

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460



OFFICE OF AIR AND RADIATION

[Date]

Dear ENERGY STAR® Residential Lighting Fixture Partner:

On behalf of the U.S. Environmental Protection Agency (EPA), I would first like to thank you for your involvement and continued support of ENERGY STAR. By manufacturing ENERGY STAR qualified products, your company is showing its commitment to protecting the environment and to manufacturing high quality products that meet strict energy and safety requirements and consumer expectations. The purpose of this letter is to inform you about a process EPA is initiating to ensure compliance with the ENERGY STAR Specification for Residential Light Fixtures.

Recently, EPA has been made aware of some concerns regarding the quality and the reliability of ENERGY STAR qualified residential light fixtures. Anecdotal reports of premature failures from industry, retailers, and consumers, along with EPA's interest in protecting the integrity of the ENERGY STAR label, has led us to the Lighting Research Center (LRC) and their research of durability issues. Over the last year EPA has been in discussions with LRC and Industry regarding the development of a durability testing method for use in the ENERGY STAR for Residential Light Fixture (RLF) Program Requirements. As a result of these discussions, and LRC's preliminary research, EPA has determined that closer scrutiny of the Maximum Ballast Operating Case Temperature requirement for performance is warranted. As a reminder, the ENERGY STAR requirement for maximum ballast operating case temperature is $\leq 90^{\circ}\text{C}$ or not to exceed ballast manufacturer requirements, whichever is lower.

It is increasingly clear that heat is a likely cause of premature failure in fluorescent fixtures, especially in recessed and ceiling flush mount applications. Compact fluorescent, electronic ballasts are particularly susceptible to failure due to elevated temperatures. When placed inside recessed and ceiling flush mount fixtures the ballast case can reach very high temperatures, which reduces the load life of the capacitor; thus compromising ballast performance and causing premature failure. In EPA's opinion, it is in the best interest of any manufacturer to test the temperatures within their products, since this will identify overheating conditions that will undermine product durability and long-term performance and affect long term consumer acceptance of fluorescent technologies.

For the above stated reasons and to maintain the integrity of the ENERGY STAR label, **EPA announces its intent to request manufacturers of recessed and ceiling flush mounted indoor fixtures to submit a laboratory test report that shows compliance with the Maximum Ballast Operating Case Temperature for Performance requirement.** Contacted manufacturers will be given 60 days to send EPA the required test report from the date the written request is made. **Failure to comply with these requirements or failure of products to meet with the durability requirements will result in de-listing of products from the ENERGY STAR Web site.**

In an effort to focus on high-risk fixtures EPA has determined that initially only electronically ballasted, compact fluorescent recessed and ceiling flush mount fixtures will require laboratory test reports. Furthermore, EPA is currently reviewing the ENERGY STAR qualified products list to determine high risk fixtures for heat build-up and will require manufacturers to submit manufacturer laboratory test reports only on those products. A letter will be sent to individual manufacturers in early July with a request for manufacturer laboratory test reports for specific ENERGY STAR models. EPA developed a Standard Operating Procedure (SOP), attached, that describes exactly what is expected of both manufactures and EPA during this process.

Existing laboratory test reports demonstrating that the ballast operating case temperature meets the ENERGY STAR specification will be accepted. If no existing test report is available, than the manufacturer should use the LRC's "Proposed Durability Testing Method: Temperature" as guidance to ensure that the laboratory test reports you supply meet the intent of the ENERGY STAR specification. The LRC's durability testing method for temperature utilizes UL testing apparatus to measure the ballast case operating temperature. It is important to note, however, that the location of the thermal probes and the maximum allowable ballast operating case temperatures required for the heat test are different than those required in the UL safety testing. The temperature of the ballast case should be taken at the "hot-spot" locations for performance as indicated by the ballast manufacturer. If the maximum ballast operating case temperature and hot-spot locations cannot be obtained from the ballast manufacturer measurements should be completed in accordance with the LRC's "Proposed Durability Testing Method: Temperature".

If you have any questions about the submission of this durability data, please contact me at 202-564-6246 or Shiller.david@epa.gov.

Thank you in advance for your cooperation and, as always, for your support of ENERGY STAR.

Sincerely,



David Shiller, Product Manager
ENERGY STAR for Residential Light Fixtures

ENERGY STAR® Standard Operating Procedure: Responding to EPA's Request for Manufacturer Laboratory Test Report(s)

Purpose: To ensure ENERGY STAR for Residential Lighting Fixture product quality as it relates to durability.

I. Data Request and Response:

1. EPA will send ENERGY STAR for Residential Light Fixture (RLF) partners a letter requesting manufacturer laboratory test reports that show compliance with the ENERGY STAR specification for maximum ballast operating case temperature for optimal performance. The letter will list specific high risk (in terms of heat build-up) fixture models for which manufacturer laboratory test reports will need to be supplied.
2. RLF manufacturers must submit a manufacturers laboratory test report within 60 days of receipt of the letter.

II. Data Requirements and Requested Format:

1. One test should be completed for each fixture model listed in the letter.
2. The laboratory test report may come from any of the following: 1) "In-house" fixture manufacturer lab. 2) lamp or ballast manufacturer lab. 3) third party independent lab. Note: EPA will accept existing test report data.
3. Provide the ballast manufacturer's data that describes the maximum allowable case temperature for performance and the "hot-spot location".
4. Describe testing method (reference applicable standards).
5. Describe equipment used (reference applicable standards).
6. Provide maximum ballast operating case temperature for performance when tested inside the fixture. Indicate thermocouple locations. Note: The temperature of the ballast case should be taken at the "hot-spot" locations for performance as indicated by the ballast manufacturer. If the maximum ballast operating case temperature and hot-spot locations cannot be obtained from the ballast manufacturer measurements should be completed in accordance with the LRC's "Proposed Durability Testing Method: Temperature".
7. If available, include photograph(s) of fixture(s) mounted on the testing apparatus.
8. Fixture manufacturers should follow the LRC's "Proposed Durability Testing Method: Temperature" in all cases. This is attached for your reference.

III. EPA Data Review:

1. Upon receipt, EPA will review data received and notify partners of next steps within 14 days.

IV. Procedure for Products That Meet Maximum Ballast Operating Case Temperature for Performance Requirements:

1. If test report proves acceptable, EPA will notify the partner in writing. No further action will be required.

V. Procedure for Products that Exceed Maximum Ballast Operating Case Temperature for Performance Requirements:

1. EPA, will contact the manufacturer in writing to obtain clarification on the test results and communicate identified discrepancies and request that **additional** information, including a corrective action plan, be submitted within 30 days from the date of receipt of the EPA letter of notification.
2. EPA will review the additional information submitted by the partner for compliance within 7 days from the date of receipt of documentation. **In the event that significant concerns remain, products are de-listed for six months so the partner can make necessary improvements to the products.** Partner is notified of this de-listing via written notification.
3. After the six-month period is completed, partner may resubmit products for ENERGY STAR re-qualification.
4. If the partner fails to submit or follow the corrective action plan as agreed, products will be removed from the ENERGY STAR Web site indefinitely.
5. Partners whose products are repeatedly found to be in violation of the specification will be terminated from the ENERGY STAR program.

VI. Procedure for Manufacturers That Fail to Provide Maximum Ballast Operating Case Temperature for Performance Test Report:

1. 60 days after sending out the initial letter a second request will be sent to RLF partners that did not respond to initial request giving a 21 day extension to submit laboratory test reports.
2. The products will be de-listed if no response is obtained by the 21 day extension.

LRC's Proposed Durability Testing Method: Temperature¹

Testing location

Testing shall be conducted in a room with ambient temperature of 25°C ±5°C.

Apparatus

Underwriters Laboratory (UL) has established a thermal testing procedure and apparatus for safe operation of electric fixtures. The apparatus construction techniques for ENERGY STAR durability testing should follow those described in UL 1598 for normal temperature testing, but thermocouple locations will be different than the ones required by UL.

Procedure

- a. Fixtures shall be connected to the apparatus in the manner described in UL 1598.
- b. Thermocouples will be placed on the ballast in the locations indicated by ballast manufacturer. This information should be listed in the NEMA/ALA matrix, and/or clearly marked on the ballast, and/or clearly stated in the ballast manufacturer's literature (printed or website). If more than one location is indicated, temperature measurements are to be made in every location.
- c. Maximum allowable temperature (for ballast performance) at the location indicated by the ballast manufacturer shall be indicated by the ballast manufacturer. This information shall be listed in the NEMA/ALA matrix, and/or clearly marked on the ballast, and/or clearly stated in the ballast manufacturer's literature (print or website). If none of the sources cite this information, the manufacturer should assume that the maximum allowable temperature at the indicated location on the ballast is 65°C.
- d. Stabilization time shall be a minimum of 7.5 hours. Fixtures must be turned on inside the testing box for a minimum of 7.5 hours before any measurements are taken.

¹ Note: The "Proposed Durability Testing Method: Temperature" is a modified version of LRC's proposed testing method. Steps 1, 2, and 6 were removed because the information is redundant to what is included in the Standard Operating Procedure (SOP). A full version of the testing method can be found in Appendix I of the LRC Durability Testing report that can be accessed at:
<http://www.lrc.rpi.edu/programs/lightingTransformation/pdf/durabilityTestingFinalReport.pdf>