved by, and may not necessarily reflect, the views of the Commission.

CPSC staff generally supports the proposed requirements to improve consumer awareness and installation practices relative to range stability (August 7, 2009 UL Bulletin, Subject 858). Staff views the proposed requirements as a positive step toward ensuring that anti-tip devices are installed. However, CPSC staff believes that the proposed requirements still do not provide sufficient feedback to the consumer to ensure that the device is engaged properly at any given time throughout the life of the product.

CPSC staff estimates that there are 1,700 appliance-related (*e.g.*, refrigerators, ranges), emergency department (ED)-treated injuries involving instability and tip over annually (<http://www.cpsc.gov/library/foia/foia11/os/tipover.pdf>). In addition, from 2000 to 2008, CPSC staff has reports of 13 fatalities associated with instability and tip over of ranges. The majority of the fatalities involved children younger than 10 years old.

CPSC staff believes that relatively minor changes to the requirements for range stability have the potential to reduce the number of tip-over incidents and the subsequent deaths associated with tip over. This is supported by CPSC staff analysis in the report mentioned above, and it

forms the basis for CPSC staff's belief that more stringent performance requirements for freestanding ranges should be developed to address range instability.

Thus, CPSC staff proposes that UL 858 be revised to include the following three requirements:

- Increase the loaded test weight for Section 35 Stability, as described in 34.4, from 50 lb (22.7 kg) to 75 lb (34 kg), for a door located more than 36 in (914 mm) above the floor, and 75 lb (34 kg) to 100 lb (45.4 kg), for a door located 36 in or less above the floor.

Revised Text (deleted text struck through; new text underlined):

34.4 A load is to be applied uniformly, without impact, for 5 min to the fully open oven door. The load is to be ~~50 lb (22.7 kg)~~ 75 lb (34 kg) for a door located more than 36 in (914 mm) above the floor, and ~~75 lb (34 kg)~~ 100 lb (45.4 kg) for a door located 36 in or less above the floor. For a side-hinged door, the load is to be applied to the top of the door midway between the vertical edges. For a bottom-hinged door, the load is to be distributed along the center line (midway between the front and back edges) of the door. For an appliance with two or more doors, the test is to be conducted on one door at a time. For a slide-in door (a door that slides into the appliance), the load is to be hung from the top center edge of the door.

#### Rationale

In May 2011, CPSC staff released a study, *Range Tipovers: An Evaluation of Range Stability* (<http://www.cpsc.gov/library/foia/foia1/os/rangestability.pdf>), which details the testing and analysis CPSC staff conducted on range stability. In the report, CPSC staff reviewed 33 reports involving range tipover incidents occurring from 1980 to 2006. Two main commonalities in the incidents reviewed were: (1) the ranges were unsecured to an adjacent wall, floor, or cabinet; and (2) sufficient weight was applied to the open oven door to cause the range to tip forward. The available incident data for the past 25 years show that the incidents involved two distinct groups—children between the ages of 15 months and 5 years and older adults.

CPSC staff testing in 2009 and 2010 included static and dynamic load tests on four sample ranges to determine the loads required for the ranges to reach tip-over conditions. Based on a threshold line corresponding to UL's current requirement to address stability under normal conditions (*i.e.*, a test in which a static weight of 75 pounds is placed on the geometric center of an open oven door) and using the data collected in the CPSC staff's dynamic tests, 26 percent of the incidents involving up to two children climbing onto an open oven door of an unsecured range would have resulted in range tipover. Using a threshold line corresponding to a static test at 100 pounds on the geometric center of an open oven door and using the data collected in staff's tests, the percentage of expected tipping events was reduced to approximately 1.5 percent.

- Requirements for a visual indicator when the appliance is not secured to an anti-tipping device.

New Text, underlined, to be appended to paragraph 35.3.4:

(g) Removal of the appliance from the mounting hardware shall result in a readily apparent and prominent visual indication. The visual indication shall consist of:

- a) A warning flag that is exposed when the appliance is not secured to the mounting hardware; or
- b) An equivalent arrangement (such as an audible or illuminating signal on the control panel).

Rationale

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All of the 33 incidents that were documented by CPSC staff occurred with an unsecured range due to: (1) missing anti-tip hardware; (2) improperly installed anti-tip hardware; or (3) improper application of anti-tip hardware to secure the range.

- Requirements for removing power from the heating element if the appliance is not horizontal.

New Text, underlined, paragraph 35.2.3:

35.2.3 When subjected to this test, all heating elements for floor-supported, cabinet-supported (cabinet below) or counter-supported (counter-hung) appliance shall de-energize when exceeding the loading, as described in 34.4. The reference to a cabinet-supported appliance here is not intended to include a wall-mounted appliance as specified in 1.5. For this test, the appliance is to be completely assembled, except the broiler pan is to be removed. The appliance is to be installed as intended, but it is not to be connected to the power supply, and a floor-supported appliance is not to be secured to any adjacent structure. The appliance is to be mounted on a level surface. For a floor-supported appliance with adjustable feet, the appliance is to be level with the feet set at their most unfavorable position. A load of 75 lb (34.0 kg) is to be placed on the door and then is to be increased uniformly, at a rate not to exceed 20 lb (9.1 kg) per minute, without impact, separately to each fully open door or drawer, one at a time. For a bottom-hinged door, the load is to be distributed along the center line (midway between the front and back edges) of the door. For a drawer or slide-in door (a door that slides into the appliance), the load is to be hung from the top center of the outer edge of the drawer or door. The load is to be increased up to a maximum of 250 lb (113.4 kg), or until any feet lift from the floor, the range begins tipping, or the like. If the maximum load can be applied, it is to remain on the door for 5 min. The power continuity to the heating element for the appliance is to be measured.

#### Rationale

All the incidents that were documented by CPSC staff occurred with an unsecured range as a result of missing anti-tip hardware, improperly installed anti-tip hardware, or anti-tip hardware that was not secured properly to the range. CPSC staff members are aware of five incidents where adult victims were trapped for an extended period of time under a tipped over range while the oven's heating elements were turned on, resulting in thermal burns each time the oven cycled on. Automatically shutting off the heating source of a range/oven when it has tipped over may reduce the severity of thermal burns.

We appreciate the opportunity to make recommendations to UL 858, *Standard for Household Ranges*. The proposals take into account foreseeable use of these products, and CPSC staff believes that these proposed requirements will increase the safety of electric ranges for consumers. We look forward to participating in further discussions about this standard.

Sincerely,



Arthur Lee  
Electrical Engineer  
Division of Electrical Engineering