



THE MARK OF ENVIRONMENTAL RESPONSIBILITY

GS-5

DRAFT FINAL REVISED
GREEN SEAL™ ENVIRONMENTAL STANDARD FOR
Compact Fluorescent Lamps
(CFLs)

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GREEN SEAL™

Green Seal is a non-profit organization devoted to environmental standard setting, product certification, and public education. Green Seal's mission is to work towards environmental sustainability by identifying and promoting environmentally responsible products, purchasing, and production. Through its standard setting, certification and education programs, Green Seal:

- identifies products that are designed and manufactured in an environmentally responsible manner;
- offers scientific analyses to help consumers make educated purchasing decisions regarding environmental impacts;
- ensures consumers that any product bearing the Green Seal Certification Mark has earned the right to use it; and
- encourages manufacturers to develop new products that are significantly less damaging to the environment than their predecessors.

The intent of Green Seal's environmental requirements is to reduce, to the extent technologically and economically feasible, the environmental impacts associated with the manufacture, use and disposal of products. Set on a category-by-category basis, Environmental Standards focus on significant opportunities to reduce a product's environmental impact.

Green Seal offers certification to all products covered by its Standards. Manufacturers may submit their products for evaluation by Green Seal. Those which comply with Green Seal's requirements may be authorized to use the Green Seal Certification Mark on products and in product advertising. Manufacturers authorized to use the Green Seal Certification Mark on their product are subject to an ongoing program of testing, inspection, and enforcement. For additional information on Green Seal or any of its programs, contact:

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**GREEN SEAL™ DRAFT FINAL REVISED ENVIRONMENTAL STANDARD
FOR COMPACT FLUORESCENT LIGHTING (GS-5)**

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FOREWORD

A. Certification. This Environmental Standard contains the basic requirements for certain products (as defined in the Scope section below) to be certified by Green Seal™ and for their manufacturers to receive authorization to use the Green Seal Certification Mark on products and their packaging, and in product advertising. The requirements are based on an assessment of the environmental impacts of product manufacture, use, and disposal and reflect information and advice obtained from industry, trade associations, users, government officials, environmental and other public interest organizations, and others with relevant expertise. These requirements are subject to revision as further experience and investigation may show is necessary or desirable.

B. Compliance with the Standard. Compliance with this Standard is one of the conditions of certification of a product by Green Seal.

C. Compliance with Government Rules. In order to be authorized to use the Green Seal Certification Mark, the manufacturer of the certified product must disclose all governmental allegations or determinations of violation of federal, state, or local environmental laws or regulations with respect to facilities in which the product is manufactured. Certification will be denied any product manufactured in violation of environmental laws or regulations if, in Green Seal's judgment, such violations indicate that the environmental impacts of the product significantly exceed those contemplated in the setting of the standard.

D. Limitations on Purpose of Standard. Green Seal's Standards provide basic criteria to promote environmental quality. Provisions for product safety have not been included in this Standard because government agencies and other national standard-setting organizations establish and enforce safety requirements.

E. Substantially Equivalent Products. Products that are substantially similar to those covered by this standard in terms of function and environmental impact may be evaluated and certified by Green Seal against the intent of the requirements of this standard.

F. Unanticipated Environmental Impacts. A product which complies with this Standard will not necessarily be certified by Green Seal if, when examined and tested, it is found to have other features which significantly increase its impact on the environment. In such a situation, Green Seal will ordinarily amend its standards to account for the unanticipated environmental impacts.

G. Certification Agreement and Green Seal Rules. In order to be authorized to apply the Green Seal Certification Mark to a product or its packaging, or to use the Green Seal Certification Mark in product advertising, the manufacturer of the product must (1) undergo an initial product evaluation to determine that the product complies with Green Seal's requirements, (2) sign a Green Seal Certification Agreement that, among other things, defines how and where the Green Seal may be used, (3) pay fees to cover the costs of testing and monitoring, (4) agree to an ongoing program of factory inspections and product testing, and (5) comply with the requirements found in the most recent version of "Rules Governing the Use of the Green Seal Certification Mark."

H. Disclaimer of Liability. Green Seal™, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. Green Seal shall not incur any obligations or liability for damages, including consequential damages, arising out of or in connection with the interpretation of, reliance upon, or any other use of this Standard.

I. Care in Testing. Many tests required by Green Seal's Standards involve safety considerations. Adequate safeguards for personnel and property should be employed in conducting such tests.

J. Referenced Standards. Standards referenced in this document may have been superseded by a later edition, and it is intended that the most recent edition of all referenced standards be used in determining compliance of a product with this standard.

K. Labeling Requirements. This standard neither modifies nor supersedes government labeling requirements. Labeling language which varies in form from the requirements of this section may be used with the written approval of Green Seal.

List of Acronyms

ANSI. American National Standards Institute

CFL. Compact Fluorescent Lamp

ENERGY STAR. A joint program run by the United States Department of Energy (DOE) and the Environmental Protection Agency. The DOE runs the ENERGY STAR Program for CFLs and publishes the requirements for that program.

NRTL. Nationally Recognized Testing Laboratory

OSHA. Occupational, Safety, and Health Administration

UL. Underwriters Laboratories

GREEN SEAL™ DRAFT FINAL REVISED ENVIRONMENTAL STANDARD FOR COMPACT FLUORESCENT LIGHTING (GS-5)

1.0 SCOPE

This Standard establishes environmental requirements for compact fluorescent lamps. This includes those lamps used for general illumination purposes, and can include those for some special purposes such as germicidal and bug lamps. The product group includes those with both screw based and pin based lamps and those with integral and non-integral ballasts.

2.0 DEFINITIONS

2.1 Ballast Adaptor. A unit that contains all elements that are necessary for starting and stable operation of the lamp, with an integral socket for a lamp.

2.2 Compact Fluorescent Lamp (CFL). A fluorescent lamp that is small and compact and performs the entire mechanical support function and may be self-ballasted or function with a ballast adaptor.

2.3 Conversion Kit. A set of field-installed components which converts a portable luminary (fixture) to a permanently installed ballast adaptor, or remote ballast and socket adaptor, with a replaceable compact fluorescent lamp.

2.4 Intentional Introduction. The act of deliberately utilizing a restricted material in the formation of packaging or a packaging component where its continued presence is desired in the final package or packaging component to provide a specific characteristic, appearance, or quality.

2.5 Post-Consumer Material. Material that would otherwise be destined for solid waste disposal, having completed its intended end-use and product life cycle. Post-consumer material does not include materials and by-products generated from, and commonly reused within, an original manufacturing and fabrication process.

2.6 Primary Packaging. The material physically containing and coming into contact with the product.

2.7 Recovered Material. Material that has been recovered from or otherwise diverted from the waste generated after a material manufacturing process. Recovered material may include post-consumer material, cuttings, trimmings, obsolete inventories, and rejected unused stock, but does not include material capable of being re-used within the process that generated it.

2.8 Recyclable Package. The package can be collected in a substantial majority of communities, separated or recovered from the solid waste stream and used again, or reused in the manufacture or assembly of another package or product through an established recycling program:

2.9 Secondary Packaging. Any packaging or material other than primary packaging, including wrappers, but excluding shipping containers.

2.10 Self-Ballasted Lamp. A unit that incorporates, permanently enclosed, all elements that are necessary for starting and stable operation of the lamp, and which does not include any replaceable or interchangeable parts. The unit including all elements is discarded at the end of the lamp life.

2.11 Source-Reduced Package. A package that has at least 50% less material (by weight) compared to containers commonly used for that product type.

3.0 PRODUCT-SPECIFIC PERFORMANCE REQUIREMENTS

3.1 ENERGY STAR Compliance. Products shall meet or exceed the ENERGY STAR Program Requirements for CFLs.

3.2 Lamp Life. The average minimum rated lamp life shall be 10,000 hours at 3 hours per start as measured in accordance with the ENERGY STAR Program Requirements for CFLs. In units packaged with replaceable lamps, the ballast shall be tested to assure an average minimum rating of 1 lamp life cycle of 10,000 hours, with ongoing testing to confirm a life expectancy of an average minimum of 4 lamp life cycles, as measured in accordance with the ENERGY STAR Program for CFLs

3.3 40% of Lamp Life. The lamp lumen output measured at 40% of the lamp's life shall be within 15% of average initial lumens.

3.4 Safety. Ballast adaptors and self-ballasted lamps shall be tested by a third party and listed to the applicable UL standard by a NRTL accredited by OSHA.

4.0 PRODUCT-SPECIFIC HEALTH AND ENVIRONMENTAL REQUIREMENTS

4.1 Mercury Content. Lamps shall contain less than 3 milligrams of mercury per unit.

4.2 Radioisotopes. Lamps shall not contain radioisotopes.

4.3 Lead. Lead shall not be used in the solder components of the lamp.

4.4 Flame Retardants. Plastic components weighing more than 5 grams shall not contain flame retardant substances or preparations that contain substances that carry the risk phrases R45, 46, 50, 51, 52, 53, 60, 61. In addition, the plastic components weighing more than 5 grams shall not contain any of the following flame retardants:

- Decabromodiphenyl 13654-09-6
- Monobromodiphenyl ether 101-55-3
- Dibromodiphenyl ether 2050-47-7
- Tribromodiphenyl ether 49690-94-0
- Tetrabromodiphenyl ether 40088-47-9
- Pentabromodiphenyl ether 32534-81-9
- Hexabromodiphenyl ether 36483-60-0
- Heptabromodiphenyl ether 68928-80-3
- Octabromodiphenyl ether 32536-52-0
- Nonabromodiphenyl ether 63936-56-1
- Decabromodiphenyl ether 1163-19-5
- Chloroparaffins with chain length 10-13 C atoms,
- Chlorine content > 50 % by weight 85535-84-8

5.0 MANUFACTURING REQUIREMENTS

5.1 Compliance to Laws and Regulations. The product shall be produced in compliance with applicable laws and regulations.

5.2 Code of Conduct. Manufacturers shall have a code of conduct program to encourage safe conditions, worker rights and environmental responsibility in the global electronics supply chain. The program shall include the criteria established by the Electronic Industry Code of Conduct.

5.3 Mercury in Manufacturing. If mercury is in the product, the manufacturer shall use methods to minimize mercury exposure to workers during product manufacturing. This shall be done with automated and encapsulated dosing of mercury. Other methods of closed, accurate, and precise dosing would be acceptable if proven, with documentation, to have similar or better dose efficiency and protection to worker exposure.

6.0 END OF LIFE REQUIREMENTS

6.1 Lamp Recycling. Manufacturers shall have a recycling program in place to encourage and facilitate recycling of lamps in all markets where their CFLs are sold, including at least:

- Provide direct consumer/customer access to a CFL collector and recycler. This access can include a third-party provider or retailer partnership.
- Information on the package, as pursuant to section 8.1.
- Information on the company website on the recycling program that directly links consumers/customers to the CFL collectors and recyclers, through a link on the main CFL or lighting page for the company.

7.0 PACKAGING REQUIREMENTS

7.1 Polyvinyl Chloride Package. The package shall not be made from polyvinyl chloride.

7.2 Recyclable Package. The product's package shall be recyclable or source-reduced, or a combination of the two.

7.3 Source-Reduced Package. Plastic packaging shall contain at least 25% post-consumer material and paperboard packaging shall contain at least 50% post-consumer material.

7.4 Secondary Packaging. Secondary packaging shall not be used. An exception may be made for packaging of multiple units when the total packaging (primary plus secondary) is a reduction in packaging material use.

7.5 Heavy Metal Restrictions. Heavy metals, including lead, mercury, cadmium, and hexavalent chromium, shall not be intentionally introduced. Further, the sum of the concentration levels of these metals present shall not exceed 100 parts per million by weight (0.01%); an exception is allowed for refillable packages or packages that would not exceed this maximum level but for the addition of recovered materials. Further, intentional introduction does not include the use of one of the metals as a processing aid or intermediate to impart certain chemical or physical changes during manufacturing, where the incidental retention of a residual of that metal in the final packaging or packaging component is not desired or deliberate, if the final packaging or packaging component complies with the incidental concentration restrictions of 100 ppm.

8.0 LABELING REQUIREMENTS

8.1 Primary Packaging Information for CFLs, Self-Ballasted Lamps, Ballast/Lamp Systems, and Conversion Kits.

8.1.1 ENERGY STAR Compliance. Lamps shall meet or exceed all of the ENERGY STAR Program Requirements for CFLs.

8.1.2 Color Rendering Index. The Color-Rendering Index shall be included on the product packaging as measured in accordance with the ENERGY STAR Program Requirements for CFLs.

8.1.3 Mercury. If the lamp does not contain mercury, it does not need to include the mercury labeling requirements in the ENERGY STAR Program Requirements for CFLs. For products that contain mercury, in addition to the requirements in the ENERGY STAR Program Requirements for CFLs, instructions for safe clean up of broken product shall be included. Unless otherwise approved in writing by Green Seal, the description shall read as follows:

- If lamp breaks, do not inhale. Open window, leave room, and close door behind you. Shut off air system. Stay away for 20 minutes. With gloves or plastic bags to protect hands, scoop up broken material with stiff paper or cardboard and seal in plastic bag or container with lid. Clean area with damp paper towels and seal in a separate plastic bag or container, include gloves. Dispose of properly. Wash hands thoroughly. Do not allow children or pregnant/nursing women to help with cleanup. Do not vacuum or sweep.

8.1.4 Lead. If the product does not contain lead in any component including, but not limited to, the solder and glass, a claim indicating this is permitted, such as “lead-free glass” or “no lead glass.”

8.1.5 Extra Long Life. If the product has an average minimum rated lamp life of greater than 15,000 hours it can make a claim about the extended life of the product, such as “extra long life.”

8.1.6 Application Exceptions. In addition to the requirements in the ENERGY STAR Program Requirements for CFLs, the following shall be included (or equivalent language) when applicable.

- “Possible dimension fit problem with some common luminaries.”
- “Not for use in enclosed fixtures”

- “Reduced mechanical stability possible with freestanding luminaries.”¹
- Replacement parts listing.
- “Not for use with 2-way, 3-way, or dimmable fixtures.”

8.2 Primary Packaging Information for Ballast Adaptors. The total input watt rating and average rate life shall be displayed on the front face (the package side intended to face forward in merchandising) or adjacent side panels (not top, bottom, back or flaps) of the primary package.

8.3 Certification. Whenever a claim on the product or package is made that it has been certified to this standard, it shall be based on a third-party certification program with an on-site audit and a description of the basis of certification shall be in a location, style, and typeface that are easily readable by the consumer. Unless otherwise approved in writing by Green Seal, the description shall read as follows:

“This product meets the Green SealTM Environmental Standard for Compact Fluorescent Lamps for energy efficiency, long-life, low mercury content, and in a package with post-consumer content.”

¹ Refer to ANSI C78.5-1991, *Fluorescent self-ballasted lamps-performance guide*, for guidance.