



IEEE Standard for Environmental Assessment of Personal Computer Products, Including Laptop Personal Computers, Desktop Personal Computers, and Personal Computer Monitors

IEEE Computer Society

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IEEE Standard for Environmental Assessment of Personal Computer Products, Including Laptop Personal Computers, Desktop Personal Computers, and Personal Computer Monitors

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IEEE Computer Society

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Abstract: IEEE Std 1680-2006 provides a set of environmental performance criteria for notebook computers, desktop computers, and computer monitors. In addition, it defines the methods by which manufacturers may declare such products as conforming with the Standard and by which such conformance may be verified. The Standard provides a measure of environmental leadership in product design, manufacture, service and end-of-life management. It is intended for use by institutional purchasers to select personal computer products, and by product manufacturers who wish to sell such products. There are three levels of conformance with this Standard. To achieve the first level, the product shall conform to all of the 23 required environmental criteria. To achieve the second level, the product shall conform to all of the required criteria plus at least 50% of the 28 optional criteria, and to achieve the third level the product shall conform to all the required criteria and at least 75% of the optional criteria. It is intended that this Standard shall be a baseline for further environmental standards for additional electronic products and shall be updated and revised on a periodic basis to continue to set a higher performance standard for leadership products.

Keywords: computer, computer monitor, electronic product, electronic product design, environment, environmental leadership, environmental performance, notebook computer, personal computer

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Introduction

This introduction is not part of IEEE Std 1680-2006, IEEE Standard for Environmental Assessment of Personal Computer Products, Including Laptop Personal Computers, Desktop Personal Computers, and Personal Computer Monitors.

This Standard has been developed due to a growing demand by institutional purchasers for an easy-to-use evaluation tool that allows the comparison and selection of electronic products based on environmental performance.

This Standard is intended to be used by institutional purchasers in the selection of electronics products based on environmental performance, and by product designers and manufacturers who wish to sell products that meet environmental performance standards to institutional purchasers.

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IEEE Standard for Environmental Assessment of Personal Computer Products, Including Laptop Personal Computers, Desktop Personal Computers, and Personal Computer Monitors

1. Overview

1.1 Scope

This Standard defines environmental performance standards for personal computer products, including desktop computers, notebook computers, and computer monitors that are marketed to institutions, and includes key concepts and implementation procedures relating to reduction or elimination of environmentally sensitive materials, materials selection, design for end of life, life cycle extension, energy conservation, end of life management, corporate performance and packaging.

1.2 Purpose

This Standard provides a clear and consistent set of performance criteria for the design of personal computer products that are marketed to institutions, and provides an opportunity to secure market recognition for efforts to reduce the environmental impact of electronic products.

The environmental performance criteria of this Standard are intended to define a measure of environmental leadership in: the design and manufacture of personal computer products that are marketed to institutions; the delivery of specified services that are associated with the sale of the product to institutions; and in associated corporate performance characteristics.

This Standard is defined with the intention that the criteria are technically feasible to achieve, but that only products demonstrating the leading environmental performance currently available in the marketplace would meet them at the time of their adoption. As the environmental performance of products that are available in the marketplace improves, it is intended that the criteria will be updated and revised to set a higher performance standard for leadership products.

This Standard is intended to serve as a baseline for further environmental standards for additional electronic products to be developed in the future.

1.3 Application

The environmental performance criteria in Clause 4 apply to notebook personal computers, desktop personal computers, and personal computer monitors. The principles and procedures identified in Clause 1, Clause 2, and Clause 3 apply to personal computer products and will apply to future standards developed for additional electronic products.

Different configurations of a product, as defined in 3.1, may include options for processors, memory, hard disks, etc. A product, for the purpose of this Standard, is every configuration that could be offered in a specific marketing model and chassis type. If there is a specific configuration within a marketing model and chassis type that would change the environmental performance substantially, especially if that configuration would no longer meet a criterion, then the manufacturer could not claim conformance to this Standard for that configuration, even if the same model in other configurations did conform to this Standard. The manufacturer shall report such special configurations that do not conform to the Standard to the Product Registration Entity.

A product includes a desktop computer, a notebook computer or monitor, and all the peripherals that are integral to its operation. For example, the desktop computer together with the keyboard, the mouse, and the power cord would be a product.

1.4 Conformance with this Standard

In order to conform to this Standard, each unit of a product must satisfy all of the applicable requirements provided in Clause 4. A subclause of Clause 4 is applicable to the product if the product falls within the scope of products defined by the “Applies to” section of the subclause. A product satisfies the criterion if it meets the requirement shown in the “Product Criterion” section of the subclause. The “References and Details” section of the subclause provides critical information that is valuable for interpreting the requirements of the Product Criterion. The “Verification Requirements” section of the subclause specifies the data and information that a manufacturer must supply to a Product Registration Entity if requested for verification purposes.

The environmental performance criteria in this Standard are of two types:

- Required criteria that all products shall meet in order to be considered in conformance with the environmental standard
- Optional criteria that products may voluntarily meet in order to gain additional points so as to be rated at a higher level of environmental performance

All criteria, including the optional criteria, use the “shall” construct since the defined criterion shall be met if the applicant wishes to receive the credit. Note that in certain cases there are multiple optional criteria that address a single environmental attribute, such as the presence of recycled content, with increasing levels of environmental benefit. Points may be accumulated in these cases. For example, if the product has a 26% recycled content, then it would earn two points from two different criteria: one point for exceeding 10% and one point for exceeding 25%.

There shall be three levels of conformance with this Standard:

- To achieve the first level, the product shall conform to all of the required criteria.
- To achieve the second level, the product shall conform to all of the required criteria, plus at least 50% of the optional criteria.
- To achieve the third level, the product shall conform to all of the required criteria, plus at least 75% of the optional criteria.

Conformance with this Standard shall be demonstrated by the following process:

- a) Before declaring the conformance of products to this Standard, the manufacturer will sign a legally binding Agreement with a Product Registration Entity. This Agreement shall commit the manufacturer to providing accurate product and company information and shall provide for remedies should inaccuracies be discovered.

The Agreement shall provide that all units sold of a product that is declared to this Standard shall conform to the product declaration submitted by the manufacturer, and that all such units are subject to verification by the Product Registration Entity, according to 1.6.

The Agreement shall include a commitment to provide to the Product Registration Entity, within 30 d of a request, a set of verification data, as specified for each criterion, to be verified. Such verification data shall be held in confidence by the Product Registration Entity.

- b) The manufacturer may declare that the product meets the definition and intent of each required criterion, and as many optional criteria as wished. These declarations shall be of two types, as specified in Clause 4 for each criterion:
 - 1) *Product criteria* are those that apply to each specific product, and are declared to in the product application process.
 - 2) *Annual report criteria* are those that apply to a program or an offering of the manufacturer in general, and are not exclusive to the specific product. These criteria are declared in an annual report to the Product Registration Entity.

1.5 Product Registration Entity and Market Surveillance Entity

A Product Registration Entity shall perform the activities defined in 1.4 and 1.6 to ensure that products are in conformance with this Standard. A Product Registration Entity shall make available the documents referenced in this Standard that are not otherwise readily accessible and for which copyright protection does not apply. A Product Registration Entity should submit the products that have been declared to them to be in conformance with this Standard to the Market Surveillance Entity to be posted on the Electronic Product Environmental Assessment Tool (EPEAT) Registry.

The Market Surveillance Entity shall maintain a Web site at <http://www.epeat.net/> that will make available for purchasers the EPEAT Registry of all products that have been declared to be in conformance with this Standard. A Product Registration Entity that submits a listing of products to be displayed on the EPEAT Registry shall demonstrate to the Market Surveillance Entity that such products have been declared to be in conformance with the Standard, according to procedures described in 1.3 and 1.4, and that the Product Registration Entity operates a declaration verification system that conforms with 1.6.

1.6 Verification of conformance with this Standard

A subset of qualified products will periodically be selected by the Product Registration Entity to verify their conformance with this Standard. A subset of criteria, as they apply to many products, may also be selected for verification. The Product Registration Entity will contact the manufacturer who will be required to provide all the data listed in the “Verification Requirements,” as specified for each criterion to be verified. In the event that a declared product cannot be shown to meet the criteria, the Product Registration Entity will follow the corrective process established in the Agreement that will initially focus on correcting the problem, but may ultimately include disqualifying the product or, upon the event of repeated product disqualifications, disqualify the manufacturer.

A Product Registration Entity shall maintain a Product Verification Committee that is responsible for making final decisions regarding product verifications described in this subclause. The Product Verification Committee shall be independent of any and all financial benefit that results when products are verified to be

in conformance with, or determined to not be in conformance with, this Standard. The Product Verification Committee shall consist of experts appointed by the Product Registration Entity who are knowledgeable regarding the technical assessment of the environmental characteristics of electronic products and the criteria within this Standard.

The verification methods, and the selection of products or criteria for verification, shall be adequate to provide a high degree of credibility that declared products conform to this Standard.

1.7 Qualified Verifier

A Product Registration Entity may utilize Qualified Verifiers to conduct verification activities and provide recommendations to the Product Verification Committee. A Product Registration Entity shall implement a Verifier Qualification Program that qualifies individuals or organizations to verify products for conformance to this Standard. The Verifier Qualification Program shall test the qualifications of individuals to assess the environmental characteristics of electronic products relative to the criteria in this Standard. Qualified Verifiers shall be independent of any and all financial benefit that results when products are verified to be in conformance with, or determined not to be in conformance with, this Standard.

2. Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

ASTM D256-05, Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.¹

CONEG, Model Legislation for Toxics in Packaging.²

European Union, European Commission Directive 98/101/EC of 22 December 1998 adapting to technical progress Council Directive 91/157/EEC on batteries and accumulators containing certain dangerous substances.³

European Union, European Council Directive 2002/95/EC of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

European Union, European Council Directive 2002/96/EC of the European Parliament and of the Council on waste electrical and electronic equipment (WEEE).

European Union, European Council Directive 67/548/EEC of the European Council of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances.

European Union, European Council Directive 91/157/EEC of the Council of the European Communities of 18 March 1991 on batteries and accumulators containing certain dangerous substances.

European Union. The Eco-Management and Audit Scheme (EMAS).⁴

¹ ASTM publications are available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, USA (<http://www.astm.org/>).

² This compilation was developed by CONEG and is administered by the Toxics in Packaging Clearinghouse (TPCH). TPCH publications are available online at: <http://www.toxicsinpackaging.org/>

³ European Union Directives are available from the portal Web site of the European Union at: <http://www.europa.eu.int/>.

⁴ EMAS publications of the European Union are available from the Environment section of the portal Web site of the European Union at http://www.eu.int/comm/environment/emas/index_en.htm.

GRI, Sustainability Reporting Guidelines, 2002.⁵

ISO 11469:2000, Plastics—Generic identification and marking of plastics products.⁶

ISO 14001, Environmental management systems—Requirements with guidance for use.

U.S. EPA, Comprehensive Procurement Guidelines.⁷

U.S. EPA, ENERGY STAR®.⁸

U.S. EPA, National Environmental Performance Track Annual Performance Report.⁹

U.S. EPA, National Environmental Performance Track Application (7 March 2006).¹⁰

U.S. EPA, Plug-In To eCycling: Guidelines for Materials Management (May 2004).¹¹

U.S. Executive Order 13101, Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition.¹²

3. Definitions, special terms, and acronyms

For the purposes of this standard, the following terms and definitions apply. *The Authoritative Dictionary of IEEE Standards* [B4]¹³ should be referenced for terms not defined in this clause.

3.1 Definitions

3.1.1 biobased: A material that is composed, in whole or in significant part, of biological materials or renewable agricultural (including plant, animal, and marine materials) or forestry materials.

3.1.2 desktop: A computer designed for use on a desk or table.

3.1.3 electronic products: Products that are dependent on electric currents or electromagnetic fields in order to work properly.

3.1.4 environmental management system: Part of an organization's management system used to develop and implement its environmental policy and manage its environmental aspects.

⁵ GRI guidelines are available from the Global Reporting Initiative at: <http://www.globalreporting.org/>.

⁶ ISO publications are available from the ISO Central Secretariat, Case Postale 56, 1 rue de Varembe, CH-1211, Genève 20, Switzerland/Suisse (<http://www.iso.ch/>). ISO publications are also available in the United States from the Sales Department, American National Standards Institute, 11 West 42nd Street, 13th Floor, New York, NY 10036, USA (<http://www.ansi.org/>).

⁷ This document is available from the IEEE Standards World Wide Web site, at <http://standards.ieee.org/downloads/1680/1680-2006/>.

U.S. EPA publications are available at: <http://www.epa.gov/cpg/>.

⁸ U.S. EPA Energy Star publications are available at: <http://www.energystar.gov/>.

⁹ This document is available from the IEEE Standards World Wide Web site, at <http://standards.ieee.org/downloads/1680/1680-2006/>.

U.S. EPA National Environmental Performance Track publications are available at <http://www.epa.gov/performance-track/index.htm>.

¹⁰ This document is available from the IEEE Standards World Wide Web site, at <http://standards.ieee.org/downloads/1680/1680-2006/>.

¹¹ This document is available from the IEEE Standards World Wide Web site, at <http://standards.ieee.org/downloads/1680/1680-2006/>.

U.S. EPA Plug-In publications are available at <http://www.epa.gov/epaoswer/osw/conserves/plugin/index.htm>

¹² U.S. Executive Order publications are available at: <http://www.ofee.gov/eo/eo.htm>.

¹³ The numbers in brackets correspond to those of the bibliography in Annex A.

3.1.5 environmentally preferable: Products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose; the product or service comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal. (as defined in Executive Order 13101, Section 201.)

3.1.6 homogeneous: Of uniform composition throughout.

3.1.7 incidental presence: The presence of a regulated metal as an unintended or undesired ingredient of a package or packaging component. (As specified in the Model Toxics in Packaging legislation developed by the CONEG.)

3.1.8 monitor: A video display unit used with a computer.

3.1.9 notebook: Portable-style or laptop-style computer system.

3.1.10 postconsumer: A material or finished product that has served its intended use and has been discarded for disposal or recovery, having completed its life as a consumer item; part of the broader category of “recovered” items.

3.1.11 product: A marketing model and chassis type (and all its peripherals) versus a singular configuration of the product.

3.1.12 recovered: Waste materials and by-products reclaimed or diverted from solid waste, not including those materials and by-products generated from, and commonly reused within, an original manufacturing process.

3.1.13 recyclable: Materials or components that can be removed or recovered from the whole product or package and put back into productive use as a material, not including energy recovery, using standard technologies, or as otherwise demonstrated.

NOTE—See Section 260.7(d) of the Federal Trade Commission (FTC) Guides for the Use of Environmental Marketing Claims [B12].

3.1.14 recyclable resin stream: A group of identifiable plastics that, mixed together, can be processed back into productive use as a material, not including energy recovery.

3.1.15 recycling: A process by which materials or components are processed to be put back into productive use as a material or component, not including energy recovery.

3.1.16 renewable energy: Resources that constantly renew themselves or that are regarded as practically inexhaustible.

3.1.17 reusable: Components or systems of components that can be removed or recovered from the whole product or package and put back into productive use as a component or system of components, not including energy recovery, using standard technologies, or as otherwise demonstrated.

NOTE—See Section 260.7(d) of the FTC Guides for the Use of Environmental Marketing Claims [B12].

3.1.18 video display unit: A cathode ray tube, cathode ray tube device, and flat panel screen or similar display device, including stand-alone units and those components of an integrated unit, e.g., a notebook computer, that are directly used to generate an image.

3.2 Special terms

3.2.1 annual report criterion: A criterion that applies to a program or offering of the manufacturer in general, is not exclusive for the specific product, and is declared each year to the Product Registration Entity.

3.2.2 compatible: Paints and coatings on plastic parts are proven to be compatible with recycling processes if they do not significantly impact the physical/mechanical properties of the recycled resin. “Significant impact” is defined as >25% reduction in notched Izod impact at room temperature as measured using ASTM D256. This definition is based on a criterion developed by the Federal Electronics Challenge Plastics Task Force.

3.2.3 declaration by manufacturer: This is the procedure by which a manufacturer declares that a product meets the environmental performance criteria by following specific steps defined by the Product Registration Entity and submitting them to the Product Registration Entity.

3.2.4 first, second, and third tier recyclers: first tier recycler is the organization that contracts with, or otherwise works directly with, the manufacturer, to receive and tear down product; second tier recycler is an organization that receives material from the first tier recycler and performs further processing, but has no direct relationship with the manufacturer; and third tier recycler is an organization that receives material from the second tier recycler and generally produces a commodity for sale and use, but has no direct relationship with the first tier recycler.

3.2.5 homogeneous material: European Union documentation [B2] provides the following guidance for homogeneous material: homogeneous material refers to a material that can not be mechanically disjointed into different materials. Examples of “homogeneous material” are individual types of: plastics, ceramics, glass, metals, alloys, paper, board, resins, and coatings. The term “mechanically disjointed” means that the materials can, in principle, be separated by mechanical actions such as: unscrewing, cutting, crushing, grinding, and abrasive processes.

3.2.6 institution: A governmental, quasi-governmental, or non-governmental organization that establishes centralized agreements, which enable the entire organization and/or any of its parts to purchase electronic products.

3.2.7 intentionally added: The act of deliberately utilizing a regulated restricted substance in the formation of a product, component, package, or packaging component where its continued presence is desired in the final product, component, package, or packaging component to provide a specific characteristic, appearance, or quality. The use of recycled material as feedstock in the manufacture of a product, component or package, where some portion of the recycled material may contain residual amounts of a restricted substance, is not considered intentionally added, unless the restricted substance in the recycled material is used for the express purpose of imparting a specific characteristic, appearance or quality to the final product. The exclusion of recycled feedstock shall not apply to any cadmium, lead, mercury, or hexavalent chromium that has been recovered and/or separated from other materials for use as a metal or metallic compound.

3.2.8 Market Surveillance Entity: The organization that maintains the EPEAT Registry of all products that have been declared to this Standard

3.2.9 on average: The term “on average” as used in the Standard in the phrase “product shall contain on average” shall mean that the desired material (e.g., recycled or biobased plastic) shall be present at the designated percentage in the total weight of like material (e.g., all plastic) within each unit for each product declared to the criterion.

3.2.10 product criterion: A criterion that applies to each specific product that a manufacturer declares to a Product Registration Entity to conform to the Standard.

3.2.11 Product Registration Entity: The organization that 1) receives applications from manufacturers that declare their products to be in conformance with the Standard; 2) maintains a listing of products that conform to the Standard; 3) verifies that such products conform to the Standard according to the procedures defined in the Standard; and 4) manages a Verifier Qualification Program.

3.2.12 Qualified Verifier: An individual who has met the requirements set forth by a Product Registration Entity through a Verifier Qualification Program to determine if products conform to the environmental performance criteria.

3.2.13 take-back: A service provided by, or caused to be provided by, the manufacturer by which the product or packaging can be returned for reuse or recycling with no more than 10% of the returned material going to disposal or incineration.

3.2.14 Verifier Qualification Program: The program and examination by which a Product Registration Entity qualifies an individual to be Qualified Verifier.

3.2.15 weighted average: An average that takes into account the proportional relevance of each component, rather than treating each component equally.

3.3 Acronyms

ASTM: American Society of Testing and Materials

CONEG: Council of Northeast Governors

CPG: Comprehensive Procurement Guidelines

CPU: Central Processing Unit

DIN: Deutsches Institut für Normung (German Institute of Standardization)

DVD: Digital Versatile Disc

EMAS: Eco-Management and Audit Scheme

EMS: Environmental Management System

EPEAT: Electronic Product Environmental Assessment Tool

EPS: Expanded Polystyrene

FTC: Federal Trade Commission

IEEE: Institute of Electrical and Electronics Engineers, Inc.

ISO: International Organization for Standardization

GRI: Global Reporting Initiative

OEM: Original Equipment Manufacturer

PCB: Printed Circuit Board

PVC: Polyvinyl Chloride

RBRC: Rechargeable Battery Recycling Corporation

RoHS: Restriction on the use of certain hazardous substances in electrical and electronic equipment

SCCP: Short Chain Chlorinated Paraffins

SPI: Society of the Plastics Industry

U.S. EPA: United States Environmental Protection Agency

USB: Universal Serial Bus

VDU: Video Display Unit

WEEE: Waste electrical and electronic equipment

4. Environmental performance criteria for desktop personal computers, notebook personal computers, and personal computer monitors

4.1 Reduction/elimination of environmentally sensitive materials

4.1.1 Reduction of use of hazardous substances

4.1.1.1 Required—Compliance with provisions of European RoHS Directive upon its effective date

Product Criterion: All products shall comply with the final requirements developed under the European RoHS Directive.

Applies to: All covered products, except for European RoHS Directive exemptions.

Verification Requirements:

- a) Declaration from manufacturer
- b) Demonstration of European RoHS Directive compliance according to European RoHS Directive requirements when developed
- c) Evidence of certification from component manufacturers that is based on either empirical data demonstrating compliance or analytical test data demonstrating compliance

References and Details: The European RoHS Directive, formally known as Directive 2002/95/EC of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment, in its latest edition, stipulates the following thresholds for the presence of each substance within homogeneous materials.

— Cadmium	<100 ppm
— Mercury	<1000 ppm
— Lead	<1000 ppm
— Hexavalent Chromium	<1000 ppm
— Polybrominated Biphenyls (PBB)	<1000 ppm
— Polybrominated Diphenyl Ethers (PBDE)	<1000 ppm

The list of materials, thresholds, and possible exemptions are currently under development by the European Union. Prior to RoHS finalization, products shall be compliant to RoHS as it reads on 1 January 2006. As of the effective date of RoHS, products must be compliant with the final RoHS language.

4.1.2 Cadmium

4.1.2.1 Optional—Elimination of intentionally added cadmium

Product Criterion: Traces of cadmium shall not exceed 50 ppm in homogeneous materials unless it can be shown that the cadmium is present above this threshold due to the use of recycled content.

Applies to: All covered products excluding batteries.

Verification Requirements:

- a) Declaration from the manufacturer
- b) Evidence of certification from component manufacturers that is based on either empirical data demonstrating compliance or analytical test data demonstrating compliance

References and Details: None available.

4.1.3 Mercury

4.1.3.1 Required—Reporting on amount of mercury used in light sources

Product Criterion: Manufacturer shall report on how many lamps used and the mercury content per lamp in accordance with the ranges of the following list:

- 0 mg to 5 mg
- 5 mg to 10 mg
- 10 mg to 50 mg
- 50 mg to 100 mg
- 100 mg to 1000 mg
- Greater than 1000 mg

Optional reporting: maximum average mercury content per lamp.

Applies to: All VDUs, including stand-alone and integrated systems (i.e., flat panel monitors, notebook computers, CRTs).

Verification Requirements:

- a) Declaration from manufacturer
- b) Evidence of certification from component manufacturers that is based on either empirical data demonstrating compliance or analytical test data demonstrating compliance

References and Details: None available.

4.1.3.2 Optional—Low threshold for amount of mercury used in light sources

Product Criterion: Maximum average of 3.0 mg mercury per lamp.

Applies to: All flat panel VDUs.

Verification Requirements:

- a) Declaration from manufacturer
- b) Evidence of certification from component manufacturers that is based on either empirical data demonstrating compliance or analytical test data demonstrating compliance

References and Details: None available.

4.1.3.3 Optional—Elimination of intentionally added mercury used in light sources

Product Criterion: Maximum of 0.01% mercury per lamp.

Applies to: All flat panel VDUs.

Verification Requirements:

- a) Declaration from manufacturer
- b) Evidence of certification from component manufacturers that is based on either empirical data demonstrating compliance or analytical test data demonstrating compliance

References and Details: None available.

4.1.4 Lead

4.1.4.1 Optional—Elimination of intentionally added lead in certain applications

Product Criterion: The VDU, including housing, batteries, cables, adapters and other peripheral equipment used to generate an image, shall not contain lead greater than 50 ppm by weight per listed part unless it can be shown that the lead is present above this threshold due to the use of recycled content.

Applies to: VDUs only, including stand-alone units and those components of an integrated unit, e.g., a notebook computer, that are directly used to generate an image. This does not apply to European RoHS Directive exemptions.

Verification Requirements:

- a) Declaration from manufacturer
- b) Evidence of certification from component manufacturers that is based on either empirical data demonstrating compliance or analytical test data demonstrating compliance

References and Details: None available.

4.1.5 Hexavalent chromium

4.1.5.1 Optional—Elimination of intentionally added hexavalent chromium

Product Criterion: Traces of hexavalent chromium shall not exceed 500 ppm in homogeneous materials unless it can be shown that the hexavalent chromium is present above this threshold due to the use of recycled content.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Evidence of certification from component manufacturers that is based on either empirical data demonstrating compliance or analytical test data demonstrating compliance

References and Details: None available.

4.1.6 Flame retardants and plasticizers

4.1.6.1 Required—Elimination of intentionally added SCCP¹⁴ flame retardants and plasticizers in certain applications

Product Criterion: Paints, coatings, plastics, rubbers and seals shall be free from flame retardants and / or softeners containing SCCPs (not more than 0.1% by weight), 10 carbon atoms to 13 carbon atoms, minimum 48% chlorine by weight, unless it can be shown that the SCCPs are present above this threshold due to the use of recycled content.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Evidence of certification from component manufacturers that is based on either empirical data demonstrating compliance or analytical test data demonstrating compliance

References and Details: None available.

4.1.6.2 Optional—Large plastic parts free of certain flame retardants classified under European Council Directive 67/548/EEC

Product Criterion: Plastic parts >25 g shall be free from flame retardants (not more than 0.1% of total weight) that are classified as dangerous substances under European Council Directive 67/548/EEC.

Applies to: All covered products.

¹⁴ Chemical Abstracts Service number 63449-39-8.

Verification Requirements:

- a) Declaration from manufacturer
- b) Evidence of certification from component manufacturers that is based on either empirical data demonstrating compliance or analytical test data demonstrating compliance

References and Details: European Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances. Chemicals classified under European Council Directive 67/548/EEC as the following may not be used as flame retardants in plastic parts:

- R45 may cause cancer
- R46 may cause heritable genetic damage
- R50-R51-R52 are very toxic to aquatic organisms
- R60 may impair fertility
- R61 may cause harm to an unborn child

NOTE—Many flame retardants may not have these classifications because they have not been tested. To gain this optional point, equipment manufacturers and suppliers would have to request that the materials be tested if they are not currently classified. As a result, this criterion provides an incentive for chemical companies to run the necessary tests in order to satisfy demand by equipment manufacturers and suppliers. It also ensures that any alternatives to current flame retardants would have to meet minimum requirements for hazard evaluation.

4.1.7 Batteries

4.1.7.1 Optional—Batteries free of lead, cadmium, and mercury

Product Criterion: With the exemption of technically unavoidable impurities, batteries and accumulators (internal to the computer system) shall not contain any lead, cadmium, or mercury. Such impurities shall not exceed the limiting values as specified in the European Council and Commission Directives (91/157/EEC and 98/101/EEC).

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Evidence of certification from component manufacturers that is based on either empirical data demonstrating compliance or analytical test data demonstrating compliance

References and Details: European Council Directive 91/157/EEC of the Council of the European Communities of 18 March 1991 on batteries and accumulators containing certain dangerous substances. Commission Directive 98/101/EC of 22 December 1998 adapting to technical progress European Council Directive 91/157/EEC of the Council of the European Communities on batteries and accumulators containing certain dangerous substances.

4.1.8 Polyvinyl chloride and chlorinated plastics

4.1.8.1 Optional—Large plastic parts free of PVC

Product Criterion: Eliminate PVC in parts >25 g.

Applies to: All covered products. Cables and interconnect parts are exempt. Examples of interconnect parts are plugs and sockets.

Verification Requirements:

- a) Declaration from manufacturer
- b) Evidence of certification from component manufacturers that is based on either empirical data demonstrating compliance or analytical test data demonstrating compliance

References and Details: None available.

4.2 Materials selection

4.2.1 Total recycled plastics content

4.2.1.1 Required—Declaration of postconsumer recycled plastic content

Product Criterion: Manufacturer declares whether product contains postconsumer recycled plastic greater than 5.0% by weight, measured as a percentage of total plastic (by weight) in each product, or does not. Manufacturer may declare actual percentage of postconsumer plastic.

Applies to: All covered products that contain plastics, excluding PCB and packaging.

Verification Requirements:

- a) Declaration from manufacturer
- b) Supplier letter
- c) Documentation of calculation

References and Details: Declaring either “yes” or “no” satisfies this requirement. “Yes” declaration is defined as a minimum of 5.0% postconsumer recycled plastic measured as a percentage of total plastic (by weight) in each product.

4.2.1.2 Optional—Minimum content of postconsumer recycled plastic

Product Criterion: Product shall contain on average a minimum of 10% postconsumer recycled plastic, measured as a percentage of total plastic (by weight) in the product.

Applies to: All covered products that contain plastics, excluding PCB.

Verification Requirements:

- a) Declaration from manufacturer
- b) Supplier letter
- c) Documentation of calculation

References and Details: None available.

4.2.1.3 Optional—Higher content of postconsumer recycled plastic

Product Criterion: Product shall contain on average a minimum of 25% postconsumer recycled plastic, measured as a percentage of total plastic (by weight) in the product.

Applies to: All covered products that contain plastics, excluding PCB.

Verification Requirements:

- a) Declaration from manufacturer
- b) Supplier letter
- c) Documentation of calculation

References and Details: None available.

4.2.2 Renewable/biobased plastic materials

4.2.2.1 Required—Declaration of renewable/biobased plastic materials content

Product Criterion: Manufacturer declares whether product contains renewable/biobased plastic materials greater than 5.0 %, measured as a percentage of total plastic (by weight) in each product, or does not.

Applies to: All plastic parts, excluding packaging.

Verification Requirements:

- a) Declaration from manufacturer
- b) Supplier letter
- c) Documentation of calculation

References and Details: Declaring either “yes” or “no” satisfies this requirement. “Yes” declaration defined as a minimum of 5.0% biobased/renewable plastic measured as percentage (by weight) of total plastic in each product. The percent of biobased/renewable plastic will be calculated by taking a weighted average of the percent biobased/renewable plastic in all plastics in the product.

Under Section 9002 of the Farm Security and Rural Investment Act of 2002 [B9], biobased products are defined as a product “that is composed, in whole or in significant part, of biological products or renewable agricultural materials (including plant, animal, and marine materials) or forestry materials.”

The U.S. Department of Agriculture’s framework rule for Federal purchasing of biobased products, 70 FR 1792, 11 January 2005 [B10], cites the intent of the Farm Security and Rural Investment Act is “to stimulate the production of new biobased products and to energize emerging markets for those products.”

Verification of biobased content is determined using the ASTM D6866-04a [B1].

4.2.2.2 Optional—Minimum content of renewable/biobased plastic material

Product Criterion: Product shall contain on average a minimum of 10% renewable/biobased plastic, measured as a percentage of total plastic (by weight) in the product.

Applies to: All plastic parts, excluding packaging.

Verification Requirements:

- a) Declaration from manufacturer
- b) Supplier letter
- c) Documentation of calculation

References and Details: Refer to Section 9002 of the Farm Security and Rural Investment Act of 2002 [B9]; the U.S. Department of Agriculture’s framework rule for Federal purchasing of biobased products, 70 FR 1792, 11 January 2005 [B10]. Verification of biobased content is determined using ASTM D6866-04a [B1].

4.2.3 Dematerialization

4.2.3.1 Required—Declaration of product weight

Product Criterion: Manufacturer declares product weight.

Applies to: All covered products, excluding packaging.

Verification Requirements:

- Declaration of product weight $\pm 5\%$

References and Details: None available.

4.3 Design for end of life

4.3.1 Design for recovery through recycling systems that utilize shredding

4.3.1.1 Required—Identification of materials with special handling needs

Product Criterion: Manufacturer shall provide treatment information to reuse and recycling facilities that identifies the presence and location of materials that require special handling, especially nonstandard or new substances or new technologies, and including components such as batteries.

Applies to: All covered products.

Verification Requirements:

- Declaration by manufacturer as to how information is provided to reuse and recycling facilities or web link to where information is available

References and Details: “Nonstandard or new” substances or technologies shall refer to substances or technologies that are rarely encountered in the end-of-life stream of products such that recycling and reuse enterprises would not develop methods to deal with them. If a new substance or technology is introduced and in time becomes commonplace such that recycling and reuse enterprises develop methods of dealing with them, then they shall no longer meet this definition.

4.3.1.2 Required—Elimination of paints or coatings that are not compatible with recycling or reuse

Product Criterion: Plastic parts >100 g on a product shall not contain paints or coatings that are not compatible with recycling or reuse, including metal coatings.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Documentation showing manufacturer test, or supplier verification if paints or coatings are used on plastic parts >100 g

References and Details “Compatible,” as defined in 3.2, is based on a criterion developed by the Plastics Task Force of the U.S. Federal Electronics Challenge [B8].

4.3.1.3 Required—Easy disassembly of external enclosure

Product Criterion: External enclosures shall be easily removable by one person alone with commonly available tools.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Supporting documentation that the external enclosure design does not unreasonably obstruct the disassembly process. Examples of documentation include:
 - i) A list of the commonly available tools required to disassemble the external enclosure; or
 - ii) A statement from a minimum of three recyclers individually, or at least one recycler working under an independent entity with electronics recycling expertise that is not a trade organization, confirming that the product design meets requirements of 4.3.1.3; or
 - iii) Instructions for disassembly that show how the external enclosure can be easily removed.

References and Details: None available.

4.3.1.4 Required—Marking of plastic components

Product Criterion: Plastic components >100 g shall be marked with a material code in accordance with the identification and marking requirements of ISO 11469:2000.

Applies to: All plastic components >100 g in the product

Verification Requirements:

- a) Declaration from manufacturer
- b) Record of visual inspection

References and Details: ISO 11469:2000 specifically applies to parts weighing 25 g or more. However, this criterion only applies to parts of 100 g or more, with the assumption that only those larger parts will be separated in most current recycling processes that rely on shredding.

4.3.1.5 Required—Identification and removal of components containing hazardous materials

Product Criterion: Circuit boards >10 cm² (measured on the largest face), batteries, and other components—any of which contain hazardous materials—shall be safely and easily identifiable and removable.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Supporting documentation that the design does not unreasonably restrict the identification and removal of components containing hazardous materials. Examples of documentation could be:
 - i) A list of the commonly available tools required to remove components containing hazardous materials, or
 - ii) A statement from a minimum of three recyclers individually, or at least one recycler working under an independent entity with electronics recycling expertise that is not a trade organization, confirming that the product design meets requirements of 4.3.1.5 or
 - iii) Instructions for disassembly that show how the components containing hazardous materials can be easily identified and removed.

References and Details: Hazardous materials are those materials defined under Annex II of the European WEEE Directive, Directive 2002/96/EC of the European Parliament and of the Council on waste electrical and electronic equipment (WEEE).

4.3.1.6 Optional—Reduced number of plastic material types

Product Criterion: Only one plastic material type shall be used in each plastic enclosure part >100 g.

Applies to: Enclosures for all covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Supplier letter

References and Details: None available.

4.3.1.7 Optional—Molded/glued in metal eliminated or removable

Product Criterion: Plastic enclosures shall not contain molded-in or glued-on metal unless metal inserts are easy to remove by one person alone with commonly available tools.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Supporting documentation demonstrating that the plastic enclosures do not incorporate adhesives or molding for metal inserts or that they are easily removable. Examples of documentation that they are easily removable could be:
 - i) A list of the commonly available tools required to remove metal inserts; or
 - ii) A statement from a minimum of three recyclers individually, or at least one recycler working under an independent entity with electronics recycling expertise that is not a trade organization, confirming that the product design meets requirements of 4.3.1.7; or
 - iii) Instructions for disassembly that show how metal inserts can be easily removed.

References and Details: None available.

4.3.1.8 Required—Minimum 65% reusable/recyclable

Product Criterion: 65% or greater of materials and components by weight shall be reusable or recyclable within the current infrastructure and using demonstrated technologies.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Description of demonstrated recycling technologies
- c) Demonstration that material is normally recyclable or, if not, that there exists a market/use

References and Details: Declaration by manufacturer of the material and components and how they can be recycled or reused within the existing infrastructure and demonstrated technologies.

For further explanation of when a product or packaging can be claimed to be reusable or recyclable see definitions in 3.1.

The definition of reusable and recyclable is in accord with Article 7, paragraph 2 of the European WEEE Directive, which includes component, material and substance reuse but excludes reuse of whole products.

4.3.1.9 Optional—Minimum 90% reusable/recyclable

Product Criterion: 90% or greater of materials and components by weight shall be reusable or recyclable within the current infrastructure and using demonstrated technologies.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Description of demonstrated recycling technologies
- c) Demonstration that material is normally recyclable or, if not, that there exists a market/use

References and Details: Declaration by manufacturer of the material and components and how they can be recycled or reused within the existing infrastructure and demonstrated technologies.

The definition of reusable and recyclable is in accord with Article 7, paragraph 2 of the European WEEE Directive that includes component, material and substance reuse but excludes reuse of whole products.

4.3.2 Design for recovery through disassembly

4.3.2.1 Optional—Manual separation of plastics

Product Criterion: All plastic parts >25 g used in product shall be manually separable by one person alone with commonly available tools into recyclable resin streams.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Supporting documentation demonstrating that qualifying plastic components are manually separable with commonly available tools into recyclable resin streams and identifying the plastic composition of each recyclable resin stream. Examples of documentation include:
 - i) A list of the commonly available tools required to separate plastic components; or
 - ii) A statement from a minimum of three recyclers individually, or at least one recycler working under an independent entity with electronics recycling expertise that is not a trade organization, confirming that the product design meets requirement 4.3.2.1; or
 - iii) Instructions for disassembly that show how resin streams can be separated.

References and Details: None available.

4.3.2.2 Optional—Marking of plastics

Product Criterion: Plastic components >25 g shall be marked with a material code in accordance with the identification and marking requirements of ISO 11469:2000.

Applies to: All plastic components >25 g.

Verification Requirements:

- a) Declaration from manufacturer
- b) Record of visual inspection

References and Details: ISO 11469:2000.

4.4 Product longevity/life cycle extension

4.4.1 Manufacturer warranty/service agreement

4.4.1.1 Required—Availability of additional three year warranty or service agreement

Product Criterion: Additional product warranty or service contract of at least three years shall be available for customer purchase.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Documentation of warranty or service contract

References and Details: None available.

4.4.2 Upgradeability

4.4.2.1 Required—Upgradeable with common tools

Product Criterion: Product shall be upgradeable with commonly available tools:

- Hard disk, digital versatile disc (DVD), floppy drive can be changed or extended [e.g., by a high performance serial bus (IEEE Std 1394™ [B5]) or universal serial bus (USB)]
- Memory and cards can be changed or extended [e.g., by a high performance serial bus (IEEE Std 1394)].

Applies to: Desktop personal computers and notebook personal computers only.

Verification Requirements:

- a) Declaration from manufacturer
- b) Supporting documentation demonstrating that the product is upgradeable with commonly available tools. Examples of documentation include:
 - i) A list of the commonly available tools required to upgrade product; or
 - ii) A statement from a minimum of three recyclers individually, or at least one recycler working under an independent entity with electronics recycling expertise that is not a trade organization, confirming that the product design meets requirement 4.4.2.1; or
 - iii) Instructions for upgrading the product.

References and Details: Upgrading of product may be limited to designated service entities or manufacturer.

4.4.2.2 Optional—Modular design

Product Criterion: Product shall have a modular design; for example, major components/processor can be changed.

Applies to: Desktop personal computers and notebook personal computers only.

Verification Requirements:

- a) Declaration from manufacturer
- b) Description of product modules
- c) Description of module change method

References and Details: None available.

4.4.3 Product life extension

4.4.3.1 Optional—Availability of replacement parts

Product Criterion: Spare parts and/or compatible replacement parts shall be available five years after end of production. Information on how to obtain replacement parts shall be provided to user.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Description of how product user is informed about how to obtain replacement parts

References and Details: None available.

4.5 Energy conservation

4.5.1 Power management system

4.5.1.1 Required—ENERGY STAR®

Product Criterion: All products shall comply with the requirements of U.S. ENERGY STAR. Manufacturer shall declare the version of ENERGY STAR to which the product is compliant.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Demonstration of ENERGY STAR certification or compliance with all applicable ENERGY STAR requirements

References and Details: All products shall comply with ENERGY STAR program requirements that are applicable for the declared product at the time of declaration to the Standard. If ENERGY STAR requirements are modified, all products previously declared to the Standard shall have a six month declaration update period before products that comply only with the previous version of ENERGY STAR must be declared to the new ENERGY STAR standard.

4.5.1.2 Optional—Early adoption of new ENERGY STAR specification

Product Criterion: Qualification to a new ENERGY STAR specification in advance of effective date.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Demonstration of ENERGY STAR certification

References and Details: Product may receive this optional early adopter point for qualification through the ENERGY STAR program to any new tier or new version of ENERGY STAR. The product will retain that optional point after the new tier or version becomes effective, but a single product can only receive one early adopter point.

For instance, ENERGY STAR 4.0 will be implemented through a series of new “tier” specifications. The specifications of each new tier will be adopted, and a period of time will be defined before they go into effect. Product must be formally certified to all specifications of a new tier of the ENERGY STAR program after the specifications have been adopted but before they go into effect.

4.5.2 Use of renewable energy

4.5.2.1 Optional—Renewable energy accessory available

Product Criterion: Accessory for powering product using renewable energy shall be commercially available for purchase with the product.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Commercial documentation of product availability

References and Details: Renewable energy includes solar, fuel cells, wind, geothermal, hydro and biomass. Although particular geothermal formations can be depleted, the natural heat in the earth is a virtually inexhaustible reserve of potential energy. Renewable resources also include some experimental or less-developed sources such as tidal power, sea currents, and ocean thermal gradients.

4.5.2.2 Optional—Renewable energy accessory standard

Product Criterion: Product shall be shipped with a standard component (either internal or external) that allows for use of renewable energy to power the product.

Applies to: All covered products.

Verification Requirements:

- a) Declaration from manufacturer
- b) Commercial documentation of product availability

References and Details: Renewable energy includes solar, fuel cells, wind, geothermal, hydro, and biomass. Although particular geothermal formations can be depleted, the natural heat in the earth is a virtually inexhaustible reserve of potential energy. Renewable resources also include some experimental or less-developed sources such as tidal power, sea currents, and ocean thermal gradients.

4.6 End of life management

4.6.1 Product take-back

4.6.1.1 Required—Provision of product take-back service

Annual Report Criterion: Manufacturer shall provide a take-back or recycling service at a competitive price that meets U.S. EPA’s “Plug-In To eCycling: Guidelines for Materials Management,” published May 2004.

Applies to: The marketing and sale to institutions of all products that are declared to conform to this Standard.

Verification Requirements:

- a) Declaration from manufacturer
- b) Documentation of take-back service
- c) Documentation of notification of user of take-back service
- d) Documentation of service certification to the U.S. EPA’s Plug-In To eCycling: Guidelines for Materials Management.
- e) Documentation that demonstrates the service is offered at a competitive price

References and Details: “Plug-In To eCycling: Guidelines for Materials Management” refers to the U.S. EPA document published in May 2004.

Purchaser is not obligated to contract with OEM for end of life management service.

End of life management services may be provided via contracts.

4.6.1.2 Optional—Auditing of recycling vendors

Annual Report Criterion: An annual audit is performed of all first, second, and third tier recyclers’ facilities; this ensures that the recycler is complying in full with all Plug-In Guidelines, as published in May 2004, and with any and all applicable regulations and laws.

Applies to: The marketing and sale to institutions of all products that are declared to conform to this Standard.

Verification Requirements:

- a) Declaration by manufacturer
- b) Documentation of on-site visits
- c) Documentation of all facilities' compliance with environmental, health, and safety and import/export laws

References and Details: None available.

4.6.2 Rechargeable battery recycling

4.6.2.1 Required—Provision of a rechargeable battery take-back service

Annual Report Criterion: Manufacturers shall provide a rechargeable battery take-back service at a competitive price that is equivalent to or better than that provided by the RBRC [B6]. In the annual report manufacturers must explain how the service applies to products declared to this Standard, and must provide information about that service.

Applies to: The marketing and sale to institutions of batteries in products that are declared to conform to this Standard.

Verification Requirements:

- a) Declaration from manufacturer
- b) Documentation of battery take-back service
- c) Documentation of notification of user of battery take-back service
- d) If a take back service other than RBRC is provided, the manufacturer shall provide the following:
 - i) Documentation of amounts returned
 - ii) Demonstration that, in comparison to RBRC, it is equivalent in cost or less expensive to the user and is equivalently convenient for the user

References and Details: Covers Lithium-ion batteries used in notebook personal computers. Affix RBRC seal, or appropriate recycling system notification, to battery and make information available on Web site or product literature. Information on RBRC is available online.

Participating in the RBRC Program as a Licensee qualifies for this criterion. If a program other than RBRC is provided, it must report amounts returned and demonstrate that in comparison to RBRC it is equivalent or less expensive in cost to the user and is equivalently convenient for the user.

4.7 Corporate performance

4.7.1 Corporate environmental policy

4.7.1.1 Required—Demonstration of corporate environmental policy consistent with ISO 14001

Annual Report Criterion: Manufacturer shall demonstrate the existence and public availability of a written corporate environmental policy consistent with all aspects of the requirements laid out in the environmental policy section of ISO 14001.

Applies to: All manufacturers with products that are declared to conform to this Standard.

Verification Requirements:

- a) Declaration from manufacturer
- b) Copy of environmental policy indexed to ISO 14001 requirements

References and Details: This criterion references the requirements of the environmental policy section of ISO 14001.

4.7.2 Environmental management system

4.7.2.1 Required—Self-certified environmental management system for design and manufacturing organizations

Annual Report Criterion: OEM shall have self-certified, with or without independent assessment, that the OEM-owned organizations that have significant responsibility for the design and manufacture of the declared product have an operational EMS that meets either:

- The requirements of ISO 14001 or EMAS; or
- The EMS requirements of the U.S. EPA National Environmental Performance Track program. This does not require participation in the Performance Track program.

Applies to: All manufacturers with products that are declared to conform to this Standard.

Verification Requirements:

- a) Declaration from manufacturer
- b) Documentation of self-certification to the specified standard

References and Details: ISO 14001 and EMAS are available online. The EMS requirements of the U.S. EPA Performance Track program are described in the Performance Track Application (questions 1 through 10) and the corresponding EMS Worksheet section of its Application Help instructions document.

4.7.2.2 Optional—Third-party certified environmental management system for design and manufacturing organizations

Annual Report Criterion: OEM shall certify that either:

- All OEM-owned design and manufacturing organizations have registered ISO 14001 or EMAS EMSs; or
- Its EMS meets EMS requirements of the U.S. EPA National Environmental Performance Track program, including a successful independent assessment by a qualified lead auditor.

Applies to: All manufacturers with products that are declared to conform to this Standard.

Verification Requirements:

- a) Declaration from manufacturer
- b) Documentation of registration to ISO or EMAS, or documentation of third-party certification to Performance Track

References and Details: ISO 14001 and EMAS are available online. There are three ways to get this point, all of which require independent assessment—through the ISO or EMAS process, or through the more flexible requirements of Performance Track.

4.7.3 Corporate reporting

4.7.3.1 Required—Corporate report consistent with Performance Track or GRI

Annual Report Criterion: OEM shall produce an annual report that meets the first three reporting requirements of the U.S. EPA National Environmental Performance Track program or the GRI Sustainability Reporting Guidelines (2002). The word “corporation” may be substituted for “facility” in the requirements.

Applies to: All manufacturers with products that are declared to conform to this Standard.

Verification Requirements:

- a) Declaration from manufacturer
- b) Copy of annual report
- c) Index to report showing reports compliance with first three Performance Track requirements (listed below in References and Details) and/or GRI.

References and Details: The Performance Track Annual Performance Report requirements applicable to this criterion include the following:

- A summary of the facility's EMS assessment activities and progress towards meeting EMS objectives and targets, including brief descriptions of audits conducted and improvements made
- A brief report on progress made in meeting the facility's environmental performance commitments
- A summary of the facility's public outreach activities

Manufacturers may meet the reporting criteria on the corporate level, rather than the facility level as specified in the Performance Track requirements.

An Annual Performance Report format and preparation instructions are available from the U.S. EPA Web site.

4.7.3.2 Optional—Corporate report based on GRI

Annual Report Criterion: Manufacturer shall produce an annual public report that is based on, but not limited to, certain elements of the GRI Sustainability Reporting Guidelines. An index shall be provided to indicate which portions of the GRI Sustainability Reporting Guidelines are covered and not covered in the report.

Applies to: All manufacturers with products that are declared to conform to this Standard.

Verification Requirements:

- a) Declaration from manufacturer
- b) Copy of annual report
- c) Index to report showing how report is based on GRI

References and Details: Information on the GRI is available online.

4.8 Packaging

4.8.1 Toxics in packaging

4.8.1.1 Required—Reduction/elimination of intentionally added toxics in packaging

Product Criterion: Heavy metals shall not be intentionally added to any packaging or packaging component, with the exception of the recycled content exemption cited in References and Details. For incidental presence, the sum of the concentration levels of lead, cadmium, mercury, and hexavalent chromium present in any package or packaging component shall not exceed 100 ppm by weight (0.01%).

Applies to: Packaging of products that are declared to conform to this Standard.

Verification Requirements:

- a) Declaration from manufacturer
- b) Supplier letter

References and Details: This criterion is drawn from the Model Toxics in Packaging legislation (referred to as “Act” below) developed by CONEG, which is available online.

“Incidental presence,” as defined in 3.1, is specified in CONEG’s Model Legislation for Toxics in Packaging. “Recycled content exemption” is specified in CONEG’s Model Legislation for Toxics in Packaging as the following: packages and packaging components that would not exceed the maximum contaminant levels set forth in subsection c of Section 4 of this Act but for the addition of recycled materials; and provided that the exemption for this subparagraph shall expire 1 January 2010. This exemption shall not apply to any cadmium, lead, mercury, or hexavalent chromium that has been recovered and/or separated from other materials for use as a metal or metallic compound.

4.8.2 Recyclable packaging materials

4.8.2.1 Required—Separable packing materials

Product Criterion: All non-reusable packaging shall be separable. All the packaging materials shall be able to be segregated into like materials without the use of tools (i.e., need to be able to have all the cardboard separable from the foams that are separable from the plastic bags).

Applies to: Packaging of products that are declared to conform to this Standard.

Verification Requirements:

- a) Declaration from manufacturer
- b) Documentation stating that dissimilar materials are not glued together.

References and Details: None available.

4.8.2.2 Optional—Packaging 90% recyclable and plastics labeled

Product Criterion: All plastics shall be identified by material type (SPI, DIN, or country specific) and 90% of the packaging (by weight) consists of readily recyclable materials that are commonly accepted in most recycling programs (and for which, on a regional basis, a recycling infrastructure is present) or can be composted or disposed of in municipal sewage programs. This includes: cardboard, boxboard, newsprint, and cornstarch. Pallets are excluded from the weight calculation.

Applies to: Packaging of products that are declared to conform to this Standard.

Verification Requirements:

- a) Declaration from manufacturer
- b) Demonstration that material is normally recyclable or, if not, that there exists a market/use
- c) Record of visual inspections

References and Details: For the definition of “recyclable” as applied to packaging refer to Section 260.7(d) of the FTC Guides for the Use of Environmental Marketing Claims [B12].

For some specific packaging materials, the presence or lack of an infrastructure at a regional level will need to be considered by the manufacturer wishing to demonstrate compliance with this criterion. Since this Standard will be used without regional variations, if a product is declared to this criterion, the manufacturer will need to provide a recycling vendor option in certain areas if the recycling infrastructure is not generally available in a region where the product will be used.

4.8.3 Recycled content

4.8.3.1 Required—Declaration of recycled content

Product Criterion: Manufacturer declares whether packaging contains recycled content, or does not. Manufacturer also declares approximate recycled content (by weight or volume specified by manufacturer) in the packaging materials used, with the approximate range of recycled content in each material.

Applies to: Packaging of products that are declared to conform to this Standard.

4.8.4 Take-back option

4.8.4.1 Optional—Provision of take-back program for packaging

Product Criterion: Manufacturer shall offer a take-back program for free where the packaging material can be collected/returned to manufacturer or recycler for reuse or recycling.

Applies to: The marketing and sale to institutions of packaging of products that are declared to conform to this Standard.

Verification Requirements:

- a) Declaration from manufacturer
- b) Documentation of take-back service
- c) Documentation of notification of user of take-back service

References and Details: None available.

4.8.5 Reuse option

4.8.5.1 Optional—Documentation of reusable packaging

Product Criterion: Manufacturer shall provide a reusable packaging process that reuses the packaging for the same or similar product, at a competitive price. Manufacturer designs packaging for a minimum of five reuses.

Applies to: Packaging of products that are declared to conform to this Standard.

Verification Requirements:

- a) Declaration from manufacturer
- b) Documentation of packaging reuse system

References and Details: None available.

Annex A

(informative)

Bibliography

- [B1] ASTM, D6866-04a, Test Methods for Determining the Biobased Content of Natural Range Materials Using Radiocarbon and Isotope Ratio Mass Spectrometry Analysis.¹⁵
- [B2] European Union Electrical and Electronic Equipment Directives.¹⁶
- [B3] German Federal Ministry of the Environment, Nature Protection and Nuclear Safety, and the German Federal Environmental Agency, The Blue Angel Environmental Label.¹⁷
- [B4] IEEE 100™, *The Authoritative Dictionary of IEEE Standards Terms*, Seventh Edition.
- [B5] IEEE Std 1394™, IEEE Standard for High Performance Serial Bus Bridges^{18, 19}
- [B6] Rechargeable Battery Recycling Corporation, Battery Recycling Program.²⁰
- [B7] U.K. Department of Trade and Industry, *RoHS Regulations, Government Guidance Notes*.²¹
- [B8] U.S. Federal Electronics Challenge.²²
- [B9] U.S. Department of Agriculture, *Farm Security and Rural Investment Act of 2002, Section 9002—Federal procurement of biobased products*. Pub. L. 107-171.²³
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- [B11] U.S. Department of Energy, Federal Energy Management Program, How to Buy Products with Low Standby Power.²⁵
- [B12] U.S. FTC, *Guides for the Use of Environmental Marketing Claims*.²⁶

¹⁵ ASTM publications are available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, USA (<http://www.astm.org/>).

¹⁶ European Union Directives are available from the portal Web site of the European Union at: <http://europa.eu.int/>.

¹⁷ Information available online at: <http://www.blauer-engel.de/>.

¹⁸ The IEEE standards referred to in this annex are trademarks of the Institute of Electrical and Electronics Engineers, Inc.

¹⁹ IEEE publications are available from the Institute of Electrical and Electronics Engineers, Inc., 445 Hoes Lane, Piscataway, NJ 08855-1331, USA (<http://standards.ieee.org/>).

²⁰ Information available online at: <http://www.rbrc.org/>.

²¹ RoHS publications are available online from the U.K. Department of Agriculture Available online at: <http://www.dti.gov.uk/>.

²² Information available online at <http://www.federalelectronicschallenge.net/>.

²³ Information available online at <http://www.ers.usda.gov/>.

²⁴ This Federal Register document is available online at: <http://www.gpoaccess.gov/fr/index.html>.

²⁵ U.S. Department of Energy publications are available at: <http://www.eere.energy.gov/femp/>.

²⁶ U.S. FTC publications are available online at: <http://www.ftc.gov/>.