



# UL 110

## STANDARD FOR

## Sustainability for Mobile Phones



Standard for Sustainability for Mobile Phones, UL 110

Third Edition, Dated December 16, 2024

### **Summary of Topics**

***This Third Edition of ANSI/UL 110, Standard for Sustainability for Mobile Phones, dated December 16, 2024, reflects the latest ANSI approval dates and incorporates the proposals dated July 28, 2023, June 21, 2024 and October 25, 2024.***

The requirements are substantially in accordance with Proposal(s) on this subject dated July 28, 2023, June 21, 2024 and October 25, 2024.

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DECEMBER 16, 2024



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## UL 110

### Standard for Sustainability for Mobile Phones

First Edition – March, 2012  
Second Edition – March, 2017

### Third Edition

**December 16, 2024**

This ANSI/UL Standard for Sustainability consists of the Third Edition.

The most recent designation of ANSI/UL 110 as an American National Standard (ANSI) occurred on December 16, 2024. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

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## INTRODUCTION

### 1 General

1.1 This Standard is designed to reduce adverse environmental and social impacts associated with the design, manufacture, use, and end of life management of mobile phones. Prior to establishment of this Standard, there were various criteria to define the sustainability of mobile phones; however, they were not coordinated or combined into a set of metrics. The goal of this Standard is to establish a set of multi-sustainability performance criteria addressing the life cycle impacts of the product that may be used to evaluate the sustainability performance of mobile phones.

### 2 Scope

2.1 This Standard establishes multiple attribute sustainability criteria for mobile phones, covering the mobile phone, accessories shipped in the box with the mobile phone, and packaging.

2.2 The criteria in this Standard were developed based on the life cycle stages of mobile phones and corporate sustainability performance factors. Sustainability factors considered in this Standard are:

- a) Materials;
- b) Energy use;
- c) End of life management and extension of useful life;
- d) Packaging;
- e) Corporate practices;
- f) Manufacturing and operations.

Credit for innovations in these, or other factors not listed, is also addressed in this Standard.

2.3 This standard includes two types of criteria:

- a) Product criteria: Applies to the product declared to conform to the standard.
- b) Corporate criteria: Applies to the manufacturer that declares products to conform to this standard for at least the applicable operations.

Unless designated as corporate, criteria in this standard are product criteria.

### 3 Units of Measurement

3.1 For the purposes of this Standard, values shall be reported in accordance with the requirements of the specific criteria and shall be in the International System of Units (SI).

### 4 Undated References and Regional Conformity

4.1 Any undated reference to a code or standard appearing in this Standard shall be interpreted as referring to the latest edition of that code or standard. The exception shall be in the case where the criterion explicitly states a certain version or date to be used. 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.

4.2 With regard to being region or country specific, there are the two following options for criteria:

- a) If the criterion does not specify, the criterion shall be declared the same in all countries or regions for which the product is declared to conform to this standard. The approach used to conform to the criterion may vary by country or region; or
- b) The criterion may specify, "A manufacturer may declare this criterion differently in each country or region for which the product is declared to conform to this standard."

NOTE: Region means countries and territories whose independence may not be recognized by all countries (e.g., Taiwan).

4.3 For instances where there are multiple accessory combinations covered under a criterion, and for which there are not material differences associated with the product, the manufacturer shall choose a representative combination.

4.4 For instances where supplier documentation or test reports are covered under a criterion, the documentation must have been generated:

- a) Within 2 years of when the impacted item was first sold on the market, or
- b) Within 2 years of when the documentation was obtained, or
- c) When changes were most recently made to the impacted part that impacts the aspects to which the documentation applies,

whichever is most recent.

## 5 Glossary

5.1 For the purpose of this Standard, the following definitions apply.

### 5.1.1 3TG MINERALS –

- a) Columbite-tantalite (coltan), cassiterite, gold, wolframite, or their derivatives, which are limited to tantalum, tin, and tungsten, unless the U.S. Secretary of State determines that additional derivatives are financing conflict in the Democratic Republic of the Congo or an adjoining country; or
- b) Any other mineral or its derivatives determined by the U.S. Secretary of State to be financing conflict in the Democratic Republic of the Congo or an adjoining country.

Source: U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, Section 1502, and the Securities and Exchange Commission Rule.

5.2 ACCESSORIES – Components used external to the mobile phone, such as cables and external power supplies, essential to the operation of and shipped in the box with the mobile phone, not including the mobile phone. Printed materials and packaging are excluded. For instances where there are multiple accessory combinations associated with the product, and for which there are not material differences relevant to the aspects germane to the criterion, the manufacturer shall choose a representative combination.

5.3 AUTHORIZED REPAIR SERVICE PROVIDERS – A service provider is an entity or facility that has been provided permission directly by the mobile phone manufacturer to provide repair services. Manufacturer authorized service centers are entities or facilities approved by the manufacturer to perform

service on the product, including partnerships with wireless carriers and local 3PLs (third-party logistic providers).

**5.4 BIOBASED PLASTIC CONTENT** – The amount of biogenic carbon in a biosourced monomer(s) or filler(s) as determined by ASTM D6866, Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis multiplied by the percentage (by weight) of the components of the polymer(s) or filler(s) that originate from the bio-sourced monomer(s) in the compound. Biogenic carbon is derived, in whole or in significant part, from biological products or renewable domestic agricultural materials (including plant, animal, and marine materials) or forestry materials.

**5.5 CHEMICAL ABSTRACT SERVICES (CAS) NUMBER** – A unique numerical identifier assigned to every chemical by the CAS division of the American Chemistry Council.

**5.6 CONSUMER** – Individual and institutional purchaser of the product.

**5.7 DISPLAY ASSEMBLY** – A collection of assembled electronic components that displays data utilizing liquid crystal, LED, or other display technologies, as they are assembled into the product (i.e. may include a housing or casing).

**5.8 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)** – Part of an organization's management system used to develop and implement its environmental policy and manage its environmental aspects. (Reprinted from ISO 14050 Environmental management – Vocabulary.)

**5.9 EUTROPHICATION** – The process whereby a body of water receives excess nutrients that stimulate excess plant growth, usually resulting in the depletion of dissolved oxygen.

**5.10 FIBER BASED** – Materials primarily derived from natural fiber, including but not limited to wood, hemp, kenaf, palm, bamboo, starch, straw, cellulose and bagasse. A material that is composed of or derived from biological materials, including renewable agricultural (plant, animal, and marine) and/or forestry materials.

**5.11 FINAL ASSEMBLY** – The assembly process for a product after which it is sold directly to a customer, retail store or other distribution channel, without further assembly or manufacture, and does not include non-physical (e.g. software/firmware installation on the product) and/or packaging processes or services.

**5.12 GLOBAL WARMING** – The sustained increase of the average temperature of the earth's atmosphere, resulting in climatic change, due to the increased emission of greenhouse gases.

**5.13 GRI STANDARDS** – A sustainability reporting framework that can be used to measure and report on the economic, environmental, and social performance of an organization.

**5.14 HOMOGENEOUS MATERIAL** – A homogeneous material is either:

a) A material with a uniform composition throughout; or

b) A material that consists of a combination of materials, that cannot be disjointed or separated into different materials by mechanical actions such as unscrewing, cutting, crushing, grinding or abrasive processes.

**5.15 HOUSING** – External enclosure of the mobile phone that provides protection to the internal components of a mobile phone. Secondary cases on top of, or attached or applied to the exterior of the

manufacturer's original housing; and a mobile phone display, buttons and connection ports; are not included.

**5.16 LIFE CYCLE ASSESSMENT** – Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle. (Reprinted from ISO 14050 Environmental management – Vocabulary.)

**5.17 MANUFACTURER** – The legal entity that is the owner or the licensee of the brand or trademark under which the mobile phone in the scope of this standard is placed on the market and

- a) Manufactures a mobile phone, and/or
- b) Has a mobile phone designed or manufactured, and/or
- c) Acquires a mobile phone for sale under their brand or trademark

**5.18 MECHANICALLY DISJOINTED** – The materials can, in principle, be separated by mechanical actions such as:

- a) Unscrewing;
- b) Cutting;
- c) Crushing;
- d) Grinding; and
- e) Abrasive processes.

(Reprinted from the UK RoHS Guidance Producer Support Booklet.)

**5.19 MOBILE PHONE** – A wireless handheld device that is designed to send and receive transmissions through a cellular radiotelephone service including only the device itself and not packaging or accessories. Slates/tablets, as defined in the most recent applicable version of ENERGYSTAR specification, are excluded from this definition.

**5.20 NON-PROPRIETARY TOOL** – Legally available for purchase by the general public. If patented, the patent is available for licensing under Fair, Reasonable, and Non-Discriminatory terms.

**5.21 OZONE DEPLETION** – The destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life.

**5.22 PACKAGING** – A container enclosing the product along with any required protective materials designed to contain and protect from the point of manufacture to the point of sale. The packaging includes any individual assembled parts of the packaging such as, but not limited to, any interior or exterior blocking, bracing, cushioning, weatherproofing, exterior strapping, coatings, closures, inks, labels, bags, and films. The packaging does not include additional protective packaging used when transporting to a customer or reseller nor does it include printed information such as warranties and user guides.

**5.23 PLASTIC** – A material that contains, as an essential ingredient, one or more organic polymeric substances of large molecular weight, is solid in its finished state, and, at some stage in its manufacture or processing into finished articles can be shaped by flow. Rubber, textiles, adhesives, and paint, which may in some cases meet this definition are not considered plastics. Thermoset plastic and 3-D printed plastic are within the scope of this definition.

Adapted, with permission from ASTM D883-12 Standard Terminology Relating to Plastics, copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken PA 19428. A copy of the complete standard may be obtained from ASTM, [www.astm.org](http://www.astm.org).

**5.24 POINT OF SALE (POS) PACKAGING** – The packaging that contains the mobile phone and accessories as packaged for sale to the user.

**5.25 POST-CONSUMER RECYCLED MATERIAL** – Material that was used by an end-user which is no longer being used for its intended purpose.

**5.26 PRE-CONSUMER RECYCLED MATERIAL** – Material diverted from the waste stream during a manufacturing process having never reached the end user. Excluded is the reutilization of materials generated in a manufacturing process and capable of being reused as a substitute for raw material without being modified in any way.

**5.27 PRIMARY ENERGY DEMAND** – The demand for energy found in nature that has not been subjected to any conversion or transformation process. It is energy contained in raw fuels as well as other forms of energy received as input to a system.

**5.28 PRIMARY RECYCLERS** – The entity(ies) that is contracted by the manufacturer or its agent to provide recycling services. A manufacturer may have multiple primary recyclers (i.e. regional providers).

**5.29 PRODUCT** – The distinct mobile phone device identified by a unique stock keeping unit (SKU) identified and created to be available for sale to and used by a mobile phone end user and including all accessories contained in the POS packaging.

NOTE: The product does not include the packaging (see [5.22](#)).

**5.30 QUALIFIED REPAIR SERVICE PROVIDERS** – Companies and organizations which provide repair services for mobile phones that have demonstrated qualifications through training and experience. May include organizations that have partnerships with wireless carriers and local third-party logistics providers.

**5.31 RECYCLED CONTENT** – The proportion of pre-consumer and/or post-consumer recycled material, by mass, in a product or packaging.

**5.32 REFURBISHMENT** – The process by which electronic products or components are restored to a defined condition in function and form that is comparable to, or better than, a new mobile phone or component. The mobile phone or component's composition and design is not changed significantly. Refurbishment may include repair or replacement of a consumable item such as an EMC or quick-release tape, or of parts or components associated with repair.

**5.33 RENEWABLE ENERGY** – Energy derived from resources that are naturally replenished and can be sustained indefinitely. Potential sources include, but are not limited to, solar electric (photovoltaic), solar thermal, wind, geothermal, bio-gas, biomass, low-impact hydro and renewable cogeneration on-site or off-site, on- or off-grid.

**5.34 REUSE** – Using an object again, for its original purpose or as repurposed, without significantly altering the physical form of the object although the object may be cleaned, repaired or refurbished between uses. (Reprinted from IEEE Std. 1680.2-2012, Standard for Environmental Assessment of Imaging Equipment.)

**5.35 UNIQUE SUPPLIER PARTS** – Parts, components, or materials in the product manufacturers' Bill of Materials of the product that have a unique part number defined by the parts manufacturer.

5.36 WASTE – Material from the generator or holder that does not possess characteristics or meet technical specifications for use in the marketplace without further processing and will be discarded or released to the environment.

## COMPLIANCE, EVALUATION AND ASSESSMENT CRITERIA

### 6 Evaluation and Assessment Criteria

#### 6.1 General

6.1.1 This standard recognizes three levels of environmental performance. To conform to this standard, a product shall meet all required criteria. Products are certified to a specific achievement level by meeting all required criteria and a percentage of optional points, as described below.

6.1.2 For each optional criterion a total number of possible points is specified. No minimum number of optional points is needed from within each environmental performance category. The total number of points needed may be obtained by any combination of total points available. Overall, a maximum of 140 points are available (excluding criteria from which a particular product is excluded, or that are not applicable), not including innovation points. No more than eight innovation points, as described in this Standard, are permitted to be assigned to a candidate product. Innovation points achieved are added to the numerator and not the denominator.

#### 6.2 Levels of achievement

6.2.1 Three levels of achievement are available within this Standard: Bronze, Silver and Gold. [Table 6.1](#) below identifies the levels, with the associated points needed to achieve each level.

**Table 6.1**  
**Achievement Level – Optional Points Needed**

| Level of achievement | Points needed                                         |
|----------------------|-------------------------------------------------------|
| Bronze               | Required                                              |
| Silver               | Required criteria + 50 % of available optional points |
| Gold                 | Required criteria + 75 % of available optional points |

6.2.2 [Table 6.2](#) lists the required criteria for this Standard and Annex [A](#) contains the full list of criteria in this standard.

**Table 6.2**  
**Required Criteria**

| Category                     | Criteria                                                                                                                                                                                              |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Materials                    | <a href="#">7.1.1</a> , <a href="#">8.1.2</a> , <a href="#">9.1.1</a> , <a href="#">9.2.1</a> , <a href="#">9.2.4</a> , <a href="#">9.2.5</a>                                                         |
| Energy Use                   | <a href="#">10.1.3</a> , <a href="#">10.1.5</a>                                                                                                                                                       |
| End of Life Management       | <a href="#">11.1.1</a> , <a href="#">11.2.1</a> , <a href="#">11.3.1</a> , <a href="#">11.4.1</a> , <a href="#">11.5.1</a> , <a href="#">11.6.1</a> , <a href="#">11.7.1</a> , <a href="#">11.8.1</a> |
| Packaging                    | <a href="#">12.2.1</a> , <a href="#">12.4.1</a> , <a href="#">12.5.1</a> , <a href="#">12.7.1</a> , <a href="#">12.8.1</a>                                                                            |
| Corporate Practices          | <a href="#">13.1.1</a>                                                                                                                                                                                |
| Manufacturing and Operations | <a href="#">15.2.1</a> , <a href="#">15.3.1</a>                                                                                                                                                       |

## MATERIALS

### 7 Supply Chain Management of Materials

#### 7.1 Compliance with the European Union REACH Regulation

##### 7.1.1 Required – Compliance with the European Union REACH Regulation

The manufacturer shall disclose in accordance with Article 33 disclosure requirements for Substances of Very High Concern (SVHC) under the European REACH regulation.

#### 7.2 Reduction of European Union REACH Candidate SVHC substances

##### 7.2.1 Optional – Reduction of European Union REACH Candidate SVHC substances

7.2.1.1 The product articles shall not contain applicable substances included in the Candidate List of Substances of Very High Concern (SVHC) and REACH Annex XIV (List of Substances Subject to Authorization) above 0.1 % weight by weight, as per Article 33 paragraph 1 of the European Union REACH regulation and interpreted according to the European Chemicals Agency "Guidance on requirements for substances in articles C"<sup>1</sup>, excluding uses and levels allowable under the European Union RoHS directive and amendments.

<sup>1</sup> <http://echa.europa.eu/guidance-documents/guidance-on-reach>

7.2.1.2 Substances on the Candidate List of SVHC that have a Date of Inclusion on the Candidate List of two years or more prior to the date the product is first declared to conform to this criterion are subject to this requirement.

7.2.1.3 In order to identify applicable substances, manufacturers may pre-screen the European Union REACH Candidate List and Annex XIV using IEC 62474, Material Declaration for Products of and for the Electrotechnical Industry.

7.2.1.4 Manufacturer shall utilize a system to ensure that the product articles do not contain these substances above 0.1 % weight by weight, as per Article 33 paragraph 1 of the European Union REACH regulation and interpreted according to the European Chemicals Agency "Guidance on requirements for substances in articles." The system may include supplier management and trustworthiness assessment, Supplier Material Declaration, Disclosure to manufacturer, or analytical testing, to ensure that the product does not contain these substances.

Point value: 6

### 7.3 Substitutions assessment

#### 7.3.1 Optional – Substitutions assessment

7.3.1.1 The manufacturer shall provide documentation showing that a recognized competent and reliable scientific manufacturer or supplier expert, or such an expert in partnership with the manufacturer, has performed a chemical hazard assessment of alternatives to one or more substances that:

- a) Is on the "Declarable Substances List" of IEC 62474, Material Declaration for Products of and for the Electrotechnical Industry; or

b) Has been assessed using the GreenScreen® for Safer Chemicals<sup>2</sup> protocol and achieved a Benchmark™ score of 1 or 2.

<sup>2</sup> <http://www.greenscreenchemicals.org>

7.3.1.2 This evaluation shall be based on assessment tools equivalent to the U.S. EPA's Design for the Environment Alternative Assessment Methodology<sup>3</sup> (including but not limited to the Green Screen for Safer Chemicals methodology). The assessment shall cover human health and environmental endpoints including but not limited to those listed in U.S. EPA's Design for the Environment Program Alternatives Assessment Criteria for Hazard Evaluation<sup>4</sup>. All assessments shall consider the health and environmental impacts of transformation products associated with combustion.

<sup>3</sup> <https://www.epa.gov/saferchoice/design-environment-alternatives-assessments>

<sup>4</sup> <https://www.epa.gov/saferchoice/alternatives-assessment-criteria-hazard-evaluation>

7.3.1.3 Assessments shall be conducted on at least one substance used in the declared product or that has been used in previous products manufactured within 5 years prior to declaration of conformity to this standard.

7.3.1.4 All assessments shall be conducted by an assessor with the following qualifications:

- a) A degree in chemistry, chemical engineering, biology, toxicology, environmental sciences, or a related field relevant to the subject matter in the assessment;
- b) Training in conducting assessments using one of the above referenced methodologies, provided by recognized experts in conducting such assessments;
- c) Experience in conducting at least one assessment that has been peer reviewed by experts in the field or published in relevant journals or in repositories of reviewed assessments.

7.3.1.5 Assessments shall include the following information:

- a) Name of assessor.
- b) Demonstration that assessor meets the applicable qualifications.
- c) Whether the assessment has been verified by an independent third-party.
- d) Date of the assessment and date of expiration (if applicable).

7.3.1.6 If the manufacturer cannot identify one or more substances that meet the conditions of [7.3.1.5\(a\)](#), then the manufacturer must select one or more substances meeting the conditions of [7.3.1.5\(b\)](#) in order to claim this criterion

7.3.1.7 The manufacturer shall indicate whether it replaced the target substance with a lower-hazard substance to serve the same function in the product, based upon the results of the assessment. The manufacturer shall determine the weighting of hazard endpoints evaluated and provide documentation supporting its decision.

7.3.1.8 A manufacturer may only claim these points if it elects to use a lower-hazard alternative (e.g. higher-benchmark), or if the assessment demonstrates the target substance represents a lower hazard alternative (e.g. higher-benchmark) than the evaluated potential alternatives. An evaluation performed on a substance used in a manufacturer's prior-shipped product is considered sufficient if the application is