

# Biodegradability Standard, V6-1

*Environmental Certification Services*



**SCS**global  
SERVICES

*Setting the standard for sustainability™*

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## Preface

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This Environmental Certification Program was developed by SCS Global Services (SCS) as part of its ongoing efforts to evaluate the environmental performance of products and services using established and/or advanced scientific principles, practices, materials, and standards. As such, the requirements and information herein are subject to change.

Concerns about the health of the earth's rivers, lakes, and oceans has generated enormous interest in products which biodegrade in water. However, the claim *biodegradable* has been used to mean different things by different companies, leading to consumer confusion.

To help overcome this confusion, and ensure that products making the biodegradable claim meet consumer expectations, SCS has developed a special certification standard for liquid and powder cleaning and personal care products.

This standard is designed to verify that products degrade efficiently under worst-case circumstances and that chemicals are not entering the environment at such a rate that they reach harmful concentrations before degradation can occur.

An evaluation consists of a thorough literature search for each ingredient in the product's formulation to determine the rate at which a product's ingredients break down into carbon dioxide, minerals, and water under aerobic conditions. However, laboratory test results may be requested for some products. SCS also reviews scientific literature, chemical manufacturers' data, and independent laboratory test results to determine whether the product has low toxicity to aquatic life and whether it can result in eutrophication (stimulation of algae growth) as additional requirements for this certification. SCS does not certify products that contain phosphates because of potential contribution to eutrophication of rivers, ponds, and other receiving waters.

This certification is in conformance with ISO Type I (14024) and Type II (14021) environmental labeling and declaration requirements.

This certification is to be used to engender confidence in the various stakeholders (manufacturers, suppliers, regulators, and consumers) that products labeled with the SCS mark consistently meet all requirements established in this standard.

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## 1.0 Purpose, Structure, and Intended Uses

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### 1.1. Purpose

This Biodegradable Certification Standard (hereafter referred to as the Standard) describes the requirements for third-party substantiation of biodegradability claims asserted by companies regarding liquid and powder cleaning and personal care products.

This Standard allows a company:

1. To demonstrate that the product or products assessed by SCS meet the technical requirements for a biodegradable product;
2. To make claims about its product that conform to the Federal Trade Commission (FTC) Guides for the Use of Environmental Claims, and
3. To make a self-declared environmental claim under section 7.3 of ISO 14021:1999.

### 1.2. Structure of the Standard

The Standard provides:

1. Requirements for determining whether a product is biodegradable, displays aquatic toxicity, and contributes to eutrophication;
2. Guidelines for vendors of ingredients to this product; and
3. Marketing requirements that are applicable to all certified products.

Requirements for biodegradability certification include: a detailed ingredient review; product testing when appropriate; a documented quality control system; and compliance of a certified product with internationally accepted biodegradability criteria.

### 1.3. Intended Users

Intended users of this Standard are manufacturers of liquid and powder cleaning and personal care products seeking third-party certification of conformance to the requirements of this Standard, as well as individuals, businesses, organizations, agencies, or consumers interested in conducting business with companies whose products meet the requirements of this Standard. This Standard also provides guidelines for vendors of ingredients to these products.

### 1.4. Voluntary Standard

This Standard is voluntary. It is not intended to replace any legal or regulatory requirements that may be applicable to user operations.

## 2.0 Scope, Goals, and Limitations

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### 2.1. Scope

This Standard can apply to:

1. Liquid and powder products generally used with water. This includes, but is not necessarily limited to, cleaners, degreasers, detergents, soaps, and personal care products.

The term “shall” is used throughout the Standard to indicate mandatory requirements. The term “should” is used throughout the Standard to indicate preferred requirements.

### 2.2. Goals

The major goals of this Standard are:

1. To provide a uniform standard by which to assess liquid and powder cleaning and personal care products for biodegradability for manufacturers making Type II environmental claims (self-declared environmental claims as defined by ISO 14021:1999); and
2. To promote confidence in the marketplace that SCS certified facilities or programs consistently meet the requirements of this Standard.

### 2.3. Limitations

#### 2.3.1. Health and Safety

This Standard does not purport to address all of the safety, health, comfort (e.g. odor) and performance concerns, if any, associated with its use. It is the responsibility of the user of this Standard to establish appropriate safety, health, and other performance conditions — and to determine the applicability of federal, state, or local environmental and other regulatory requirements. Users shall note that compliance with the requirements of this Standard is no guarantee of regulatory compliance.

It is the responsibility of the user to establish appropriate conditions for such considerations and to determine the applicability of regulatory limitations prior to use.

#### 2.3.2. Usage

The basic biodegradability requirement in this Standard considers the rate at which products break down. However, it does not consider the way the product is used. No assumption of actual biodegradability of certified products should be made for all potential uses of a product.

### **2.3.3. Packaging**

This Standard does not address environmental attributes of the packaging of the product being reviewed.

### **2.3.4. Product Lifecycle**

The Standard does not address any environmental benefits, compromises, or tradeoffs that may be associated with all life-cycle phases of the product.

### 3.0 Key Terminology

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Specific terms and definitions are provided below.

**Acute Toxicity.** An adverse effect produced from a single or short-term exposure (up to 96 hours). Exposure can take any one or more routes (e.g., oral, dermal). Acute toxicity is measured using statistical procedures (e.g. point estimate techniques or a t-test). The LD<sub>50</sub> of a substance (the lethal dose at which 50 percent of test animals succumb to the toxicity of the chemicals) or LC<sub>50</sub> can be typically used as a measure of acute toxicity.

**Aquatic Toxicity.** The adverse effects of marine life that result from being exposed to a toxic substance.

**Biodegradation.** The breakdown of a substance by biological activity, especially by microorganisms, into smaller compounds. The microbial organisms transform the contaminants through metabolic or enzymatic processes. Biodegradation processes vary greatly, but the final product of *aerobic* degradation usually is carbon dioxide, water and minerals (salts). Other gases (e.g., N<sub>2</sub> or H<sub>2</sub>S) may also result.

**CAS number.** Generated by the American Chemical Society, which indexes and compiles abstracts of worldwide chemical literature, the Chemical Abstracts Service Number is a number that uniquely identifies a chemical compound, element, mixture, or alloy.

**Certification Assessment.** An independent evaluation of a product claim using specific predetermined criteria and procedures with assurance of data reliability.

**Certified Product.** A finished product authorized to apply the SCS Certification Mark, as evidence that the product complies with the relevant certification program. *Note that certified products are listed on the Certified Products list issued by SCS. This list can be found on the SCS web site at <http://www.scsglobalservices.com/green-products>.*

**Claim.** Oral, written, implied, or symbolic representation, statement, or advertising or other form of communication presented to the public or buyers of products that asserts a verified attribute of a product.

**Cleaner.** A formulated product designed to assist in removing undesirable matter—often from, but not limited to, a surface.

**DfE or Design for Environment.** The U.S. EPA's Design for the Environment program which aims to help consumers, businesses, and institutional buyers identify cleaning and other products that perform well, are cost-effective, and are safer for the environment.

**Eutrophication.** The process by which an increase in chemical nutrients (compounds containing nitrogen or phosphorous) promotes a proliferation of plant life (especially algae) in a lake, pond, or stream. This plant life reduces the dissolved oxygen content and can cause the extinction of other organisms.



**Ingredient.** Any component or additive of a product intentionally added or not, including any impurities. Synonymous with component, constituent, or additive.

**ISO.** International Organizations for Standardization. ISO defines itself as, “an independent, non-governmental membership organization and the world’s largest developer of voluntary International Standards.”

**LC<sub>50</sub>.** The Median Lethal Concentration, which is the published concentration of a substance required to kill half the members of a sample population of aquatic organisms. This measure is generally used as a general indicator of a substance's acute toxicity when exposure to a chemical is through inhalation.

**Literature Review.** A literature review is the process of surveying current documents and publications on a particular topic or subject of interest, and is undertaken for determining a variety of characteristics for each ingredient in a product, or the product itself. Manufacturer statements, MSDS, peer-reviewed scholarly publications, lab reports, test results, and government databases are primary sources of information for this review.

**Manufacturer.** An organization or individual responsible for the production of the product undergoing certification assessment. In some cases this may be a contractor that actually produces the product for the company undergoing the certification process.

**MSDS.** Material Safety Data Sheet. This is a form containing data regarding the properties of a particular substance, and may provide information on a variety of topics, including physical data; chemical properties; hazard information; health effects; toxicity; ecological information; first aid; stability and reactivity; handling, storage, and disposal of chemicals; first aid; protective equipment; spills and leak procedures; and may provide information on biodegradability.

**OECD.** The Organization for Economic Co-operation and Development is an international economic organization of 30 countries based in Paris. It defines itself as, “a forum of countries committed to democracy and the market economy, providing a setting to compare policy experiences, seek answers to common problems, identify good practices, and co-ordinate domestic and international policies.”

**Personal Care Product.** A consumer product used for personal hygiene or beautification.

**Products of Concern.** Byproducts of degradation with high acute aquatic toxicity ( $L/E/IC_{50} \leq 10\text{ppm}$ ) and a slow rate of biodegradation (greater than 28 days).

**Quality Assurance Plan.** A plan that sets out documented procedures that are established, implemented, and periodically audited to assure that production, handling, management, certification, and other quality practices of the Manufacturer ensure consistent compliance with the requirements of this Standard.

**Ready Biodegradability.** A classification of biodegradability made by the OECD describing the degradation of an organic substance under aerobic conditions to carbon dioxide (CO<sub>2</sub>), water (H<sub>2</sub>O), and minerals by

aerobic bacteria as determined by the measured change of Dissolved Organic Carbon (DOC), Biological Oxygen Demand (BOD), or CO<sub>2</sub> evolution over time. A passing substance has to reach either a 60% BOD or theoretical CO<sub>2</sub> evolution, or 70% decrease in DOC, depending on test method, all of which use a 10 day window within a maximum 28-day test period for a successful determination.

**Records.** Any information in written, visual, or electronic form that documents the activities undertaken by, and/or use of components in assessed products by, manufacturers to demonstrate conformance with this Standard.

**Salts.** Ionic compounds composed of both positively charged ions (cations) and negative ions (anions) so that the product is electrically neutral.

**Standard.** When capitalized, refers to this Standard (Biodegradable Certification Standard).

**Supplier.** Organization that supplies a material, product, or service to the manufacturer. Synonymous with vendor.

**Surfactants.** Also known as surface active agents, are organic compounds that contain both water soluble and non-water-soluble groups (oil soluble) and used primarily in the cleaning products to reduce the surface tension of a liquid.

**Third Party.** A person or body that is recognized as being independent of the parties involved, as concerns the issue in question.

**Toxicity.** The ability of a substance to cause poisonous effects resulting in severe biological harm or death after exposure to, or contamination with, that substance.

## 4.0 Referenced Documents

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### 4.1. Normative References

The following normative documents contain provisions that, through reference in this text, constitute provisions of this Standard.

1. ISO 14021:1999, “Environmental labels and declarations – Self-declared environmental claims (Type II environmental labeling).”
2. ISO 14024:1999, “Environmental labels and declarations – Type I environmental labeling – Principles and procedures.”
3. ISO 14020:2000, “Environmental labels and declarations – General principles.”

### 4.2. Additional References

1. Federal Trade Commission (FTC) Guides for the Use of Environmental Marketing Claims.
2. ISO 9001:2008, “Quality management systems – Requirements.”
3. ISO 14001:2004, “Environmental management systems – Requirements with guidance for use.”
4. ISO/IEC 17025:2005, “General requirements for the competence of testing and calibration laboratories.”
5. DfE’s Standard and Criteria for Safer Chemical Ingredients.

## 5.0 Requirements for Manufacturers

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This section describes general conformance requirements for manufacturers.

### 5.1 Quality Assurance and Traceability

The manufacturer shall have a documented Quality Assurance Plan that contains a product identification and traceability program. The manufacturer shall have a documented procedure to ensure that a finished SCS certified product is traceable to:

1. Relevant batch information, including production dates and lot sizes and;
2. Batch inspection or test reports on those processes and materials which may affect compliance of the product with this program.

### 5.2 Technical Requirements

#### 5.2.1 Product Formulation

The manufacturer shall make available to SCS the complete detailed description of product formulation—which includes the common name, brand name, and/or chemical name of each ingredient in the product formulation, including the CAS number for each ingredient when available

#### 5.2.2 Ready Biodegradability

The manufacturer shall submit documentation for each ingredient in the product being assessed that definitively indicates that each ingredient demonstrates Ready Biodegradability as defined by:

- OECD Test Guideline 301 A: DOC Die-Away
- OECD Test Guideline 301 B: CO<sub>2</sub> Evolution (Modified Sturm Test)
- OECD Test Guideline 301 C: Modified MITI (I) (Ministry of International Trade and Industry, Japan)
- OECD Test Guideline 301 D: Closed Bottle
- OECD Test Guideline 301 E: Modified OECD Screening
- OECD Test Guideline 301 F: Manometric Respirometry
- OECD Test Guideline 310: CO<sub>2</sub> in sealed vessels (Headspace Test)

Alternative methods may be approved, at the discretion of the Auditor.

The primary sources of data shall be from MSDS, laboratory reports, test results, government databases, and peer reviewed literary scientific articles. In lieu of or in addition to the literature review, the manufacturer may choose to have testing performed on product ingredients or the

whole product. The Auditor reserves the right to require testing if biodegradability cannot be determined solely by a literature review. If testing is performed, it shall be performed by a laboratory that is accredited to ISO/IEC 17025 or a national equivalent standard. At the Auditor's discretion, testing from non-accredited laboratories may be accepted if the laboratory demonstrates the implementation of a robust quality system.

If testing is performed for the whole product, the test result must demonstrate Ready Biodegradability.

### **5.2.3 Eutrophication and Phosphates**

The manufacturer shall demonstrate, to a high degree of certainty based on current knowledge established, through submittal of documentation or the literature review, that the product components or their degradation products do not contribute to eutrophication of receiving waters. Conformance shall not be achieved if the product contains phosphates.

### **5.2.4 Toxicity to Aquatic Life**

The manufacturer shall demonstrate, to a high degree of certainty based on current knowledge established through submittal of documentation or the literature review, that the product components and their degradation products do not demonstrate aquatic toxicity. A product ingredient is considered not toxic to aquatic life if it meets the criteria of acute LC<sub>50</sub> for algae, daphnia, or fish equal to or greater than 100 mg/L through a literature review or aquatic toxicity testing.

If a product ingredient demonstrates aquatic toxicity of less than 100 mg/L, the product ingredient shall still be considered acceptable and conformant to this Standard if:

1. The product ingredient is included on the DfE's List for Safer Ingredients with a status of a green circle, green half-circle, or yellow triangle; and,
2. The product ingredient represents no greater than 1% of the dry weight or volume of the finished product formula<sup>1</sup>.

In lieu of, or in addition to, the literature review, the manufacturer may choose to have testing performed on product ingredients or the whole product. The Auditor reserves the right to require testing if aquatic toxicity cannot be determined solely by a literature review. If testing is performed, it shall be performed by a laboratory that is accredited to ISO/IEC 17025 or a national equivalent standard. At the Auditor's discretion, testing from non-accredited laboratories may be

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<sup>1</sup> At the discretion of the Auditor, a percentage greater than or equal to 1% may be allowed based on threshold requirements for the type and function of the product and ingredient, and industry best practices.

accepted if the laboratory demonstrates the implementation of a robust quality system. Appropriate test methods to determine aquatic toxicity include:

- OECD Test Guidelines 203: Fish, Acute Toxicity Test
- OECD Test Guidelines 201: Freshwater Alga and Cyanobacteria, Growth Inhibition Test
- OECD Test Guidelines 202: Daphnia sp. Acute Immobilisation Test

Alternative test methods may be approved at the discretion of the Auditor. If testing is performed, it shall be performed by a laboratory that is accredited to ISO/IEC 17025 or a national equivalent standard. At the Auditor’s discretion, testing from non-accredited laboratories may be accepted if the laboratory demonstrates the implementation of a robust quality system.

If testing is performed for the whole product, the test result must demonstrate an acute LC<sub>50</sub> for algae, daphnia, or fish equal to or greater than 100 mg/L.

#### 5.2.4.1. Surfactants

Surfactant components that demonstrate an aquatic toxicity less than 100 mg/L and are not on the DfE’s List for Safer Ingredients may still be acceptable in exceptional circumstances if the following criteria are met:

1. The manufacturer can reasonably demonstrate that no suitable substitute exists for the surfactant used;
2. The surfactant component represents no greater than 1% of the dry weight or volume of the finished product mixture<sup>2</sup>; and
3. The aquatic toxicity of the surfactants component meets the following criteria modified from DfE:

Table 1. Toxicity Values and Rates of Degradation for Surfactants

Acute Aquatic Toxicity (L/E/IC <sub>50</sub> Value)	Rate of Biodegradation	Acceptable Component?
≤1 ppm	n/a	No
>1 ppm and ≤10 ppm	Ready Biodegradability without Products of Concern	Yes
>10 ppm	Ready Biodegradability	Yes

<sup>2</sup> At the discretion of the Auditor, a percentage greater than or equal to 1% may be allowed based on threshold requirements for the product type and function, and industry best practices.

### **5.3 On-Site Audit Requirements**

If document review is deemed insufficient to certify the product then a site audit may be recommended based on the Auditor's discretion.

## 6.0 Certification and Continued Conformance

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### 6.1. Certification of Achievement

After a product qualifies for certification based on conformance with this Standard, an SCS Biodegradable certificate of achievement is issued. Certificates are valid for one year, provided that the manufacturer maintains conformance with the requirements. By issuing a certificate of achievement, SCS demonstrates that it is satisfied that the manufacturer is capable of consistently producing a product complying with the requirements of this Standard. The manufacturer, by applying the SCS Certification Mark to a product, warrants that the product meets all relevant requirements of this Standard.

### 6.2. Continued Conformance

An annual renewal audit to demonstrate continued conformance with this Standard is required if the manufacturer or certificate holder wishes to continue making a certified claim.

## 7.0 Marketing Requirements

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### 7.1. Geographic Requirements

All uses of the SCS Certification Certificate or references to the certification in advertising and marketing shall be conducted in conformance with U.S. Federal Trade Commission guidelines, or other national guidelines if outside of the U.S. Allowing the SCS Certification Mark to remain on non-conforming products offered for sale could invite prosecution under U.S. Trademark statutes or attract other penalty provisions in other U.S. or State law.

### 7.2. SCS Requirements

The manufacturer shall comply with the requirements of the SCS Labeling and Language Guide at all times.

## 8.0 Complaints, Appeals, and Disputes

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### 8.1. Complaints

All complaints, appeals and disputes are handled in accordance with the *SCS Complaint, Appeals and Disputes Procedure*.