

IEEE Standard for Environmental Assessment of Televisions

IEEE Computer Society

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Environmental Assessment Standards Committee

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IEEE Standard for Environmental Assessment of Televisions

Sponsor

Environmental Assessment Standards Committee
of the
IEEE Computer Society

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IEEE-SA Standards Board

Abstract: A clear and consistent set of environmental performance criteria for the design of televisions is established, providing an opportunity for manufacturers to secure market recognition for efforts to reduce the environmental impact of electronic products. This standard is also intended to provide a tool for government, institutional, corporate, and consumer purchasers to identify products that demonstrate environmental leadership. This standard is intended to be updated and revised on a periodic basis to continue to set a higher performance standard for leadership products.

Keywords: electronic product, electronic product design, environment, environmental leadership, environmental performance, IEEE 1680.3, televisions

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Introduction

This introduction is not part of IEEE Std 1680.3-2012, IEEE Standard for Environmental Assessment of Televisions.

IEEE Std 1680.3-2012 was developed due to a growing demand by 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 government, institutional, corporate, and consumer 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.

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1. Overview

1.1 Scope

This standard defines environmental performance for televisions, television combination units, and component television units, 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. This standard applies to products that are primarily marketed as televisions, and does *not* cover computer displays as defined by IEEE 1680.1TM [B12].¹

1.2 Purpose

This standard for televisions is part of the IEEE 1680TM family of standards that provides a clear and consistent set of performance criteria for the design of electronic products, and provides an opportunity to secure market recognition for efforts to reduce the environmental impact of electronic products. This *television standard* is intended to provide a tool for government, institutional, corporate, and consumer purchasers. Product manufacturers may use this tool to earn recognition in these markets, recognizing that certain criteria may not be applicable to all types of purchasers.

¹ The numbers in brackets correspond to those of the bibliography in Annex A.

The environmental performance criteria of this standard are intended to define a measure of environmental leadership in: the design and manufacture of televisions; the delivery of specified services that are associated with the sale of the product; 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.

1.3 Application

The environmental performance criteria in Clause 4 apply to televisions (as defined by the U.S. ENERGY STAR[®] Television Specification).^{2, 3} The principles and procedures identified in the base standard (IEEE Std 1680 [B11]) apply to televisions. For further information on application, see IEEE Std 1680. This standard is not applicable to computer displays as defined by IEEE Std 1680.1 [B12].

Manufacturer shall declare if its product is an *institutional product* as defined in 3.2.

1.4 Conformance with this standard

See IEEE Std 1680 [B11].

1.5 Product Registration Entity and Market Surveillance Entity

See IEEE Std 1680 [B11].

In addition to provisions of IEEE Std 1680, a Product Registration Entity (PRE) may be authorized to qualify an Electronics Take-Back Standard for use in conforming with applicable criteria in this standard if it determines that a particular standard meets all of the requirements listed in 4.6.2.1. The PRE shall utilize the processes defined as follows in qualifying standards.

A Market Surveillance Entity (MSE) shall develop and operate a system by which PREs can be authorized to qualify electronics take-back standards. Assessments for qualification of a standard shall be conducted by PREs that are independent of any business or financial relationships with electronics take-back service providers and subscribers. Any Standard Assessors (SAs) who conduct the assessments and qualifications shall disclose any potential conflicts of interest and shall possess the requisite technical competency to perform these activities. Qualified standards shall be listed on an MSE Registry.

Authorized PREs shall maintain the following:

- a) A publicly available listing of Electronics Take-Back Standard Assessors who have been trained and qualified to conduct such assessments.
- b) A Qualification Panel consisting of experts who have been trained and qualified to qualify standards.

² Information on references can be found in Clause 2.

³ ENERGY STAR is a registered trademark of U.S. Environmental Protection Agency.

PREs shall establish and maintain a qualification process, defined as follows, by which entities can propose an Electronics Take-Back Standard to be assessed for qualification for use in this end-of-life criterion:

- The process is initiated when an authorized PRE is contacted by an interested party with a request to have a standard be qualified. The request shall specify the countries/regions in which the standard is applicable and shall be qualified for use.
- The applicant shall engage one or more SAs to assess the standard according to the requirements of 4.6.2.1, and for its applicability to be used in the countries/regions being requested. For qualification, all requirements in the Electronics Take-Back Standard shall be fully implementable in the applicable countries/regions.
- The SA shall generate a recommendation for either qualification or rejection of the application, which is provided to the PRE.
- The PRE shall submit the recommendation to the Qualification Panel, which will make the final judgment regarding qualification of the standard and define the country(s)/region(s) in which the standard is applicable.
- The PRE shall provide information to an MSE on Qualified Standards for listing on an MSE Registry. All records of assessment and qualification shall be made publically available.
- Qualified standards shall be listed on an MSE Registry prior to any subscriber claiming they are being met when declaring to 4.6.2.1.

1.6 Verification of conformance with this standard

See IEEE Std 1680 [B11].

1.7 Qualified Verifier

See IEEE Std 1680 [B11].

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

In the case of EU Directives, which contain an adoption date in their title, when the EU repeals a directive and replaces it with a new directive, or otherwise edits and updates a directive, the new directive will apply as the referenced directive upon its enforcement date, unless otherwise explicitly stated in the normative reference.

ASTM D256, Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.⁴

⁴ ASTM publications are available from the American Society for Testing and Materials (<http://www.astm.org/>).

ASTM D6400, Standard Specification for Labeling of Plastics Designed to be Aerobically Composted in Municipal or Industrial Facilities.

ASTM D6868, Standard Specification for Labeling of End Items that Incorporate Plastics and Polymers as Coatings or Additives with Paper and Other Substrates Designed to be Aerobically Composted in Municipal or Industrial Facilities.

EN 13432, Requirements for packaging recoverable through composting and biodegradation—Test scheme and evaluation criteria for the final acceptance of packaging.⁵

ENERGY STAR Imaging Equipment Specification.⁶

European Union, Eco-Management and Audit Scheme (EMAS).⁷

European Union Directive 2006/95/EC of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.

European Union, European Commission Directive 2002/96/EC of the European Parliament and of the Council on waste electrical and electronic equipment (WEEE).⁸

European Union, European Commission Directive 2006/66/EC of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC.

European Union, European Council former Directive 2002/95/EC as amended by 2005/618/EC and 2011/65/EU 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 Regulation (EC) No. 1907/2006, Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).⁹

IEC 62474, Material declaration for products of and for the electrotechnical industry.¹⁰

ISO 179, Plastics—Determination of Charpy impact properties.¹¹

ISO 180, Plastics—Determination of Izod impact strength.

ISO 1043, Plastics—Symbols and Abbreviated Terms.

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

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

ISO 14025, Environmental labels and declarations—Type III environmental declarations—Principles and procedures.

⁵ Available at <http://www.en-standard.eu/>.

⁶ ENERGY STAR publications are available from the ENERGY STAR Website at <http://www.energystar.gov>.

⁷ EMAS publications of the European Union are available at http://ec.europa.eu/environment/emas/index_en.htm.

⁸ European Union Directives are available at <http://europa.eu>.

⁹ REACH regulations and information are available from the European Union at http://ec.europa.eu/environment/chemicals/reach/reach_intro.htm.

¹⁰ IEC publications are available from the International Electrotechnical Commission (<http://www.iec.ch/>). IEC publications are also available in the United States from the American National Standards Institute (<http://www.ansi.org/>).

¹¹ ISO publications are available from the ISO Central Secretariat (<http://www.iso.org/>). ISO publications are also available in the United States from the American National Standards Institute (<http://www.ansi.org/>).

ISO 14040, Environmental management—Life cycle assessment—Principles and framework.

ISO 14044, Environmental management—Life cycle assessment—Requirements and guidelines.

ISO 17088, Specifications for Compostable Plastics.

ISO/IEC 17025, General requirements for the competence of testing and calibration laboratories.¹²

Joint Industry Guide 101 (JIG-101 Ed. 4.0), Material Composition Declaration for Electrotechnical Products.¹³

Standard ECMA-341, Environmental Design Considerations for ICT & CE Products.¹⁴

United Nations Protocol on Pollutant Release and Transfer Registers (PRTR).¹⁵

U.S. EPA Toxics Release Inventory.¹⁶

3. Definitions, special terms, acronyms, and abbreviations

For the purposes of this document, the following terms and definitions apply. The *IEEE Standards Dictionary Online* should be consulted for terms not defined in this clause.¹⁷

3.1 Definitions

biobased: A material that is composed of biological materials, including renewable agricultural (plant, animal, and marine) and/or forestry materials.

biobased plastic material content: A percentage calculated by dividing the weight of biobased plastic material, divided by the full weight of the plastic material in the part or product.

chassis: A rigid framework onto which electronic and/or mechanical components may be mounted. The framework may also support the product case.

commodity materials: Materials derived from primary resources (mined or extracted from virgin raw materials) or from secondary raw materials that need no further processing (such as smelting), cleaning, separation, or recycling in order to be either sold directly on the retail market as new consumer products, or used as a direct feedstock in primary manufacturing processes.

connectors: An electrical or mechanical coupling device employed to connect one element with those of another element.

¹² ISO/IEC publications are available from the ISO Central Secretariat (<http://www.iso.org/>). ISO publications are also available in the United States from the American National Standards Institute (<http://www.ansi.org/>).

¹³ Available at http://www.ecaus.org/engineering/JIG_101_Ed_4%200.pdf.

¹⁴ Available from ECMA International at <http://www.ecma-international.org/publications/standards/Ecma-341.htm>.

¹⁵ Available at http://www.unece.org/env/pp/prtr/Protocol%20texts/PRTR_Protocol_e.pdf.

¹⁶ Available at <http://www.epa.gov/TRI/>.

¹⁷ *IEEE Standards Dictionary Online* subscription is available at http://www.ieee.org/portal/innovate/products/standard/standards_dictionary.html.

disposal: Final disposition (not including reuse or recycling) that includes incineration (with and without energy recovery), landfill, and any other placement of electronic equipment, components, or materials into or on land, water, and air.

disposal facility: Facilities that are licensed and permitted to provide final disposal for the specific wastes they accept, including incineration (with and without energy recovery) and landfill.

electronic components: An individual part or combination of parts that, when together, perform a design function(s) and are typically directly attached to a printed circuit board.

NOTE—Examples include cables, connectors, sockets, discrete printed circuit board components, and integrated circuits.¹⁸

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

electromagnetic interference (EMI) components: Components designed to mitigate or manage the effects of conducted or radiated electromagnetic energy that may interfere, interrupt, obstruct, or otherwise degrade or limit the performance of telecommunication or other electrical and electronic products.

electrostatic discharge (ESD) components: Components designed to mitigate or manage the effects of electrical discharges of static electricity that may build up on personnel or equipment, generated by interaction of dissimilar materials.

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

external enclosure: The external housing that protects the internal parts from environmental effects and prevents the user from coming into contact with moving, radiating, or current carrying components.

external plastic casings: Components of a product's external enclosure composed of plastic, exclusive of cabling.

final disposition: The last point in the recycling chain where materials have been converted into a commodity or properly treated in a disposal facility.

firmware: Software resident in the electronic product required for the product to operate as specified by the manufacturer.

hazardous characteristics: The potential adverse environmental and health effects attributable to a specific environmental agent, the mechanisms by which agents exert their toxic effects, and the associated dose, route, duration, and timing of exposure.

incineration: A disposal method that involves combustion of waste material converting it into heat, gas, steam, and ash, but not including smelting.

labels: Piece of paper, plastic, metal, or other material affixed to a component or product, on which is printed specific information.

light source: A device to supply radiant energy capable of exciting a phototube or photocell.

¹⁸ Notes in text, tables, and figures of a standard are given for information only and do not contain requirements needed to implement this standard.

materials of concern: A generic term to encompass hazardous, toxic and potentially hazardous materials that are defined by individual take-back standards, regardless of what the individual standard may refer to them as (i.e., *restricted materials*, *focus materials*, *hazardous wastes*, *toxics* or *toxic materials*, *designated materials*).

optical components: An individual part or combination of parts that are used in the creation, transmission, manipulation, or detection of light.

NOTE—Examples include lasers, light sources, optoelectronics, fiber optics, lenses, polarizers, mirrors, beam splitters, windows, and prisms.

packaging: All goods made of any materials of any nature to be used for the containment, protection, handling, delivery, and presentation of products, from raw materials to processed goods, from the producer to the user or the consumer.

NOTE—For the purposes of this standard, *packaging* is limited to (a) sales packaging or primary packaging, i.e., packaging conceived so as to constitute a sales unit to the final user or consumer at the point of purchase; (b) grouped packaging or secondary packaging, i.e., packaging conceived so as to constitute at the point of purchase a grouping of a certain number of sales units whether the latter is sold as such to the final user or consumer or whether it serves only as a means to replenish the shelves at the point of sale; it can be removed from the product without affecting its characteristics.

packaging component: Any individual assembled part of a package such as, but not limited to, (a) any interior or exterior blocking, bracing, cushioning, weatherproofing, exterior strapping, coatings, closures, inks, and labels; (b) tin-plated steel that meets American Society for Testing and Materials (ASTM) A-623; (c) electro-galvanized coated steel and hot-dipped coated galvanized steel that meets ASTM A-525 and A-879.

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.

product: A marketing model and chassis type, including all its included peripherals or options, but not including consumables.

recovered: Waste materials and byproducts that have been recovered or diverted from solid waste, but does not include materials and byproducts generated from, and commonly reused within, an original manufacturing process.

recovered fiber: Postconsumer fiber such as paper, paperboard, and fibrous materials from retail stores, office buildings, homes, and so forth, after they have passed through their end-usage as a consumer item, including used corrugated boxes, old newspapers and magazines, mixed waste paper, tabulating cards, and used cordage; and all paper, paperboard, and fibrous materials that enter and are collected from municipal solid waste, and manufacturing wastes such as dry paper and paperboard waste generated after completion of the papermaking process (that is, those manufacturing operations up to and including the cutting and trimming of the paper machine reel into smaller rolls or rough sheets) including, envelope cuttings, bindery trimmings, and other paper and paperboard waste resulting from printing, cutting, forming, and other converting operations; bag, box, and carton manufacturing wastes; and butt rolls, mill wrappers, and rejected unused stock; and repulped finished paper and paperboard from obsolete inventories of paper and paperboard manufacturers, merchants, wholesalers, dealers, printers, converters, or others. *Mill broke* means any paper waste generated in a paper mill prior to completion of the papermaking process. It is usually returned directly to the pulping process. Mill broke is excluded from the definition of *recovered fiber*.

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.