



iPod shuffle Environmental Report



Date introduced
July 14, 2015

Environmental Status Report

iPod shuffle is designed with the following features to reduce environmental impact:

- Brominated flame retardant-free
- PVC-free
- Beryllium-free
- Recyclable aluminum enclosure

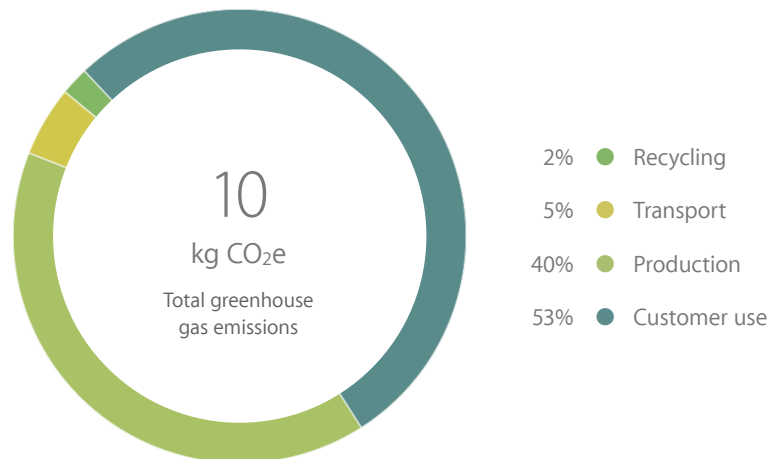
Apple and the Environment

Apple believes that improving the environmental performance of our business starts with our products. The careful environmental management of our products throughout their life cycles includes controlling the quantity and types of materials used in their manufacture, improving their energy efficiency, and designing them for better recyclability. The information below details the environmental performance of iPod shuffle as it relates to climate change, energy efficiency, material efficiency, and restricted substances.

Climate Change

Greenhouse gas emissions have an impact on the planet's balance of land, ocean, and air temperatures. Most of Apple's corporate greenhouse gas emissions come from the production, transport, use, and recycling of its products. Apple seeks to minimize greenhouse gas emissions by setting stringent design-related goals for material and energy efficiency. The chart below provides the estimated greenhouse gas emissions for iPod shuffle over its life cycle.*

Greenhouse Gas Emissions for iPod shuffle





Battery chemistry

- Lithium-ion polymer
- Free of lead, cadmium, and mercury

Energy Efficiency

iPod shuffle uses power-efficient components and software that intelligently manage power consumption. In addition, the Apple USB Power Adapter (sold separately) outperforms the strictest global energy efficiency standards for external power supplies. The following table details the energy efficiency of the Apple USB Power Adapter.

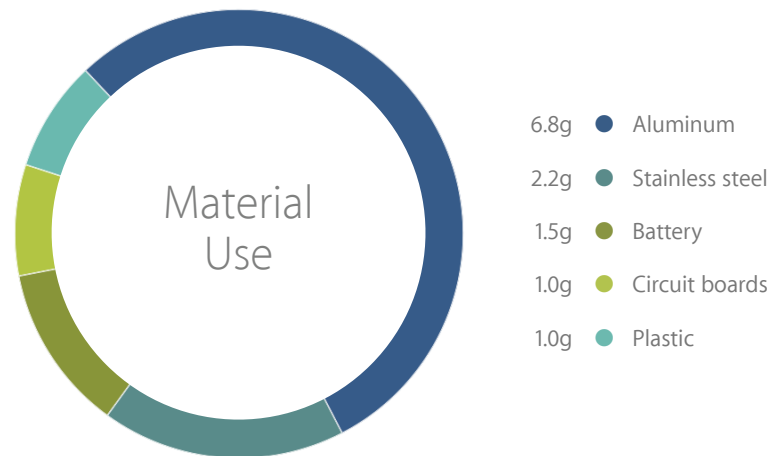
Energy Efficiency of the Apple USB Power Adapter

Mode	100V	115V	230V
Power adapter no-load	0.011W	0.011W	0.011W
Power adapter efficiency	75.0%	75.0%	74.0%

Material Efficiency

Apple's ultracompact product and packaging designs lead the industry in material efficiency. Reducing the material footprint of a product helps maximize shipping efficiency. It also helps reduce the energy consumed during production and material waste generated at the end of the product's life. The iPod shuffle enclosure is made of aluminum, a material highly desired by recyclers. The chart below details the materials used in iPod shuffle.

Material Use for iPod shuffle





The retail packaging for iPod shuffle consumes 62 percent less plastic, 60 percent less volume, and is 53 percent lighter than packaging of the previous-generation iPod shuffle (third generation).

Packaging

iPod shuffle packaging is extremely material efficient, allowing more units to be transported in a single shipping container. The following table details the materials used in iPod shuffle packaging.

Packaging Breakdown for iPod shuffle

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	4g	121g
Polycarbonate	21g	21g
Other plastics	0.3g	0.3g

Restricted Substances

Apple has long taken a leadership role in restricting harmful substances from its products and packaging. As part of this strategy, all Apple products comply with the strict European Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, also known as the RoHS Directive. Examples of materials restricted by RoHS include lead, mercury, cadmium, hexavalent chromium, and the brominated flame retardants (BFRs) PBB and PBDE. iPod shuffle goes even further than the requirements of the RoHS Directive by incorporating the following more aggressive restrictions:

- BFR-free
- PVC-free
- Beryllium-free



Recycling

Through ultra-efficient design and the use of highly recyclable materials, Apple has minimized material waste at the product's end of life. In addition, Apple offers and participates in various product take-back and recycling programs in 99 percent of the regions where Apple products are sold. All products are processed in the country or region in which they are collected. For more information on how to take advantage of these programs, visit www.apple.com/recycling.

Definitions

Greenhouse gas emissions: Estimated emissions are calculated in accordance with guidelines and requirements as specified by ISO 14040 and ISO 14044. Calculation includes emissions from the following life-cycle phases contributing to Global Warming Potential (GWP 100 years) in CO₂ equivalency factors (CO₂e):

- **Production:** Includes the extraction, production, and transportation of raw materials, as well as the manufacture, transport, and assembly of all parts and product packaging.
- **Transport:** Includes air and sea transportation of the finished product and its associated packaging from the manufacturing site to regional distribution hubs. Transport of products from distribution hubs to the end customer is modeled using average distances based on regional geography.
- **Use:** User power consumption assumes a three-year period. Consumption patterns are modeled according to European Commission and U.S. Environmental Protection Agency computer eco-design studies. Geographic differences in the power grid mix have been accounted for at a regional level.
- **Recycling:** Includes transportation from collection hubs to recycling centers and the energy used in mechanical separation and shredding of parts.

Energy efficiency terms: The energy efficiency values for the Apple USB Power Adapter are based on the following conditions:

- **Power adapter no-load:** Condition in which the Apple USB Power Adapter is connected to AC power, but not connected to iPod shuffle.
- **Power adapter efficiency:** Average of the power adapter's measured efficiency when tested at 100 percent, 75 percent, 50 percent, and 25 percent of the power adapter's rated output current.

Restricted substances: Apple defines a material as BFR-free and PVC-free if it contains less than 900 parts per million (ppm) of bromine and of chlorine. Apple defines a material as beryllium-free if it contains less than 1000 parts per million (ppm) of beryllium.

*Greenhouse gas emissions based on evaluation of iPod shuffle with 2GB capacity.

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