



GS-36

GREEN SEAL™ STANDARD FOR ADHESIVES FOR COMMERCIAL USE

EDITION 2.1
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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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**GREEN SEAL STANDARD FOR
ADHESIVES FOR COMMERCIAL USE, GS-36**

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FOREWORD

Edition. This version is Edition 2.1 from May 10, 2013 and replaces the Second Edition from September 1, 2011. This revision includes substantive changes.

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. These requirements are subject to revision, and generally cover aspects above and beyond regulatory compliance. This standard neither modifies nor supersedes laws and regulations. Any conformity assessment to this standard requires compliance with all applicable laws and regulations for the manufacturing and marketing of the products.

Provisions for safety have not been included in this standard, since they are supervised by regulatory agencies. Adequate safeguards for personnel and property should be employed for all stages of production, and for all tests that involve safety considerations.

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 a feature 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 a standard to account for the unanticipated environmental, health, or societal impacts.

Normative references (e.g., other standards) in this standard intend to refer to the most recent edition of the normative reference. Test methods may be required for product evaluation. Unless explicitly stated that a specified method is the only acceptable one, the intent of the standard is that an equivalent test method may be accepted at Green Seal's sole discretion.

Certification to this standard shall be awarded only by Green Seal, or, with Green Seal's explicit written permission, by a third-party certification program conducting on-site audits.

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.

ACRONYMS AND ABBREVIATIONS

CARB. California Air Resources Board

CFR. Code of Federal Regulations

EPA. United States Environmental Protection Agency

OECD. Organization for Economic Cooperation and Development

PBT. Persistent, Bioaccumulative, and Toxic Compounds

VOC. Volatile Organic Compound

GREEN SEAL STANDARD FOR ADHESIVES FOR COMMERCIAL USE, GS-36

1.0 SCOPE

This environmental standard establishes environmental requirements for *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 standard specifically does not cover *adhesive* tapes or tape strips, textile *adhesives*, optical *adhesives*, *adhesives* used with electronics, packaging *adhesives*, or aerospace *adhesives*. See Appendix 1 for an example list 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

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

3.0 PRODUCT-SPECIFIC HEALTH AND ENVIRONMENTAL REQUIREMENTS

3.1 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.

3.2 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.

3.3 Persistent, Bioaccumulative, and Toxic Compounds. 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.

3.4 Ozone-Depleting Substances. 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.

3.5 Volatile Organic Compounds (VOC) Content. VOCs include all organic compounds that have a vapor pressure of greater than 0.1 mm mercury at 1 atm pressure and 20° C. “VOC content” means the total weight of VOCs in a product expressed as a percentage of the product weight.

The VOC content of the product as applied according to the manufacturer's recommendations shall not exceed the current regulatory limits of the Air Resources Board for the State of California (CARB) for its product category.

The VOC content shall be determined in one of the following ways:

- By summing the percent by weight contribution from all volatile organic components present in the product at 0.01% or more.
- According to the California Air Resources Board Method 310 (or equivalent), modified to include all volatile organic components present in the product at 0.01% or more¹.

Additionally, for specialty applications not defined by CARB, the current regulatory limits and determination method of the South Coast Air Quality Management District (SCAQMD) Rule 1168 shall be used.

Current CARB regulatory limits for VOCs².

Product Category	Effective Date	Limit (%)
Aerosol Adhesives (all types)	1/1/95	70
Mist Spray Adhesive (general purpose)	1/1/2002	65
Web Spray Adhesive (general purpose)	1/1/2002	55
Mounting, Automotive Engine Compartment, and Flexible Vinyl Spray Adhesive	1/1/2002	70
Polystyrene Foam and Automobile Headliner Spray Adhesive	1/1/2002	65
Polyolefin and Laminate Repair/Edgebanding Spray Adhesive	1/1/2002	60
Construction, Panel, and Floor Covering	12/31/2008	7
Contact Adhesive – General Purpose	12/31/2006	55
Contact Adhesive – Special Purpose	12/31/2006	80
General Purpose Adhesives	1/1/95	10

¹ Evaluation of total VOCs in this standard includes all volatile organic compounds present in the product at 0.01% or more. Evaluation of total VOCs under Method 310 exempts fragrances and all organic compounds present below 0.1%.

² These limits are a reference to the current CARB regulatory limits and will be updated to reflect any amendments made by CARB in the future.

Current SCAQMD regulatory limits for VOCs³.

Product Category	Effective Date	Limit (%)
PVC Welding	1/1/2005	51
CPVC Welding	1/1/2005	49
ABS Welding	7/1/2005	32
Plastic Cement Welding	1/1/2005	25
Adhesive Primer for Plastic	7/1/2005	55
Computer Diskette Manufacturing	1/1/2005	35
Special Purpose Contact Adhesive	1/1/2005	25
Tire Retread	1/1/2005	10
Adhesive Primer for Traffic Marking Tape	1/1/2005	15
Structural Wood Member Adhesive	1/1/2005	14
Sheet Applied Rubber Lining Operations	1/1/2005	85
Top and Trim Adhesive	1/1/2007	25

3.6 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 LC₅₀ ≤ 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 and from the Hazardous Substances Data Bank will be accepted as well as peer-reviewed primary data.

3.7 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.

³ These limits are a reference to the current SCAQMD regulatory limits and will be updated to reflect any amendments made by SCAQMD in the future.

3.8 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 CERTIFICATION AND LABELING REQUIREMENT

4.1 Certification Mark. The Green Seal® Certification Mark may appear on the product, packaging, secondary documents, and promotional materials, only in conjunction with the certified product. Use of the Mark must be in accordance with *Rules Governing the Use of the Green Seal Certification Mark*⁴.

The Green Seal Certification 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.

Green Seal must review all uses of the Certification Mark prior to printing or publishing.

4.2 Use With Other Claims. The Green Seal Certification Mark shall not appear in conjunction with any human health or environmental claims, unless verified and approved in writing by Green Seal.

4.3 Statement of Basis for Certification. Wherever the Green Seal Certification Mark appears, it shall be accompanied by a description of the basis for certification. The description shall be in a location, style, and typeface that are easily readable.

Unless otherwise approved in writing by Green Seal, the description shall read as follows, unless an alternate version is approved in writing by Green Seal:

This product meets Green Seal™ Standard GS-36 based on effective performance and protective limits on VOCs and human & environmental toxicity.
GreenSeal.org.

⁴ www.greenseal.org/TrademarkGuidelines

ANNEX A – DEFINITIONS (Normative)

Note that the defined terms are italicized throughout the standard.

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

Carcinogens. Chemicals classified by the International Agency for Research on Cancer 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.

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.

Ozone-Depleting Substances. Any compound with an ozone depletion potential greater than 0.01 (CFC 11=1), as determined by the EPA (<http://www.epa.gov/ozone/ods.html>).

Persistent, Bioaccumulative, and Toxic Compounds. Compounds identified by the EPA Waste Minimization Branch as being persistent, bioaccumulative, and toxic (<http://www.epa.gov/minimize/chemlist.htm>).

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>).

APPENDIX 1 – SCOPE (Informative)

Examples of products included in or excluded from the scope of GS-36:

Products Included in GS-36

- *Acrylonitrile-butadiene-styrene welding adhesive*
- *Carpet pad installation adhesive*
- *Ceramic tile installation adhesive*
- *Contact bond adhesive*
- *Contact bond-specialty substrates adhesive*
- *Cove base installation adhesive*
- *Chlorinated polyvinyl chloride welding adhesive*
- *Indoor floor covering installation adhesive*
- *Multipurpose construction adhesive*
- *Nonmembrane roof installation/repair adhesive*
- *Other plastic cement welding adhesive*
- *Outdoor floor covering installation adhesive*
- *Polyvinyl chloride welding adhesive*

- *Rubber floor installation adhesive*
- *Single-ply roof membrane installation/repair adhesive*
- *Structural glazing adhesive*
- *Perimeter bonded sheet vinyl flooring installation adhesive*
- *Waterproof resorcinol glue*
- *Wood flooring adhesive*

Products Excluded from GS-36

- *Aerospace adhesives*
- *Consumer/office adhesives*
- *Electronic adhesives*
- *Label adhesives*
- *Office adhesives*
- *Optical adhesives*
- *Packaging adhesives*
- *Tape adhesives*
- *Textile adhesives*