



**GS-8**

**GREEN SEAL™ STANDARD FOR  
CLEANING PRODUCTS FOR  
HOUSEHOLD USE**

**FOURTH EDITION  
OCTOBER 13, 2011**

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THE MARK OF ENVIRONMENTAL RESPONSIBILITY

## **GREEN SEAL™**

Green Seal is a non-profit organization whose mission is to use science-based programs to empower consumers, purchasers, and companies to create a more sustainable world. Green Seal sets leadership standards that aim to reduce, to the extent technologically and economically feasible, the environmental, health, and social impacts throughout the life-cycle of products, services, and companies. The standards may be used for conformity assessment, purchaser specifications, and public education.

Green Seal offers certification of products, services, and companies in conformance with its standards. For additional information on Green Seal or any of its programs, contact:

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**TABLE OF CONTENTS**

<b>FOREWORD</b> .....	<b>4</b>
<b>ACRONYMS AND ABBREVIATIONS</b> .....	<b>5</b>
<b>1.0 SCOPE</b> .....	<b>6</b>
<b>2.0 PRODUCT-SPECIFIC PERFORMANCE REQUIREMENTS</b> .....	<b>6</b>
<b>2.1 STANDARD PERFORMANCE REQUIREMENTS</b> .....	<b>6</b>
<b>2.2 ALTERNATIVE PERFORMANCE REQUIREMENTS</b> .....	<b>7</b>
<b>3.0 PRODUCT-SPECIFIC HEALTH AND ENVIRONMENTAL REQUIREMENTS</b> .....	<b>7</b>
<b>3.1 TOXICITY</b> .....	<b>7</b>
<b>3.2 PROHIBITION OF CARCINOGENS, MUTAGENS, AND REPRODUCTIVE TOXINS</b> .....	<b>7</b>
<b>3.3 SKIN AND EYE IRRITATION</b> .....	<b>7</b>
<b>3.4 SKIN SENSITIZATION</b> .....	<b>7</b>
<b>3.5 AQUATIC TOXICITY</b> .....	<b>7</b>
<b>3.6 AQUATIC BIODEGRADABILITY</b> .....	<b>8</b>
<b>3.7 EUTROPHIC AGENTS</b> .....	<b>8</b>
<b>3.8 AIR POLLUTANTS</b> .....	<b>8</b>
<b>3.9 OTHER PROHIBITED INGREDIENTS</b> .....	<b>9</b>
<b>3.10 COMBUSTIBILITY</b> .....	<b>9</b>
<b>3.11 FRAGRANCES</b> .....	<b>9</b>
<b>4.0 PACKAGING REQUIREMENTS</b> .....	<b>9</b>
<b>4.1 PRIMARY PACKAGING</b> .....	<b>9</b>
<b>4.1.1 Recyclable Primary Package</b> .....	<b>9</b>
<b>4.1.2 Recovered Material Content</b> .....	<b>10</b>
<b>4.1.3 Concentrated Product Packaging</b> .....	<b>10</b>
<b>4.1.4 Aerosol Cans</b> .....	<b>10</b>
<b>4.1.5 Heavy Metal Restrictions</b> .....	<b>10</b>
<b>4.1.6 Other Restrictions</b> .....	<b>10</b>
<b>4.2 SECONDARY PACKAGING</b> .....	<b>10</b>
<b>4.3 ANCILLARY PRODUCTS</b> .....	<b>11</b>
<b>5.0 LABELING REQUIREMENTS</b> .....	<b>11</b>
<b>ANNEX A</b> .....	<b>12</b>
<b>APPENDIX 1</b> .....	<b>15</b>

## FOREWORD

**General.** The final issued standard was developed in an open and transparent process with stakeholder input that included producers, users, and general interests.

The requirements in the standard are based on an assessment of the environmental, health, or social impacts associated with the products, services, or organizations covered in the scope of the standard. The requirements included in the standard are subject to revision. Provisions for safety have not been included in this standard. This standard neither modifies nor supersedes laws and regulations. Compliance with this Standard is not a substitute for, and does not assure, compliance with any applicable law or regulations. Compliance with all applicable laws and regulations is a required prerequisite for the manufacturing and marketing of the products. This standard (and any corresponding conformity assessment) presumes compliance with all applicable laws and regulations.

Products, services, or organizations that are substantially similar to those covered by this standard in terms of function and life cycle considerations may be evaluated against the intent of the requirements of this standard, accounting for relevant differences between the intended scope of the Standard and the actual product, service, or organization to be evaluated.

This standard may not anticipate features of the product that may significantly, and undesirably, increase its impact on the environment, health, or society. In such a situation, Green Seal will ordinarily amend its standards to account for the unanticipated environmental, health, and societal impacts.

Normative references (e.g., other standards) in this standard intend to refer to the most recent edition of the normative reference.

**Edition.** This version is the Fourth Edition from October 13, 2011 and replaces the Third Edition from September 1, 2011.

**Disclaimer of Liability.** Green Seal™, as the developer of this standard, shall not incur any obligations or liability for any loss or damages, including, without limitation, indirect, consequential, special, or incidental damages arising out of or in connection with the interpretation or adoption of, reliance upon, or any other use of this Standard by any party. Green Seal makes no express or implied warranty of merchantability or fitness for a particular purpose, nor any other express or implied warranty with respect to this Standard.

Tests may be required by the standard that involve safety considerations. Adequate safeguards for personnel and property should be employed in conducting such tests.

## ACRONYMS AND ABBREVIATIONS

**AATCC.** American Association of Textile Chemists and Colorists

**ASTM.** ASTM International, a standard setting organization formerly known as the American Society for Testing and Materials

**CFR.** Code of Federal Regulations

**CSPA.** Consumer Specialty Products Association

**ISO.** International Organization for Standardization

**SDS.** Safety Data Sheet

**OECD.** Organization for Economic Co-operation and Development

## GREEN SEAL™ STANDARD FOR CLEANING PRODUCTS FOR HOUSEHOLD USE, GS-8

### 1.0 SCOPE

This standard establishes requirements for *general-purpose*, *bathroom*, *glass*, and *carpet cleaners* marketed specifically for use in households or similar residential settings. This standard does not include antimicrobial pesticide products such as those requiring registration with the U.S. Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide, and Rodenticide Act, including those making claims as disinfectants or sanitizers<sup>1</sup>. See Appendix 1 for an example of products included in this standard.

Words and phrases described in the standard that appear in *italics* have a corresponding definition located in the definition section of the standard, Annex A.

### 2.0 PRODUCT-SPECIFIC PERFORMANCE REQUIREMENTS

**2.1 Standard Performance Requirements.** Each *product as used*, when diluted with water from the cold tap at no more than 50°F, shall clean common soils and surfaces in its category effectively, as measured by a standard test method. *Carpet cleaners* may be diluted with warm or hot water where required by the test method or performance considerations. The following test methods are recommended:

- General-purpose cleaners. The *general-purpose cleaner* product shall remove at least 80% of the particulate soil in the American Society for Testing and Materials (ASTM) D4488-95, A5.
- Bathroom cleaners. The *bathroom cleaner* product shall remove at least 75% of the soil in ASTM D5343 as measured by ASTM D5343.
- Carpet cleaners. Using a standard test method, the manufacturer must demonstrate that its *carpet cleaner* product performs as well as a conventional, nationally-recognized product in its category in both cleaning efficiency and resoiling resistance. Acceptable test methods/procedures to demonstrate performance include, but are not limited to, the following sources: the American Association of Textile Chemists and Colorists (AATCC), ASTM, the Institute of Inspection, Cleaning and Restoration Certification, the International Organization for Standardization (ISO), WoolSafe, the Carpet and Rug Institute or laboratory testing conducted as part of a bid evaluation by a government purchasing entity.

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<sup>1</sup> Antimicrobial pesticide products such as EPA-registered disinfectant and sanitizers products are included in the Green Seal Standard for Specialty Cleaning Products for Household Use, GS-52.

- Glass cleaners. The *glass cleaner* product shall achieve at least a rating of three in each of the following Consumer Specialty Products Association (CSPA) DCC 09 categories: soil removal, smearing, and streaking.

**2.2 Alternative Performance Requirements.** Alternatively, using standard test methods conducted under objective, reproducible laboratory conditions, a manufacturer can demonstrate that its product performs as well as or better than a conventional, nationally-recognized product in its category or achieves the removal efficiency defined in this section with alternate test methods and has a documented rationale for the method modification for Green Seal's review.

### 3.0 PRODUCT-SPECIFIC HEALTH AND ENVIRONMENTAL REQUIREMENTS

**3.1 Toxicity.** The undiluted product shall not have toxic characteristics such that it falls under the labeling requirements as a toxic or highly toxic product, as defined by Consumer Product Safety Commission regulations found at 16 Code of Federal Regulations (CFR) Chapter II, Part 1500.

**3.2 Prohibition of Carcinogens, Mutagens, and Reproductive Toxins.** The undiluted product shall not contain any *ingredients* that are *carcinogens*, *mutagens* or *reproductive toxins*. For the purposes of this standard, naturally occurring elements and chlorinated organics, which may be present as a result of chlorination of the water supply, are not considered *ingredients* if the concentrations are below the applicable maximum contaminant levels in the National Primary Drinking Water Standards found in 40 CFR Part 141.

**3.3 Skin and Eye Irritation.** The undiluted cleaning product shall not be *corrosive* to the skin, as tested using the Organization for Economic Co-operation and Development (OECD) Guidelines for Testing Chemicals, Section 404 or the Human Skin Construct systems (Liesch et al. 2000; Fentem et al. 1998). The undiluted product shall also not be *corrosive* to the eye as tested using the bovine cornea opacity and permeability test (Sina et al. 1995) after a 10-minute exposure. Green Seal will also accept the results of other peer-reviewed or standard in vitro or in vivo test methods demonstrating that the product mixture is not *corrosive*.

**3.4 Skin Sensitization.** The undiluted product shall not be a *skin sensitizer*, as tested by the OECD Guidelines for Testing Chemicals, Section 406. Green Seal shall also accept the results of other standard test methods, such as those described in Buehler (1994) or Magnusson and Kligman (1969), as proof that the product or its *ingredients* are not *skin sensitizers*.

**3.5 Aquatic Toxicity.** The *product as used* shall not be toxic to aquatic life. A compound is considered not toxic to aquatic life if it meets one or more of the

following criteria: Acute LC<sub>50</sub> for algae, daphnia, or fish  $\geq 100$  mg/L. Aquatic toxicity tests shall follow the appropriate protocols in ISO 7346.2 for fish or OECD test guidance 203 for fish, OECD test guidance 201 for algae, and 202 OECD test guidance for daphnia.

For purposes of demonstrating compliance with this requirement, aquatic toxicity testing is not required if sufficient aquatic toxicity data exist for each of the product's *ingredients* to demonstrate that the product mixture complies.

**3.6 Aquatic Biodegradability.** Each of the organic *ingredients* in the *product as used* shall exhibit ready biodegradability in accordance with the OECD definition except for the polymer portion of a *carpet cleaner*. However, all other *ingredients* in *carpet cleaner* must comply. Biodegradability shall be measured by one of the following methods: OECD TG 301A-F, ISO 9439 carbon dioxide (CO<sub>2</sub>) evolution test, ISO 10708 (two-phase closed-bottle test), ISO 10707 (closed bottle test), or ISO 7827 (dissolved organic carbon removal).

- Removal of dissolved organic carbon (DOC) > 70%
- Biological oxygen demand (BOD) > 60%
- % of BOD of theoretical oxygen demand (ThOD) > 60%
- % CO<sub>2</sub> evolution of theoretical > 60%

For organic *ingredients* that do not exhibit ready biodegradability in these tests, the manufacturer may demonstrate biodegradability in sewage treatment plants using the Coupled Units Test found in OECD 303A by demonstrating DOC removal > 90%.

Testing is not required for any *ingredient* for which sufficient information exists concerning its biodegradability, either in peer-reviewed literature or databases or proving that the *ingredient* was tested in accordance with standard test procedures.

**3.7 Eutrophic Agents.** The *product as used* shall not contain more than 0.5% by weight of total phosphorus.

**3.8 Air Pollutants.** The *product as used* shall not contain substances that contribute significantly to the production of photochemical smog, tropospheric ozone, or poor indoor-air quality. The volatile organic content of shall be determined by California Air Resources Board Method 310 or as demonstrated through product constituent calculation, and shall not exceed the following:

- 0.1% by weight for dilutable *carpet cleaners*
- 1% by weight for *bathroom cleaners*
- 3% by weight for *general-purpose cleaners*
- 3% by weight for *glass cleaners*

- 3% by weight for ready-to-use *carpet cleaners*

**3.9 Other Prohibited Ingredients.** The undiluted product shall not contain the following *ingredients*:

- 2-Butoxyethanol
- Alkylphenol ethoxylates
- Phthalates
- Heavy metals, including but not limited to lead, hexavalent chromium, or selenium both in the elemental form or compounds.
- *Ozone-depleting compounds*
- *Optical brighteners*

**3.10 Combustibility.** The undiluted product shall not be combustible. The product or 99% by volume of the product *ingredients* shall have a flashpoint above 150 °F, as tested using either the Cleveland Open Cup Tester (ASTM D92-97) or a closed-cup method ISO 13736 or ISO 2719. Alternatively, the product shall not sustain a flame when tested using ASTM D 4206.

**3.11 Fragrances.** Manufacturers shall disclose the use of any added fragrances on their safety data sheets (SDSs) and product labels. Any *ingredient* added to a product as a fragrance must follow the Code of Practice of the International Fragrance Association.

**3.12 Animal Testing.** To avoid new animal testing, previous test results will be accepted as evidence of meeting a criterion. When existing data are not available, the preferred methods for new testing include methods that replace, reduce, or refine animal use, particularly those recommended by the Interagency Coordinating Committee on the Validation of Alternative Methods or the European Centre for the Validation of Alternative Methods, unless indicated otherwise. In addition, other non-animal (in-vitro) test results, modeling data, data from structural analogs, and other lines of evidence may be accepted, provided that the methods are peer-reviewed and applicable. Specific in vitro or modeling methods may be noted in the standard, but additional options may be accepted by the certification program.

Further, a mixture need not be tested if existing information demonstrates that each of the applicable components complies with the criterion.

## 4.0 PACKAGING REQUIREMENTS

### 4.1 Primary Packaging.

**4.1.1 Recyclable Primary Package.** The *primary packaging* shall be a *recyclable package*. If the *primary package* is not a *recyclable package*

must be a *refillable package*. An exception may be made for lightweight packaging (e.g., pouches or bags) that represents a significant reduction in material use when compared with rigid packaging.

**4.1.2 Recovered Material Content.** The *primary packaging* shall contain the state-of-the-art amount of recovered and *post-consumer material*. Where a product's packaging is below these levels, the manufacturer must demonstrate that efforts have been made to use the maximum available *post-consumer material* in packaging.

**4.1.3 Concentrated Product Packaging.** *Concentrates* are prohibited from being packaged in ready-to-use forms, including but not limited to spray-dispenser bottles.

**4.1.4 Aerosol Cans.** Aerosol cans shall be *recyclable packages*. Further, manufacturers of products packaged in aerosol cans must show that recycling programs are widely available where the product is sold. In addition, manufacturers of products packaged in aerosol cans must demonstrate why aerosol cans are the most suitable packaging for a given product considering environmental, health, and performance considerations.

**4.1.5 Heavy Metal Restrictions.** There shall be no *intentional introduction* of heavy metals, including lead, mercury, cadmium, and hexavalent chromium. 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.

**4.1.6 Other Restrictions.** There shall be no *intentional introduction* of phthalates. An exception is allowed for packages that would not have added phthalates but for the addition of *recovered material*.

**4.2 Secondary Packaging.** *Secondary packaging* shall only be used for *concentrates*. An exception may be made for packaging of multiple units when up to one of the units is a ready-to-use form, including but not limited to spray-dispenser bottles, and total packaging (*primary packaging* plus *secondary packaging*) is a reduction in packaging material use.

**4.3 Ancillary Products.** Products may contain disposable towelettes or other disposable wiping materials if they are made from 100% renewable materials including, but not limited to cellulosic materials, and meet the state-of-the-art amount of *recovered material* content.

## 5.0 LABELING REQUIREMENTS

**5.1** The label must include detailed instructions for proper use to maximize product performance and minimize waste.

**5.2** Where the product is intended to be diluted with water by the consumer prior to use, the label shall state clearly and prominently that dilution with water from the cold tap is recommended and shall state the recommended level of dilution in commonly understood measurements. *Carpet cleaner* labels shall specify the use of cold water for products that do not suffer significant performance degradation in cold water.

**5.3** The label must include proper disposal instructions. If the product is a towelette or other disposable wipe product, the label must clearly indicate proper disposal of the wipes. For the package disposal, the label must include clear recycling instructions.

**5.4** The label shall also include instructions for proper use of personal protective equipment.

**5.5** If plastic, the packaging must be clearly marked with the appropriate Society of the Plastics Industry symbol to identify the type of plastic for recycling.

**5.6** The Green Seal Certification Mark may appear on the product's packaging.

**5.7** The Green Seal Mark shall not be used in conjunction with any modifying terms, phrases, or graphic images that might mislead consumers as to the extent or nature of the certification.

**5.8** Whenever the Certification Mark appears on a package or product, the product or package must contain a description of the basis for certification. The description 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 Seal™ Standard for Cleaning Products for Household Use, GS-8, based on its reduced toxicity, biodegradability, packaging, and other characteristics.

## ANNEX A—Normative

### Definition of Terms

(note that the defined terms are italicized throughout the standard)

**Bathroom Cleaner.** A product used to clean hard surfaces in a household bathroom such as counters, walls, floors, fixtures, basins, tubs, and tile. This category does not include products specifically intended to clean toilet bowls.

**Carpet Cleaner.** A product used for routine cleaning of household carpets and rugs. This category may include, but is not limited to, products used in cleaning by means of extraction, shampooing, dry foam, bonnet, or absorbent compound. It does not include products intended primarily for spot removal.

**Carcinogen.** A chemical listed as a known, probable, or possible human *carcinogen* by the International Agency for Research on Cancer (Groups 1, 2A, and 2B), the National Toxicology Program (Groups 1 and 2), the EPA Integrated Risk Information System (weight-of-evidence classifications A, B1, B2, and C), or the Occupational Safety and Health Administration

**Concentrate.** Any product that must be diluted by at least eight parts by volume water (1:8 dilution ratio) prior to its intended use.

**Corrosive.** A substance that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact.

**General-Purpose Cleaner.** A product specifically marketed as suitable for cleaning common household surfaces. They do not include task-specific cleaners, such as scouring cleaners, toilet bowl cleaners, upholstery cleaners, laundry and dishwashing detergents, spot/stain removers, oven cleaners, furniture polish, or drain cleaners.

**Glass Cleaner.** A product used to clean windows, glass, and mirrored surfaces.

**Ingredient.** Any constituent of a product that is intentionally added or known to be a contaminant that comprises at least 0.01% by weight.

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

**Mutagen.** A chemical that meets the criteria for category 1, chemicals known to induce heritable mutations or to be regarded as if they induce heritable mutations in the germ cells of humans, under the Harmonized System for the Classification Of Chemicals Which Cause Mutations in Germ Cells (UN, 2003).

**Optical Brightener.** An additives designed to enhance the appearance of colors and whiteness in materials by absorbing ultraviolet radiation and emitting blue radiation; including but not limited to fluorescent whitening agents.

**Ozone-Depleting Compound.** Any compound with an ozone-depletion potential greater than 0.01 (CFC 11=1).

**Primary Packaging.** The material physically containing and coming into contact with the product, not including the cap, lid, or nozzle of a package.

**Product As Used.** This is the most commonly used form of the product that the manufacturer recommends for a product's intended use. For example, if a manufacturer recommends a floor cleaner *concentrate* be diluted 1:8 with water, the product shall meet the environmental and performance requirements that specify 'as used' at a dilution of 1:8.

**Post-Consumer Material.** Finished products, packages or materials generated by a business or consumer that have served their intended end uses, and that have been recovered from or otherwise diverted from the waste stream for the purpose of recycling.

**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.

**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.

**Refillable Package.** A rigid plastic packaging container that can be refilled by the product manufacturer at least five times with the original product held by that package and is proven to be routinely returned to the product manufacturer by the consumer for such a purpose.

**Reproductive Toxin.** A chemical listed as a reproductive toxin (including developmental, female, and male toxins) by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (California Code of Regulations, Title 22, Division 2, Subdivision 1, Chapter 3, Sections 1200, et. Seq.).

**Secondary Packaging.** Any packaging or material other than primary packaging, including wrappers, boxes, and blister packs, but excluding shipping containers.

**Skin Sensitizer.** A substance that causes an immunologically mediated cutaneous reaction, also known as allergic contact dermatitis.

**APPENDIX 1 - Informative**

Examples of products included and excluded in the scope of GS-8:

**Household Products Included in GS-8**

- *Bathroom cleaners*
- Floor cleaning products
- *Glass cleaners*
- *General-purpose cleaners*
- *Carpet cleaners*

**Products Excluded from GS-8**

- Air fresheners
- Cleaners/degreasers marketed as suitable for cleaning soils in production and maintenance applications (included in GS-34)
- Deck and outdoor furniture products for household use (covered in GS-52) and industrial and institutional use (covered in GS-53)
- Antimicrobial pesticide products (disinfectants or sanitizers) for household use (covered in GS-52) and industrial and institutional use (covered in GS-53)
- Floor finish and finish strippers (included in GS-40)
- Furniture polish products (included in GS-52 and GS-53)
- General-purpose, restroom, glass and carpet cleaners for industrial and institutional use (included in GS-37)
- Hand cleaning products for industrial and institutional use (covered in GS-41) or *household use* (covered in GS-44)
- Motor vehicle cleaning products for household use (covered in GS-52) and industrial and institutional use (covered in GS-53)
- Oven cleaning products for household use (covered in GS-52) and industrial and institutional use (covered in GS-53)
- Paint remover/thinner products
- Specialty cleaning products for household use (covered in GS-52) and industrial and institutional use (covered in GS-53)
- Upholstery cleaning products for household use (covered in GS-52) and industrial and institutional use (covered in GS-53)

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