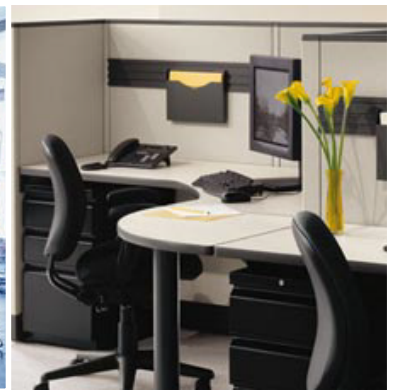
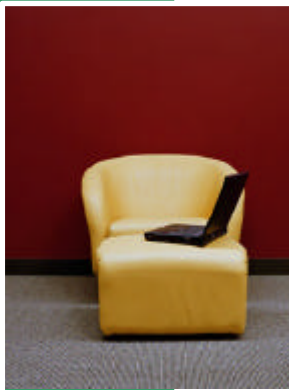


SCS - EC10.2 - 2007

Environmental Certification Program

Indoor Air Quality Performance



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AMENDMENT HISTORY		
Date	Issue	Brief Summary of Amendments
1/14/04	01	Development Draft Released
3/10/04	02	Development Draft Revised
3/31/04	03	Development Draft Revised and Approved for Release
7/22/04	04	Updated to incorporate new lab protocol
8/05/04	05	Changed from Product Certification Program to Environmental Certification Program, and published as Final Version EC-10
5/16/2007	07	Second version (EC-10.2) delineates the requirements of the two distinct tiers of certification — Indoor Advantage™ and Indoor Advantage™ Gold. In addition, EC-10.2 incorporates references to the emerging BIFMA standard, and corrects formatting inconsistencies and grammatical errors.

Authorizing Manager: Program Manager, Environmental Claims Certification, SCS

PREFACE

This Environmental Certification Program was developed by Scientific Certification Systems (SCS) as part of its ongoing efforts to support the efforts of producers, purchasers and policy makers to improve the environmental performance of products and services, based on established and/or advanced scientific principles, practices, materials and standards. As such, the requirements and information herein are subject to revision from time to time to reflect improvements in evaluation methods and production methods.

Environmental Certification Program – Indoor Air Quality Performance — serves as the basis of certification programs designed, in part, to demonstrate conformance to the following criteria:

- Collaborative for High Performance Schools (CHPS) Reference Specifications for Energy and Resource Efficiency, Section 01350 Special Environmental Requirements, Indoor Air Quality.
- California Department of Health Services Standard Practice for Testing of Volatile Organic Chemicals from Various Sources using Small Scale Environmental Chambers CA/DHS/EHLB/R-174.
- Indoor Air Quality emissions criteria for building products as specified in the USGBC Leadership Energy and Environmental Design (LEED) Green Building Rating Systems.
- Business and Institutional Furniture Manufacturers Association (BIFMA) Standard Test Method For Determining VOC Emissions From Office Furniture Systems, Components and Seating (BIFMA M7.1-2006) and Standard for Formaldehyde and TVOC Emissions of Low-emitting Office Furniture Systems and Seating (BIFMA X7.1-2006).
- ISO Type 1 (14024) and Type 2 (14021) environmental labelling and declaration requirements.
- Federal Trade Commission (FTC) Guides for the Use of Environmental Marketing Claims.

Engender confidence among the various stakeholders (manufacturers, suppliers, regulators and consumers) that products labelled with the SCS Indoor Advantage™, the SCS Indoor Advantage™ Gold, and the FloorScore Certification Marks consistently meet the requirements of this program.

Preface Table i: Sample Applications and Products Covered by the SCS Environmental Certification Program – Indoor Air Quality Performance

Functional Application	Product	Emission Criteria	SCS Certification
Classrooms, Office	Building Products	CA Section 01350	Indoor Advantage™ Gold
Classrooms, Office	Non-Carpet Flooring	CA Section 01350	FloorScore
Classrooms	Furniture	CA Section 01350	Indoor Advantage™ Gold
Office (LEED-CI EQ 4.5)	Furniture	BIFMA X 7.1-2006	Indoor Advantage™
Office (LEED-CI EQ 4.5)	Furniture	CA IAQ Furniture Specification	Indoor Advantage™ Gold
Office (LEED-NC/CI/CS EQ 4.1)	Adhesives & Sealants	CA Section 01350	Indoor Advantage™ Gold
Office (LEED-NC/CI/CS EQ 4.2)	Paints & Coatings	CA Section 01350	Indoor Advantage™ Gold
Office (LEED-NC/CI/CS EQ 4.3)	Flooring Systems	CA Section 01350	FloorScore
Office (LEED-NC/CI/CS EQ 4.4)	Composite Wood & Agrifiber Products	CA Section 01350	Indoor Advantage™ Gold
Residential*	Building Products	CA Section 01350	Indoor Advantage™ Gold
Healthcare*	Building Products	CA Section 01350	Indoor Advantage™ Gold

*Note: Emission performance criteria are equivalent to those of CA Section 01350. Modelling assumptions for building/room sizes and ventilation rates are under development.

1. SCOPE

1.1 This document sets out the requirements for the Indoor Air Quality Performance Environmental Certification Program (ECP). The ECP includes requirements for:

- i. Compliance of the certified product with indoor air emissions criteria, and
- ii. Laboratory testing for emissions of volatile organic chemicals, and
- iii. Site audits and sample selection; and,
- iv. Development and use of a Documented Control System.

1.2 This standard applies to any product or material belonging to a product category generally used within an enclosed indoor environment. This includes, for example, paints, other architectural coatings, sealants, adhesives, wall coverings, floor coverings, ceiling tiles, wall panelling, and furniture components and systems used in public and commercial office buildings, schools, medical buildings, residences and other building types.

1.3 This standard applies to building products and furniture which are intended for long term use. The standard addresses chronic inhalation exposures of building occupants to toxic, airborne organic chemicals. The standard does not address short term occupational exposures incurred during construction or renovation and, thus, does not reference occupational exposure guidelines such as Threshold Limit Values (TLVs) published by the American Conference of Governmental Industrial Hygienists (ACGIH).

1.4 This program 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 regulatory limitations prior to use.

2. TERMINOLOGY AND REFERENCED DOCUMENTS

2.1 Acronyms and Abbreviations

ARB	– Air Resources Board, Cal/EPA
ASTM	– American Society for Testing and Materials
BIFMA	– Business and Institutional Furniture Manufacturers Association
Cal/EPA	– California Environmental Protection Agency
CHPS	– Collaborative for High Performance Schools
CIWMB	– California Integrated Waste Management Board, Cal/EPA
CREL	– Chronic Reference Exposure Level
ECP	– Environmental Certification Program
EF	– Emission factor
EPA	– U.S. Environmental Protection Agency
HAP	– Hazardous Air Pollutant
IAQ	– Indoor air quality
IEQ	– Indoor environmental quality
ISO	– International Organization for Standardization
iVOC	– Individual volatile organic compound
LEED	– Leadership in Energy and Environmental Design green building rating systems

(Developed by the US Green Building Council, USGBC)

- LEED-CI – LEED for Commercial Interiors
- LEED-CS – LEED for Core & Shell Development
- LEED-NC – LEED for New Construction
- OEHHA – Office of Environmental Health Hazard Assessment, Cal/EPA
- OSHA – Occupational Safety and Health Administration
- REL – Reference exposure level
- SCAQMD – South Coast Air Quality Management District
- TAC – Toxic Air Contaminant
- TVOC – Total volatile organic compounds
- USGBC – United States Green Building Council
- VOC – Volatile organic compound

2.2 Definitions

2.2.1 Certification Assessment – Independent evaluation of a product claim using specific predetermined criteria and procedures with assurance of data reliability.

2.2.2 Certified Product - Finished product and raw materials, sub-assemblies, components and accessories for which a manufacture is authorized to apply the SCS Certification Mark, as evidence that the product complies with the relevant certification program. *Certified products are listed on the SCS website at <http://www.scs-certified.com/products>.*

2.2.3 Environmental Certification Program - A program by which a third party gives written assurance that a product, process or service conforms to specified requirements. Requirements may include environmental, mechanical, regulatory, economic, social or other performance criteria.

2.2.4 FloorScore – An indoor air quality certification of the Resilient Floor Covering Institute (RFCI) which references this SCS EC 10 standard and is conducted under the auspices of the SCS Environmental Certification Program. FloorScore products meet the emission requirements of California Section 01350 and can qualify for the LEED-NC (v. 2.2) EQ 4.3 credit.

2.2.4 Indoor Advantage™ - An SCS indoor air certification for office furniture and seating that meet the requirements of BIFMA M7.1-2006, BIFMA X7.1-2006 and LEED for Commercial Interiors (v. 2.0) EQ 4.5.

2.2.6 Indoor Advantage™ Gold - An SCS indoor air certification for building products that meet the emission requirements of California Section 01350 as described in CA Department of Health Services Standard Practice CA/DHS/EHLB/R-174 and the criteria for credits EQ 4.1, 4.2, 4.3 and 4.4 under the LEED-NC (v. 2.2), LEED-CI (v. 2.0), and LEED-CS (v. 2.0) rating systems. Office furniture and seating, in addition to requirements of BIFMA M7.1-2006, BIFMA X7.1-2006 and LEED-CI (v. 2.0) EQ 4.5, meet the requirements of California Section 01350 and the California Indoor Air Quality Specifications for Open Panel Office Furniture.

2.2.7 Manufacturer – Organization or individual responsible for the production of the product undergoing certification assessment.

2.2.8 Product – Any manufactured goods.

2.2.9 Quality Plan - A document setting out the specific quality practices, resources and sequence of activities implemented by the Manufacturer to ensure consistent compliance with the requirements of the ECP.

2.2.10 Standard - State, National, or International Standard, Specification or other document against which certification is granted or which comprises part of a certification program.

2.2.11 SCS Certification Mark – SCS certification trademarks, which are used for on-product and off-product labelling. These include Indoor Advantage™ and Indoor Advantage™ Gold. The FloorScore name and logo are certification marks of the Resilient Floor Covering Institute (RFCI) and are protected in the US and internationally.

2.2.12 SCS Certification Labels - Labels incorporating the SCS Certification Mark.

2.2.13 Supplier - Organization that supplies a product or service to the Manufacturer.

2.2.14 Third Party - Person or body that is recognized as being independent of the parties involved, as concerns the issue in question.

2.2.15 Volatile Organic Compound (VOC) - Carbon-containing compound (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonates and ammonium carbonate) with vapor pressure at EPA-defined standard conditions approximately ranging between those for n-pentane through n-heptadecane. For the purposes of this standard, formaldehyde and acetaldehyde are considered to be VOCs.

2.3 Referenced Documents

2.3.1 ASTM D6670-01 Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/Products

http://www.astm.org/cgi-bin/SoftCart.exe/STORE/filtrexx40.cgi?U+mystore+moqm1796+-L+D6670+/usr6/htdocs/astm.org/DATABASE.CART/REDLINE_PAGES/D6670.htm

2.3.2 ASTM E2129-05 Standard Practice for Data Collection for Sustainability Assessment of Building Products

http://www.astm.org/cgi-bin/SoftCart.exe/STORE/filtrexx40.cgi?U+mystore+moqm1796+-L+E2129+/usr6/htdocs/astm.org/DATABASE.CART/REDLINE_PAGES/E2129.htm

2.3.3 BIFMA M7.1-2006 Standard Test Method For Determining VOC Emissions From Office Furniture Systems, Components, and Seating - Post Canvass Edition

http://www.bifma.org/standards/pdf%20files/PostCanvassDraft/M71_28Mar_06_16Mar07TR.pdf

2.3.4 BIFMA X7.1-2006 Standard For Formaldehyde and TVOC Emissions of Low-Emitting Office Furniture Systems and Seating - Post Canvass Edition

http://www.bifma.org/standards/pdf%20files/PostCanvassDraft/X71_29Mar06_16Mar07TR.pdf

2.3.5 Cal/EPA OEHHA list of chemicals with non-cancer chronic Reference Exposure Levels (RELs). The current version of this list is accessible at

http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html

2.3.6 Cal/EPA OEHHA Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). The current versions of these lists are accessible at http://www.oehha.ca.gov/prop65/prop65_list/newlist.html

2.3.7 Cal/EPA, ARB list of Toxic Air Contaminants (TACs). The current version of this list is accessible at <http://www.arb.ca.gov/toxics/taclist.htm>

2.3.8 California Department of Health Services, Indoor Air Quality Division, Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small Scale Environmental Chambers, CA/DHS/EHLB/R-174. Note that this document supersedes previous versions of the small-scale environmental chamber testing portion of California Specification 01350 (also referred to as CA Section 01350). The current version of the practice is accessible at <http://www.dhs.ca.gov/ps/deodc/ehlb/iaq/VOCS/Practice.htm>. Addendum 2004-01 Justification for Using Concentration Limits Other Than Those Listed in OEHHA's Chronic REL List: Formaldehyde & Acetylaldehyde, October 19, 2004 is accessible at: http://www.dhs.ca.gov/ehlb/IAQ/VOCS/LORS/Section01350_7_15_2004_FINAL%20WITH%20ADDENDUM-2004-01.doc

2.3.9 Carter, R.D. and J.S. Zhang. 2006. Definition of Standard Office Environments for Evaluating the Impact of Office Furniture Emissions on Indoor VOC Concentrations. Proceedings, AWMA/U.S. EPA Indoor Environmental Quality: Problems, Research and Solutions Conference, July 17-19, 2006, Durham, NC.

2.3.10 Collaborative for High Performance Schools (CHPS) Best Practices Manual, Volume III, 2006 Edition. This document is accessible at http://www.chps.net/manual/documents/BPM_2006_Edition/CHPS_III_2006.pdf

2.3.11 Collaborative for High Performance Schools (CHPS) Reference Specifications for Energy and Resource Efficiency, Section 01350 Special Environmental Requirements. The current version of this Specification is accessible at <http://www.eley.com/specs/index.htm> and http://www.chps.net/manual/documents/Sec_01350.doc

2.3.12 Federal Trade Commission (FTC) Guides for the Use of Environmental Marketing Claims <http://www.ftc.gov/bcp/grnrule/guides980427.htm>

2.3.13 Green Seal Standard GS-11, Paints
<http://www.greenseal.org/certification/standards/paints.cfm>

2.3.14 Green Seal Standard GS-36, Commercial Adhesives
<http://www.greenseal.org/certification/standards/commercialadhesives.cfm>

2.3.15 ISO 14020 – Environmental Labels and Declarations – General Principles
<http://www.iso.org/iso/en/ISOOnline.frontpage>

2.3.16 ISO 14021 – Environmental Labels and Declarations – Self-declared Environmental Claims (Type II Environmental Labelling) <http://www.iso.org/iso/en/ISOOnline.frontpage>

2.3.17 ISO 14024 – Environmental Labels and Declarations – Type I Environmental Labelling – Principles and Procedures <http://www.iso.org/iso/en/ISOOnline.frontpage>

2.3.18 ISO 9001-2000 Quality Management Systems – Requirements
<http://www.iso.org/iso/en/ISOOnline.frontpage>

2.3.19 ISO/IEC Guide 65:1996 General requirements for bodies operating product certification systems <http://www.iso.org/iso/en/ISOOnline.frontpage>

2.3.20 OSHA Hazard Communication Standard, 29 CFR 1910.1200
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=10099

2.3.21 South Coast Air Quality Management District Rule 1113 – Architectural Coatings
<http://www.aqmd.gov/rules/reg/reg11/r1113.pdf>

2.3.22 South Coast Air Quality Management District Rule 1168 – Adhesive and Sealant Applications
<http://www.aqmd.gov/rules/reg/reg11/r1168.pdf>

2.3.23 State of California Indoor Air Quality (IAQ) Specifications for Open Panel Office Furniture
http://www.cal-iaq.org/VOC/CA_FurnitureBid-EnvIAQ.htm

2.3.24 US Green Building Council Leadership in Environmental and Energy Design (LEED) Green Rating Guides, both current ,such as LEED for New Construction (v. 2.2), Commercial Interiors (v. 2.0), Core & Shell Development (v. 2.0), and those under development, such as LEED for Homes and LEED for Schools, are located at <http://www.usgbc.org>

3. POLICY BASIS

3.1 Federal Trade Commission – Guides for the Use of Environmental Marketing Claims

The *Guides for the Use of Environmental Marketing Claims*, or “guides”, were issued by the Federal Trade Commission on July 28, 1992. Like other industry guides issued by the Commission, the Environmental Marketing Guides “are administrative interpretations of laws administered by the Commission for the guidance of the public in conducting its affairs in conformity with legal requirements.” They provide the basis for advertisers’ voluntary compliance with the law, as well as simultaneous abandonment of unlawful practices. Conduct inconsistent with the guides may result in corrective action by the Commission if this conduct is found to be in violation of applicable statutory provisions. The Commission promulgates industry guides “when it appears to the Commission that guidance as to the legal requirements applicable to particular practices would be beneficial in the public interest and would serve to bring about more widespread and equitable observance of laws administered by the Commission.”

3.2 ISO 14024 - Type 1 Environmental Labels

This standard covers labelling programs, operated either by governments or by private organizations, that use a single seal to communicate a judgment that a product is 'environmentally preferable' within a given product sector. The judgment is based on an analysis of the product's environmental attributes.

ISO 14024 lays out principles and practices to use when developing the criteria for Type 1 product labels. Important elements of the criteria include: 1) credibility; 2) consultation with stakeholders; 3) consensus; 4) transparency; 5) accessibility; and 6) avoiding creation of unnecessary obstacles to international trade. In addition, ISO 14024 requires that the standards be based on scientific, available information that is repeatable and reproducible, and that clear and transparent methodologies are used to support evidence of environmental preferability.

ISO 14024 requires that reasonable efforts be made to achieve consensus, but consensus is not necessary to create a standard. In the development of environmentally preferable product standards, it is anticipated that consensus of all stakeholders will not be achieved.

3.3 Collaborative for High Performance Schools (CHPS) Section 01350

"Collaborative for High Performance Schools (CHPS) Reference Specifications for Energy and Resource Efficiency, Section 01350, Special Environmental Requirements" (CA Section 01350) is a special environmental requirements standard specification that has been developed in California to cover key environmental performance issues related to the selection and handling of building products in construction along with a range of other sustainable design issues, such as energy, water and other resource efficiency.

Section 01350 contains three key components related to the assessment of building products for their potential IAQ impacts:

- 1) Screening based upon emission testing of products for their emissions of VOCs with known chronic health effects and reporting of the following data:
 - the ten most abundant compounds emitted from the sample
 - all compounds on the CA OEHHA CREL list
 - all compounds on the CA OEHHA Proposition 65 and ARB Toxic Air Contaminants lists; and

- 3) Establishment of compliance with the specification by modeling of VOC concentrations for standard classrooms and offices and comparison of modeled concentrations to guidelines based on CRELs.

- 4) For construction adhesives, it is additionally required that no component listed as a carcinogen or reproductive toxicant on the State of California Environmental Protection Agency lists can make up more than 1% of the total mass of the adhesive.

3.4 California Department of Health Services CA/DHS/EHLB/R-174

“California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers” (CA/DHS/EHLB/R-174) supersedes previous versions of the small-scale environmental chamber testing portion of California Specification 01350 (Also known as CA Section 01350). The practice establishes the procedures for product sample collection, emission testing, and indoor concentration modeling and the documentation requirements associated with the analysis of emissions of VOCs from various product sources using small-scale environmental chambers. The practice also establishes performance criteria for specific chemicals of interest, and lists target chemicals and their maximum allowable concentrations.

3.5 State of California Indoor Air Quality (IAQ) Specifications For Open Panel Office Furniture

The specification requires testing of a representative open office workstation, its components, or a set of component materials in an environmentally-controlled chamber for emissions of VOCs. Laboratories that conduct chamber testing are required to report the air concentrations of individual VOCs (iVOCs) at a given time following the beginning of the test (14 days for the current specifications). These results are used to determine emission rates of iVOCs for the workstation. Using emission rates derived from chamber tests and parameters for a typical office, a simple occupant exposure model is used to estimate iVOC concentrations in the office with a full workstation. Maximum acceptable iVOC office concentrations are based on State of California CRELs published by the Office of Environmental Health Hazard Assessment (OEHHA). The current version of the furniture specification is accessible at:

http://www.cal-iaq.org/VOC/CA_FurnitureBid-EnvIAQ.htm

3.6 ASTM E2129 Data Collection for Sustainability Assessment of Building Product

As is recognized in ASTM E2129, “Standard Practice for Data Collection for Sustainability Assessment of Building Product,” many features of a building contribute to its sustainability; one of them is the selection of products for use in a building. Other key features influencing sustainability include, but are not limited to: overall efficiency of the design of the building, the impact the building has on the habits of the occupants, and the impact the building has on the microclimate and macroclimate.

While the scientific understanding of the functioning and interrelation of ecosystems continues to evolve, there are nevertheless many accepted principles relative to the design, construction, and operation of buildings for improved sustainability. The ASTM E2129 standard offers a set of instructions for collecting data to be used in assessing the sustainability of elements or products for use in both commercial and residential buildings. Commonly accepted environmental principles are addressed in five criteria categories with an emphasis on the following characteristics: 1) the selection and acquisition of products, 2) the manufacturing process, 3) the operational performance of the installed product, 4) the impact of the product on Indoor Environmental Quality (IEQ), and 5) the corporate environmental policy of the company manufacturing and/or fabricating the product.

3.7 U.S. Green Building Council (LEED Green Building Rating Systems)

The U.S. Green Building Council is a national organization creating standards intended to encourage construction and/or renovation of a new generation of buildings that deliver high performance inside and out. Council members work together to develop industry standards, design guidelines, policy positions, and conference and education tools that support the adoption of sustainable design and building practices.

Each of the Council's Leadership in Energy and Environmental Design (LEED) Rating Systems is organized into five environmental categories: 1) Sustainable Sites; 2) Water Efficiency; 3) Energy & Atmosphere; 4) Materials and Resources; and 5) Indoor Environmental Quality. An additional category, Innovation & Design Process, addresses sustainable building expertise as well as design measures not covered under the five environmental categories.

On July 12, 2006 LEED approved an alternative method for office systems furniture and seating to meet the requirements for environmental quality credits in Commercial Interiors (v. 2.2) EQ 4.5. A Credit Interpretation Ruling (CIR) provided for an "Option C" that allowed "Calculated indoor air concentrations that are less than or equal to those established in Table 1 for furniture systems and seating determined by a procedure based on BIFMA M7.1-2006 and X7.1-2006 testing protocol conducted by an independent third party air quality testing laboratory.

LEED Rating Systems also provide credits for Low Emitting Materials, Adhesives and Sealants (EQ 4.1), Paints and Coatings (EQ 4.2), Carpet systems (EQ 4.3) – with resilient floor coverings added in October, 2006 through an alternative compliance path, and Composite Wood & Agrifiber Products (EQ 4.4) that are obtainable through the CA 01350 and other criteria of SCS Indoor Advantage™ Gold certification.

4. SIGNIFICANCE AND USE

4.1. This Environmental Certification Program (ECP) is intended to be used by Manufacturers seeking to demonstrate that their products comply with indoor air quality standards, consistent with the conditions defined in Sections 5 – 8 below.

4.2. This ECP is intended to be used by Manufacturers seeking to determine that their supply chain products and the materials to be used as constituents in the manufacture of finished products comply with indoor air quality standards, consistent with the conditions defined in Sections 5 – 8 below.

4.3. This ECP is intended to be used by product specifiers, designers and purchasers seeking to ensure that finished products comply with indoor air quality standards, consistent with the conditions defined in Sections 5 – 8 below.

5. GENERAL CONDITIONS

5.1 Product Compliance

Adequate supervision and control shall be exercised at all stages of manufacture to ensure that the finished product, together with related marking and information, meets all the relevant requirements of this ECP.

5.2 Confidentiality

All proprietary information, including specifications, quality plans and test reports shall remain confidential between SCS and the Manufacturer unless the Manufacturer authorizes the release or is otherwise compelled by law to release such information, for example, to an agent of a government authority.

5.3 Site Audits

5.3.1 A site audit of the manufacturing facility where the product is produced shall be performed by an SCS employee or SCS designated representative as part of the certification assessment. Where a product undergoing a certification assessment is produced at multiple locations, a statistically valid number of sites shall be audited annually in accordance with the requirements of ISO/IEC Guide 65; but in any case, all facilities in which the product is produced must be visited at least once every four years.

5.3.2 Site audits may be required at all manufacturing locations, including those not owned by the client, as when product is “toll” manufactured, or significant components are produced by supplier companies.

5.3.3 Site audits shall focus on sample selection and the documented control system for the certified product including the mechanisms that the company has in place to ensure continuing compliance of the product. A comprehensive Certification Assessment Questionnaire (CAQ) that includes data required under this SCS EC 10 standard shall be completed by the client and auditor.

5.3.4 SCS retains the right to revisit the manufacturing facility at any time during which the product maintains certified product status. SCS also retains the right to collect product samples during any site visit or revisit.

5.4 Notification

SCS shall be notified of any proposed changes which could affect compliance with the ECP. Such changes shall not be implemented without written authorization from SCS. In particular, SCS shall be notified of design or production changes that could impact the indoor air quality emissions profile of the certified product.

5.5. Use of SCS Certification Marks

5.5.1 By issuing a certificate of achievement, SCS demonstrates that it is satisfied that the Manufacturer is currently producing, and is capable of consistently producing a product complying with this program. The Manufacturer, by applying the SCS Certification Mark to a product, warrants that the product meets all relevant requirements of the specified program.

5.5.2 Manufacturers who use the registered certification trademarks of SCS do so on certain terms and under the rules described in the SCS Standard Certification Agreement and Guidelines for Use of the SCS Certification Mark. Manufacturers must also comply in all respects with this ECP. SCS may at its discretion vary the requirements of the ECP in accordance with Section 5.6 – Changes to the Environmental Certification Program.

5.5.3 All necessary action shall be taken to ensure that the SCS Certification Mark is not associated with products that do not comply with the ECP. If a non-conforming product is found in the field bearing an SCS Certification Mark, the approval may be suspended pending results of investigation. The full cost of such investigation shall be borne by the Manufacturer.

5.5.4 Allowing the SCS Certification Mark to remain on non-conforming products offered for sale could invite prosecution under US Trademark statutes or attract other penalty provisions in other US or State laws.

5.6 Changes to the Environmental Certification Program

If this ECP is amended or re-issued, a transition period for conformance to the revised ECP will be determined by SCS, usually in consultation with relevant stakeholders. After the transition period, the Manufacturer shall not apply the SCS Certification Mark to any product covered by the ECP until compliance of the product with the revised program has been verified by SCS.

6. DOCUMENTED CONTROL SYSTEM

6.1 Management Responsibility

6.1.1 The Manufacturer's management with executive responsibility shall appoint a member of the Manufacturer's own management who, irrespective of other responsibilities, shall be designated to be the Manufacturer's certification representative. The Representative shall have defined authority for the following elements.

6.1.1.1 The Representative shall ensure that a quality plan is established, implemented and maintained in accordance with this Environmental Certification Program (ECP);

6.1.1.2 The Representative shall ensure that the quality plan provides for adequate supervision and control to be exercised at all stages of manufacture so that the finished product, together with related marking and information, meets all the relevant requirements of the ECP;

6.1.1.3 The Representative shall inform SCS of all changes to:

- i) product specifications or production processes that could affect compliance of the product with the ECP; and
- ii) operating conditions such as company ownership, company name, factory address, key personnel, etc;

6.1.1.4 The Representative shall notify SCS of any information or evidence which suggests that there may be non-conforming product in the channels of trade; and

6.1.1.5 The Representative shall notify SCS of corrective action(s) taken in relation to SCS or manufacturer's internal audit findings of non-conforming products, and ensure that action is effective.

6.1.2 The responsibilities and authorities of the Representative shall be documented. SCS shall be notified of any changes to the personnel appointed.

6.2 Quality Control Plan

6.2.1 General

The supplier shall establish, document and maintain a written quality control plan for the certified product, as a means of ensuring that product conforms to the requirements of this ECP.

6.2.2 Minimum Requirements

As a minimum, the quality control plan shall contain the following:

- i) Organization Chart.
- ii) Quality Policy.
- iii) Description of the responsibilities and authorities of management Representative and any deputy Representatives.
- iv) Description of Product Formulation/Materials list:
 - For mixtures, defined in OSHA Hazard Communication Standard, 29 CFR 1910.1200, as "any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction," the description shall include the common or generic name, the chemical name, the CAS number, and the weight per unit of product (i.e., grams per liter) for each ingredient comprising 1.0% or more by weight of the product or 0.1% or more by weight when ingredient is a known or listed carcinogen or reproductive toxin.
 - For articles or assemblies, such as furniture or other combinations of solid materials, the description shall include a detailed description of each potentially emitting component. Which components to be described and the level of descriptive detail shall be determined through consultation between SCS and the manufacturer.
- v) Listing of current suppliers and a discussion of supplier variability, e.g., frequency of change in suppliers and changes in source location of a supplied material).
- vi) Flow chart referenced with the applicable production processes and procedures, methods, work instructions, and inspection and test points.
- vii) Description of the Product Identification and Traceability program by which the Manufacturer shall employ a documented procedure to ensure that a finished Certified Product is traceable to: a) relevant batch information, including production dates and lot sizes; and b) batch inspection or test reports on those processes and materials

which may affect compliance of the product with this ECP. The extent to which the Manufacturer can demonstrate traceability must be clearly documented.

- viii) Description of Control Program for Non-Conforming Product, delineating documented procedures by which the Manufacturer shall ensure that any products that do not conform to the ECP requirements will be prevented from unauthorized labelling with the SCS Certification Mark or otherwise sold as Certified Product. This control shall provide for identification, documentation, evaluation, segregation (when practical), disposition of nonconforming product, and for notification to the functions concerned.
- ix) Corrective and Preventative Action – The Manufacturer shall establish and maintain documented procedures for implementing corrective and preventive action including:
 - a. the effective handling of customer complaints and reports of product nonconformities;
 - b. investigation of the cause of nonconformities relating to product, process and quality system, and recording the results of the investigation;
 - c. determination of the corrective action needed to eliminate the cause of nonconformities; and,
 - d. application of controls to ensure that corrective action is taken and that it is effective.

6.3 Record Keeping

6.3.1 General

The Manufacturer shall establish and maintain documented procedures to control all documents and data that relate to the requirements of this ECP including, to the extent applicable, documents of external origin such as standards and customer drawings.

6.3.2 Supplier Conformance

The Manufacturer shall establish and maintain documented procedures to ensure that purchased materials, including raw materials, sub-assemblies, components and accessories of the Certified Product, conform to specified requirements.

6.3.3 Purchasing Data

Purchasing documents shall contain data clearly describing the materials ordered, including where applicable:

- i) the type, class, grade or other precise identification; and
- ii) the title or other positive identification; and applicable issues of specifications, drawings, process requirements, inspection instructions and other relevant technical data, including requirements for approval of materials, procedures, process equipment and personnel.

6.3.4 Inspection and Test Records

The Manufacturer shall establish and maintain records providing evidence that the manufactured product has been inspected and/or tested. These records shall show clearly whether the product has passed or failed the inspections and/or tests according to defined acceptance criteria. Where the product fails to pass any inspection and/or test, the procedures for control of nonconforming product shall apply. Records shall identify the inspection authority that is responsible for the release of product.

7. LABORATORY TESTING FOR VOC EMISSIONS

7.1 General Conditions

7.1.1. To be certified under this ECP, the Manufacturer shall submit suitable samples of the product for air emissions testing in accordance with the conditions described in this section. Samples shall be submitted to an air quality emissions testing laboratory that has been approved by SCS. The approved laboratory shall be an independent company or organization not related to the Manufacturer of the product to be tested.

7.1.2 For products that can be tested in whole or by representative samples in small-scale environmental chambers, testing shall be performed in accordance with CA/DHS/EHLB/R-174, “*Standard Practice for Emissions Testing of Various Sources of Volatile Organic Chemicals in Small-Scale Environmental Chambers*” or equivalent.

7.1.3 For products that require testing in mid or large-scale environmental chambers such as workstations and seating, chamber operating requirements shall be as set forth in ASTM D 6670, “*Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/Products*” and “*BIFMA M7.1-2006 Standard Test Method For Determining VOC Emissions From Office Furniture Systems, Components and Seating*”. Chain-of-custody, sample conditioning, air testing, chemical analyses and emission calculations shall be as specified in CA/DHS/EHLB/R-174 and BIFMA M7.1-2006.

7.1.4 A pass test result does not automatically lead to certification. For example, if the test report does not cover all aspects of the product standard, if the result is outside of the known process capability limits or if the results lie within a certain variability margin, further testing or information may be required. Such additional testing requirements shall be at the discretion of SCS, with the cost for additional testing borne by the manufacturer, subject to the Manufacturer’s approval.

7.2 Sample Selection

7.2.1 General - Samples shall be selected by an SCS auditor or person authorized by SCS. Under selected circumstances, SCS may allow test results from previously submitted samples to be used to demonstrate conformance with these requirements, provided the Manufacturer demonstrates that the samples were collected, handled and tested in a manner that is consistent with the requirements of this ECP.

7.2.2 Samples from Typical Production - Samples shall be selected from typical production operations when possible. The samples shall be randomly selected from a production lot that is large enough to ensure that they are representative of the processes involved and of the quality that the Manufacturer intends to present to the market. All selected product samples other than furniture and seating shall conform to sample collection and handling requirements described in CA/DHS/EHLB/R-174, including provisions for sample age, packaging and labelling. Samples of office furniture and seating shall be collected and handled in conformance to the requirements of BIFMA M7.1-2006.

7.2.3 Prototypes - For initial assessment purposes, a preliminary test may be conducted on laboratory-scale pilot batches or prototype samples. Such testing may demonstrate the

suitability of the product design in terms of the ECP requirements. However, additional testing shall be required once production has stabilized and usually before any product is released.

7.2.4 Condition of Samples – When possible, samples shall be in the condition in which they are offered for sale and shall be accompanied by all relevant attachments. Applicable instructions for use, care, installation or maintenance, shall also be submitted.

7.2.5 Test groups and worst case samples - A range of product models, brands and/or styles with varying characteristics may be grouped together for testing purposes if the products can be expected to perform similarly during testing and use. A test group shall only include models which are made using the same general production methods and are comprised of the same general product ingredients (formulation). Test samples shall be selected from the model in the group that can be expected to give the worst results for any given test or group of tests.

Nominations by the Manufacturer for test groups and worst case models shall be accompanied by supportive data in the form of calculations, test results, formulations and written explanation. The final decision on test groups and worst case models rests with SCS.

7.2.6 Delivery of samples - Delivery of samples to the agreed laboratory shall be the responsibility of the Manufacturer, in conformance with CA/DHS/EHLB/R-174 and BIFMA M7.1-2006 unless otherwise directed by the SCS or the SCS-approved laboratory.

7.2.7 Chain of Custody Documentation – All samples shall be accompanied by appropriate chain-of-custody documentation as described in CA/DHS/EHLB/R-174 and BIFMA M7.1-2006.

7.3 Test Laboratory

7.3.1 The Manufacturer may utilize any testing laboratory that has received prior approval by SCS, based on demonstrated ability to conduct testing in conformance with the requirements of this ECP, and based on demonstrated conformance with the SCS Laboratory Quality Check program. The laboratory shall be an independent company or organization not related to Manufacturer of product to be tested.

7.3.2 The testing contract shall be between the Laboratory and the Manufacturer, unless otherwise specified. Costs for all necessary testing and any related laboratory services shall be borne and paid for directly by the Manufacturer.

7.3.3 Testing must be conducted under the protocols identified in Sections 7.1.2 or 7.1.3 of this ECP in order for the test results to be accepted by SCS for certification.

7.4 Test Results

7.4.1 Original test reports shall be sent by the Manufacturer to SCS. Evaluation and acceptance of the test results and certification of the product is the sole responsibility of SCS. SCS reserves the right to reject any test result for reasonable or just cause. In case of rejection, SCS shall provide a written rationale for its decision to the Manufacturer.

7.4.2 Required elements of the Laboratory Test Report shall be provided as described below:

7.4.2.1 FloorScore, as required in Section 5.1 of CA/DHS/EHLB/R-174 (CA Section 01350).

7.4.2.2 Indoor Advantage™ for office furniture systems, components and seating, as required in Section 12 of BIFMA M7.1-2006.

7.4.2.3 Indoor Advantage™ Gold for building products, as required in Section 5.1 of CA/DHS/EHLB/R-174. (CA 01350).

7.4.2.4 Indoor Advantage™ Gold for office furniture systems, components and seating, as required in Section 12 of BIFMA M7.1-2006, including the individual VOC requirements of CA Section 01350. Indoor Advantage™ Gold certification will assure an office furniture manufacturer access to bid against the current State of California Department of General Services *2006 Indoor Air Quality (IAQ) Specifications for Open Panel Office Furniture*. If a bid is awarded, the manufacturer may have to complete additional test work sheets that are part of the DGS specifications.

7.4.3 Predicted concentrations for modelled building scenarios for all listed and non-listed compounds reported in the Laboratory Test Report shall use the modelling scenarios indicated below:

7.4.3.1 FloorScore and building products used in school classrooms and office space shall use the modelling scenarios listed in Tables 1 and 2.

7.4.3.2 Office furniture systems, components and seating shall use the modelling parameters reproduced in Tables 3 and 4.

Table 1: Parameters to be used for calculation of VOC concentrations in a school classroom for conformance with CA Specification 01350

Parameter	Unit of Measure	Parameter Value	Area Specific Flow Rate (m³ h⁻¹ m²)
<i>Classroom Dimensions</i>			
Length (40 ft)	m	12.2	
Width (24 ft)	m	7.32	
Ceiling height (8.5 ft)	m	2.59	
Volume	m ³	231	
<i>Window & Door Area</i>			
Windows (4 x 4 ft & 4 x 8 ft)	m ²	4.46	
Door (3 x 7 ft)	m ²	1.89	
<i>Ventilation Parameters</i>			
Air change rate	h ⁻¹	0.9	
Ventilated volume fraction		0.9	
Outdoor air flow rate	m ³ h ⁻¹	187	
<i>Surface Areas</i>			
Floor & ceiling	m ²	89.2	
Net wall area	m ²	94.6	
<i>Material Areas</i>			
Flooring (all types)	m ²	89.2	2.10
Acoustical ceiling panels	m ²	179	1.04
Wall paint & wall coverings	m ²	94.6	1.98
<i>Thermal insulation</i>			
Ceiling	m ²	89.2	2.10
Wall	m ²	94.6	1.98
Wall base (10 in)	m ²	9.68	19.3

Table 2: Parameters to be used for calculation of VOC concentrations in an office space for conformance with CA Specification 01350

Parameter	Unit of Measure	Parameter Value	Area Specific Flow Rate (m³ h⁻¹ m²)
<i>Building Dimensions & Areas</i>			
Volume	m ³	30.6	
Ceiling height (9 ft)	m	2.7	
Floor area	m ²	11.1	
Wall area	m ²	46.3	
<i>Ventilation Parameters</i>			
Air change rate	h ⁻¹	0.75	
Ventilated volume fraction		0.9	
Outdoor air flow rate	m ³ h ⁻¹	20.7	
<i>Material Areas</i>			
Flooring (all types)	m ²	11.1	1.86
Acoustical ceiling panels	m ²	22.3	0.93
Wall paint	m ²	46.3	0.45
Thermal insulation, ceiling	m ²	11.1	1.86
Wall base (4 in)	m ²	1.27	16.3

Table 3: Parameters to be used for calculation of VOC concentrations in typical open plan office and typical private office for conformance with BIFMA M7.1-2006

Parameter	Unit of Measure	Parameter Value
Typical Open Plan Office		
Volume	m ³	16.3
Ceiling height (9' or 2.74 m)	m	2.74
Floor area (6' x 6', or 1.83 m x 1.83 m)	m ²	5.94
Outdoor air flow rate	L/s	4.17
Typical Private Office		
Volume	m ³	65.2
Ceiling height (9' or 2.74 m)	m	2.74
Floor area (16' x 16', or 1.83 m x 1.83 m)	m ²	23.78
Outdoor air flow rate	L/s	9.63

Table 4. Required standard workstation surface areas for typical open plan office and typical private office for conformance with BIFMA M7.1-2006

Workstation System Type	Panel Area	Work Surface Area	Storage Total External Area	Total Workstation Area
Open Plan	11.08 m ² (119.3 ft ²)	6.103 m ² (65.69 ft ²)	4.569 m ² (49.18 ft ²)	21.76 m ² (234.2 ft ²)
Private Office	7.633 m ² (82.16 ft ²)	6.734 m ² (72.48 ft ²)	10.55 m ² (113.6 ft ²)	24.92 m ² (268.3 ft ²)

7.5 Product Retesting

7.5.1 A Manufacturer with a product that has failed the VOC emissions criteria while undergoing assessment in accordance with this ECP may petition SCS to have the product retested, provided that the Manufacturer can demonstrate to the satisfaction of SCS that it has identified and corrected the problems which resulted in the initial failure. All costs for retesting shall be borne by the Manufacturer.

7.5.2 SCS reserves the right to require a re-test of Certified Products at any time during the approved certification period, for instance, when new information calls into question the conformance of the Certified Product with the ECP requirement. Products may be selected from the Manufacturer's premises or at the point of importation, distribution or sale, and the cost of re-testing shall be borne by the Manufacturer.

8. Requirements for Certification of Indoor Air Quality Performance

8.1 General

8.1.1 Certification of Indoor Air Quality Performance requires conformance with the conditions described in this ECP, including site audit, sample collection, documented control system, laboratory testing requirements and other requirements as herein specified.

8.1.2 Determination of conformance with the requirements of this program shall rest solely with SCS.

8.2 Indoor Air Quality Emissions Criteria

8.2.1 To achieve certification, the calculated model building concentrations (school classroom and office space described in Section 7.4.3) for chemicals emitted by the product shall conform to the following requirements in order to qualify as Indoor Advantage™ and Indoor Advantage™ Gold:

8.2.1.1 Indoor Advantage™ for office furniture systems, components, and seating:

Chemical/Chemical Group	Workstation Systems (All configuration types)	Seating
TVOC (toluene)	<0.5 mg/m ³	< 0.25 mg/m ³
Formaldehyde	< 50 ppb	< 25 ppb
Total Aldehydes	< 100 ppb	< 50 ppb
4-Phenylcyclohexane (4 pch)	< 0.0065 mg/m ³	< 0.00325 mg/m ³

8.2.1.2 Indoor Advantage™ Gold for office furniture systems, components, and seating:

- i) Product must pass requirements listed in Section 8.2.1.1 for Indoor Advantage™.
- ii) Formaldehyde – Less than or equal to 16.5 µg/m³; and
- iii) Acetaldehyde – Less than or equal to 9 µg/m³, and
- iv) All other organic chemicals with established Chronic Reference Exposure Levels (CRELs) – Less than or equal to 1/2 the CREL as listed in the latest edition of the Cal/EPA OEHHA list of chemicals with noncancer CRELs. The current version of this list is accessible at http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html

8.2.1.3 FloorScore and Indoor Advantage™ Gold for building products other than furniture:

- i) Formaldehyde – Less than or equal to 16.5 µg/m³; and
- ii) Acetaldehyde – Less than or equal to 9 µg/m³, and
- iii) All other organic chemicals with established CRELs – Less than or equal to 1/2 the CREL as listed in the latest edition of the Cal/EPA OEHHA list of chemicals with noncancer CRELs. The current version of this list is accessible at http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html

8.3 VOC and Chemical Content Requirements for Specific Products¹

8.3.1 Additional content requirements for architectural paints and coatings to qualify for Indoor Advantage™ Gold certification are as follows:

8.3.1.1. The total grams of VOC per liter of architectural paint or coating (other than “flats”) shall be less than the current content limits specified in the South Coast Air Quality Management District (SCAQMD) Rule 1113 (<http://www.aqmd.gov/rules/reg/reg11/r1113.pdf>).

8.3.1.2 “Flat” paints or coatings must demonstrate VOC content levels of less than 50 grams/liter. Calculation of the grams of VOC per liter shall be conducted as set forth in the SCAQMD Rule 1113.

8.3.1.3 Paints must conform to the VOC content requirements of Section 4 Product Specific Environmental Requirements of Green Seal GS-11 (First Edition May 20, 1993) <http://www.greenseal.org/certification/standards/paints.cfm>

8.3.2 Additional chemical content requirements for adhesives and sealants to qualify for Indoor Advantage™ Gold certification are as follows:

8.3.2.1 The total grams of VOC per liter of adhesive or sealant shall be less than the current content limits specified in the SCAQMD Rule #1168 (<http://www.aqmd.gov/rules/reg/reg11/r1168.pdf>). Calculation of the grams or VOC per liter shall be conducted as set forth in the SCAQMD rule.

8.3.2.2 No component present in the adhesive at more than 1% of the total mass of the adhesive shall be a carcinogen or reproductive toxicant as defined by the lists in Section 4.1 of CA/DHS/EHLB/R-174.

8.3.2.3 Aerosol adhesives shall conform to the requirements of Green Seal GS-36, October 19, 2000. <http://www.greenseal.org/certification/standards/commercialadhesives.cfm>

8.3.3 Additional chemical content requirements for composite wood and agrifiber products² to qualify for Indoor Advantage are as follows:

8.3.3.1 Composite wood and agrifiber products shall contain no added urea-formaldehyde resins.

¹ The requirements in this section are intended to apply to ‘site-applied’ products — that is, those products applied by a contractor at the building site. These requirements are not intended to be applied at a manufacturing facility where, for example, paint is applied in a controlled environment to a filing cabinet prior to shipment to the project site.

² Composite wood and agrifiber products are defined in LEED-NC (v. 2.2) as: particleboard, medium density fibreboard (MDF), plywood, wheatboard, strawboard, panel substrates and door cores.

8.4 Annual Re-evaluation

8.4.1 On an annual basis, products shall be resubmitted for testing in accordance with the requirements described in Sections 7 and 8 of this ECP. Continued certification under the ECP will require demonstration of continued conformance with the criteria described in this program. Annual test sampling plans shall be developed between the manufacturer and SCS. Annual sampling requirements may be rotated among manufacturing facilities or may be designed to evaluate different variations of components within a product category.

8.4.2 Products certified to programs referencing BIFMA M7.1-2006 shall be required to conduct a mid or large-scale chamber test for each certified category at least every two years.

8.4.3 An annual desk or on-site audit as described in Section 5.3 of this standard shall also be performed to assess ongoing conformance with the provisions of this ECP.