



THE MARK OF ENVIRONMENTAL RESPONSIBILITY

# **GS-36**

## **GREEN SEAL™ STANDARD FOR ADHESIVES FOR COMMERCIAL USE**

**FIRST EDITION  
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## **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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## 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. This standard (and any corresponding conformity assessment) presumes compliance with all applicable laws and regulations.

This standard neither modifies nor supersedes laws and regulations. Compliance with all applicable laws and regulations is a required prerequisite for the manufacturing and marketing of the products.

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 First Edition from October 9, 2000.

**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.

**GREEN SEAL™ STANDARD FOR  
ADHESIVES FOR COMMERCIAL USE (GS-36)**

**1.0 Scope**

This Environmental Standard establishes environmental requirements for:

1.1 Adhesives, adhesives applied onto substrates, and aerosol adhesives. Adhesives covered by the standard shall be intended and labeled for use as a commercial adhesive. The subcategories of adhesives included in this Standard are:

1.1.1 Acrylonitrile-Butadiene-Styrene (ABS) Welding Adhesive is any adhesive intended by the manufacturer to weld acrylonitrile-butadiene-styrene (ABS) pipe.

1.1.2 Aerosol Adhesive is a mixture of rubber, resins, and liquid and gaseous solvents and propellants packaged in a container for hand-held application.

1.1.3 Carpet Pad Installation Adhesive is any adhesive intended by the manufacturer for the installation on a floor or comparable surface of carpet pad (or cushion), which is used beneath a carpet.

1.1.4 Ceramic Tile Installation Adhesive is any adhesive intended by the manufacturer for the installation of ceramic tiles.

1.1.5 Chlorinated Polyvinyl Chloride (CPVC) Welding Adhesive is any adhesive intended by the manufacturer for the welding of CPVC plastic pipe.

1.1.6 Contact Bond Adhesive is any adhesive intended by the manufacturer to adhere to itself instantaneously upon contact. The adhesive is applied to both adherends and allowed to become dry, which develops a bond when the adherends are brought together without sustained pressure.

1.1.7 Contact Bond Adhesive-Special Substrates is any contact adhesive that is intended by the manufacturer to be used for the bonding of nonporous substrates to each other, the bonding of decorative laminate in postforming application, or for the bonding of decorative laminate to metal, melamine-covered board, or curved surfaces, or when used to bond any substrate to metal, rubber, rigid plastic, or wood veneer not exceeding 1/16" in thickness.

1.1.8 Cove Base Installation Adhesive is any adhesive intended by the manufacturer for the installation of cove base (or wall base), which is

generally made of vinyl or rubber, on a wall or vertical surface at floor level.

1.1.9 Indoor Floor Covering Installation Adhesive is any adhesive intended by the manufacturer for the installation of carpet, resilient tile, vinyl tile, vinyl backed carpet, resilient sheet and roll, or artificial grass that is in an enclosure and is not exposed to ambient weather conditions during normal use. Ceramic tile installation and the installation of perimeter bonded sheet flooring with vinyl backing onto a non-porous substrate, such as flexible vinyl are excluded from this category.

1.1.10 Multipurpose Construction Adhesive is any adhesive intended by the manufacturer for the installation or repair of various construction materials, including but not limited to drywall, subfloor, panel, fiberglass reinforced plastic (FRP), plywood, pre-decorated hardboard (or tileboard), and similar pre-decorated or non-decorated panels, ceiling tile, and acoustical tile to studs or solid surfaces.

1.1.11 Nonmembrane Roof Installation/Repair Adhesive is any adhesive intended by the manufacturer for the installation or repair of nonmembrane roofs and that is not intended for the installation of prefabricated single-ply flexible roofing membrane. This category includes plastic or asphalt roof cement, asphalt roof coatings, and cold application cement.

1.1.12 Outdoor Floor Covering Installation Adhesive is any adhesive intended by the manufacturer for the installation of floor covering that is not in an enclosure and is exposed to ambient weather conditions during normal use.

1.1.13 Perimeter Bonded Sheet Flooring Installation Adhesive is any adhesive intended by the manufacturer for the installation of sheet flooring with vinyl backing onto a nonporous substrate using an adhesive design to be applied only to a strip of up to four inches wide around the perimeter of the sheet flooring.

1.1.14 Polyvinyl Chloride (PVC) Welding Adhesive is any adhesive intended by the manufacturer for the welding of PVC plastic pipe.

1.1.15 Single-Ply Roof Membrane Installation/Repair Adhesive is any adhesive intended by the manufacturer for the installation or repair of single-ply roof membrane. Installation includes, as a minimum, attaching the edge of the membrane to the edge of the roof and applying flashings to vents, pipes, and ducts that protrude through the membrane. Repair includes gluing the edges of tears together, attaching a patch over a hole,

and reapplying flashings to vents, pipes, or ducts installed through the membrane.

1.1.16 Structural Glazing Adhesive is any adhesive intended by the manufacturer to adhere glass, ceramic, metal, stone, or composite panels to exterior building frames.

1.1.17 Waterproof Resorcinol Glue is a two-part resorcinol-resin-based adhesive designed for applications where the bond line must be resistant to conditions of continuous immersion in fresh or salt water.

1.1.18 Wood Flooring Adhesive is any adhesive intended by the manufacturer for the installation of wood flooring that is in an enclosure and is not exposed to ambient weather conditions during normal use.

1.2 Adhesives specifically excluded from this Standard. The Standard specifically does not cover adhesive tapes or tape strips, textile adhesives, optical adhesives, adhesives used with electronics, packaging adhesives, or aerospace adhesives.

## 2.0 Definitions

For the purpose of this Standard, the following definitions apply.

2.1 Adhesive: A substance capable of holding materials together by surface attachment.

2.2 Carcinogens: Chemicals classified by the International Agency for Research on Cancer (IARC) as Group I (carcinogenic to humans), Group 2A (probably carcinogenic to humans), or Group 2B (possibly carcinogenic to humans) agents (<http://www.iarc.fr>), with the exception of crystalline silica.

2.3 Commercial Adhesive: An adhesive product that is designed for use in the maintenance or operation of an establishment that manufactures, transports, or sells goods or commodities, or provides services for profit; or is engaged in the nonprofit promotion of a particular public, educational, or charitable cause. Establishments include, but are not limited to, government agencies, military organizations, factories, schools, hospitals, sanitariums, prisons, libraries, office complexes, restaurants, hotels, stores, automobile service and parts centers, health clubs, theaters, or transportation companies. Commercial Adhesives do not include products that are incorporated into or used exclusively in the manufacture or construction of the goods or commodities that are produced by the establishment.

2.4 Ozone-Depleting Substances (ODSs): An ozone-depleting substance is any compound with an ozone depletion potential greater than 0.01 (CFC 11=1), as

determined by the United States Environmental Protection Agency (<http://www.epa.gov/ozone/ods.html>).

2.5 Persistent, Bioaccumulative, and Toxic Compounds (PBTs): Compounds identified by the U.S. Environmental Protection Agency Waste Minimization Branch as being persistent, bioaccumulative, and toxic (<http://www.epa.gov/minimize/chemlist.htm>).

2.6 Plastic Cement Welding: The use of adhesives made of resins and solvents which are used to dissolve the surfaces of plastic, except ABS, CPVC, and PVC plastic, to form a bond between mating surfaces.

2.7 Plastic Foam: A foam constructed of plastics.

2.8 Porous Material: A substance which has tiny openings, often microscopic, in which fluids may be absorbed or discharged (e.g., wood).

2.9 Reproductive Toxins: Chemicals known to cause reproductive toxicity as listed 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.*, <http://www.oehha.ca.gov/prop65.html>).

2.10 Volatile Organic Compounds (VOCs): Compounds as defined by the United States Environmental Protection Agency (EPA) in 40 CFR § 51.100 (s) (1).

### **3.0 Product Specific Performance Requirements**

Product shall be approved by the manufacturer for use as an adhesive type outlined in Section 1.0.

### **4.0 Product Specific Health and Environmental Requirements**

#### **4.1 Carcinogens**

The product shall not be formulated with any carcinogens. Any carcinogen that is known to be present as a contaminant shall not exceed 0.1% by weight of the product.

#### **4.2 Reproductive Toxins**

The product shall not be formulated with any reproductive toxins. Any reproductive toxin that is known to be present as a contaminant shall not exceed 0.1% by weight of the product.

#### **4.3 Persistent, Bioaccumulative, and Toxic Compounds (PBTs)**

The product shall not be formulated with any persistent, bioaccumulative, and toxic compounds (PBTs). Any PBT that is known to be present as a contaminant shall not exceed 0.1% by weight of the product.

#### 4.4 Ozone-Depleting Substances (ODSs)

The product shall not be formulated with any ozone-depleting substances. Any ozone-depleting substance that is known to be present as a contaminant shall not exceed 0.1% by weight of the product.

#### 4.5 Volatile Organic Compounds

The Volatile Organic Compound concentrations of the product, as applied according to the manufacturer's recommendations, shall not exceed those listed below as determined by U.S. Environmental Protection Agency (EPA) Reference Test Method 24 (40CFR Part60).

| <u>Adhesive Type</u>                               | <u>VOC weight in grams/liter minus water</u> |
|--|--|
| ABS Welding  | 400  |
| Carpet Pad Installation                            | 150  |
| Ceramic Tile Installation                          | 130  |
| Contact Bond                                       | 250  |
| Contact Bond-Specialty Substrates                  | 400  |
| Cove Base Installation                             | 150  |
| CPVC Welding                                       | 490  |
| Indoor Floor Covering Installation                 | 150  |
| Multipurpose Construction                          | 200  |
| Nonmembrane Roof Installation/Repair               | 300  |
| Other Plastic Cement Welding                       | 510  |
| Outdoor Floor Covering Installation                | 250  |
| PVC Welding  | 510  |
| Rubber Floor Installation                          | 150  |
| Single-Ply Roof Membrane Installation/Repair       | 250  |
| Structural Glazing                                 | 100  |
| Perimeter Bonded Sheet Vinyl Flooring Installation | 660  |
| Waterproof Resorcinol Glue                         | 170  |
| Wood Flooring Adhesive                             | 150  |

#### 4.5 Volatile Organic Compounds (continued)

For adhesives not listed above and applied to the following substrates, the following limits shall apply:

| <u>Adhesives Application Onto Substrate</u> | <u>VOC weight in grams/liter minus water</u> |
|---|--|
| Flexible vinyl                              | 250  |
| Fiberglass                                  | 200  |
| Metal-to-Metal                              | 30   |
| Porous material                             | 120  |
| Plastic Foams                               | 120  |
| Rubber                                      | 250  |
| Other substrates                            | 250  |

#### Aerosol Adhesives:

|   |                    |
|---|--------------------|
| General purpose mist spray                    | 65% VOCs by weight |
| General purpose web spray                     | 55% VOCs by weight |
| Special purpose aerosol adhesives (all types) | 70% VOCs by weight |

#### 4.6 Toxic Compounds

The solvent portion of the adhesive shall not be toxic to humans when inhaled. A product is considered toxic if the following lethal dose (LD) criterion applies:

Inhalation  $LC_{50} \leq 2,000$  ppm of vapor or gas or 20 mg/L of mist, dust, or fumes

The toxicity testing procedures shall follow the protocols put forth in the Organization for Economic Cooperation and Development (OECD) Guidelines for the Testing of Chemicals, which includes: Acute Inhalation Toxicity Test (TG 403). To demonstrate compliance with this requirement, a solvent need not be tested if existing toxicological information demonstrates that it complies. Data from the Registry of Toxic Effects of Chemical Substances (RTECS) and from the Hazardous Substances Data Bank (HSDB) will be accepted as well as peer-reviewed primary data.

#### 4.7 Packaging

Product packaging shall be resealable after the first use except for single-use packaging. Shipping packaging shall be reusable, recyclable or reconditionable. Corrugated shipping packaging shall contain 30% minimum postconsumer recycled content.

### 5.0 Labeling Requirements

Unless otherwise approved in writing by Green Seal the following labeling requirements shall apply.

5.1 The Green Seal Certification Mark may appear on the product and the product packaging.

5.2 Wherever the Green Seal Certification Mark appears, it shall be accompanied by a description of the basis for certification. This description shall be in a location, style, and typeface that are easily readable by purchasers. At a minimum, the description shall read as follows:

*"This product meets the Green Seal™ Standard for commercial adhesives based on its reduced hazard to humans, reduced volatile organic compounds, and reduced hazardous ingredients."*