



U.S. CONSUMER PRODUCT SAFETY COMMISSION
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January 2, 2015

Ms. Amy Walker
STP 858 Project Manager
Underwriters Laboratories Inc
333 Pfingsten Road
Northbrook, IL 60062-2096

Dear Ms. Walker:

Re: Comments on November 21, 2014 Preliminary Review Topic: Abnormal Operation – Coil
Surface Unit Cooking Oil Ignition Test

Dear Ms. Walker:

The U.S. Consumer Product Safety Commission technical staff (CPSC staff or staff) appreciates this opportunity to provide comments on the proposed ignition test for electric ranges with coil surface units.¹ CPSC staff strongly supports the subject proposal from the Association of Home Appliance Manufacturers (AHAM) to include requirements in Underwriters Laboratories (UL) 858 – Household Electric Ranges to reduce the likelihood of overheating food to ignition. CPSC staff has been working for several years with the Fire Protection Research Foundation (FPRF), AHAM, its range manufacturer membership, UL, and other interested parties to demonstrate technologies for limiting pan temperature and to develop test methods and requirements that could be used to evaluate these or equivalent systems. CPSC commends AHAM and its members for submitting this proposal. This marks a significant first step toward mitigating the risk of cooking fires and reducing fires, deaths, and injuries.

In general, CPSC staff agrees with the adoption of a straightforward test method that evaluates effectiveness of candidate systems with an optimal amount of testing and believes that the

¹ The comments or views expressed in this letter are those of the CPSC staff and they have not been reviewed or approved by, and may not reflect the views of, the Commission.

subject proposal accomplishes this. Following are comments on several of the major components of the proposed requirements.

Test Criteria (Proposed paragraph 60A.3)

For the pass/fail criteria, CPSC staff agrees that using oil ignition as opposed to defining a maximum oil temperature threshold is preferable. One of the problems with using a maximum temperature criterion is defining a threshold temperature that corresponds to a definable thermocouple location for all pan/element configurations. Additionally, ensuring that a thermocouple is placed at the proper height within the thin oil pool to make accurate and repeatable measurements relative to the defined limit is difficult. Another concern is that a defined threshold may be too prescriptive and thus restrict design flexibility.

Cooking Utensil (Proposed paragraphs 60A.5 through 60A.8)

While the recommended use of thin aluminum cookware may be suitable, CPSC staff suggests that cast iron cookware may be preferable. A heavier, cast iron pan will contact the coil element more evenly and solidly than a lightweight aluminum pan, and the dark bottom surface would be a more effective radiant heat absorber, optimizing test time. Since cast iron pans do not have non-stick coatings, concerns of off-gassing of toxic byproducts of perfluorinated coatings from excessive temperatures can be avoided. In addition, Primaira, LLC's 2014 report, *Pan-Bottom Temperature Limiting Control Technology Testing*, shows that for the same-size pan, cast iron more consistently produced oil ignitions than aluminum for heat settings other than high.²

However, CPSC staff acknowledges that Primaira's testing also showed that the performance of cast iron is not as distinctive from aluminum on the high setting (for which the testing is proposed). Accordingly, although CPSC staff considers cast iron preferable, if there are other factors that favor specifying aluminum, such as wider availability of pan sizes, then their use should be technically acceptable.

Test Oil (Proposed paragraph 60A.9)

Using canola as the test oil is an appropriate choice and is supported by the recommendations in the FPRF-sponsored test report by Hughes Associates, *Development of Standardized Cooking Fires for Evaluation of Prevention Technologies: Data Analysis*.³ A 1/8"-deep volume of oil also is an appropriate choice. Testing that was summarized in the reports from Hughes³ and Primaira² demonstrated that for a pan bottom that closely matches the heating element size, increasing oil volume simply results in longer times-to-ignition. Using a relatively small amount of oil (enough to cover the pan surface evenly) would ensure time-to-ignition within the proposed 30-minute test time. Specifying a depth of oil versus a specific volume ensures even coverage across the pan surface of non-specialized

² November 19, 2014 Memorandum from AHAM Cooking Products Task Force to Members of the UL 858 STP and CSA Technical Committee for C22.2 No. 61 Stakeholders involved with industry cooking safety initiatives regarding Technical Report on Cooking Sensor Research

³ Dinaburg, Joshua and Gottuk, Daniel; *Development of Standardized Cooking Fires for Evaluation of Prevention Technologies: Data Analysis*; Hughes Associates, Inc.; July 2014.

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cookware, *i.e.*, slight variations in pan size relative to the diameter of the heating element, to be used in the evaluation.

Supervisory Circuit

Staff recommends that, due to the critical nature of the ignition-mitigation system, a requirement be added for the control system to include a supervisory circuit to disable the heating element or to provide sufficient warning to the user for loss of function, such as sensor failure.

CPSC staff appreciates the efforts of AHAM and its members to develop and submit this proposal. Timely resolution of any potential issues that are raised during this comment period is paramount to the production of ranges that can reduce incidents of fire and related deaths and injuries and property damage. Overall, staff believes that the proposed test is acceptable and encourages the STP to work quickly to resolve any outstanding issues and accept it.

Again, thank you for the opportunity to comment on this important proposal. If you have any questions, or need additional information, please feel free to contact me.

Sincerely,

Andrew Trotta

cc: Colin Church, CPSC Voluntary Standards Coordinator