Apple Watch Series 2
Environmental Report

Date introduced
September 7, 2016

Environmental Status Report

Apple Watch Series 2 is designed with the following features to reduce environmental impact:

- Mercury-free
- Brominated flame retardant–free
- PVC-free
- Beryllium-free
- Complies with European REACH regulation on nickel
- Retail packaging contains at least 39 percent recycled content

Apple and the Environment

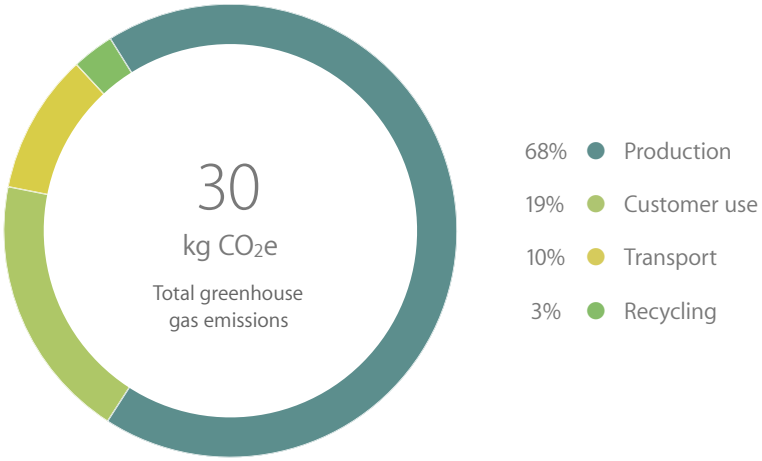
Apple believes that improving the environmental performance of our business starts with our products. The careful environmental management of our products throughout their life cycles includes controlling the quantity and types of materials used in their manufacture, improving their energy efficiency, and designing them for better recyclability. The information below details the environmental performance of Apple Watch Series 2 as it relates to climate change, energy efficiency, material efficiency, and restricted substances.[1]

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 Apple Watch Series 2 over its life cycle.

Greenhouse Gas Emissions for Apple Watch Series 2

42mm Aluminum Case with Sport Band[2]



Battery chemistry

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

Energy Efficiency

Apple Watch Series 2 uses power-efficient components and software that intelligently manages power consumption. The following table details the energy efficiency of the Apple USB Power Adapter.

Power Consumption for Apple USB Power Adapter

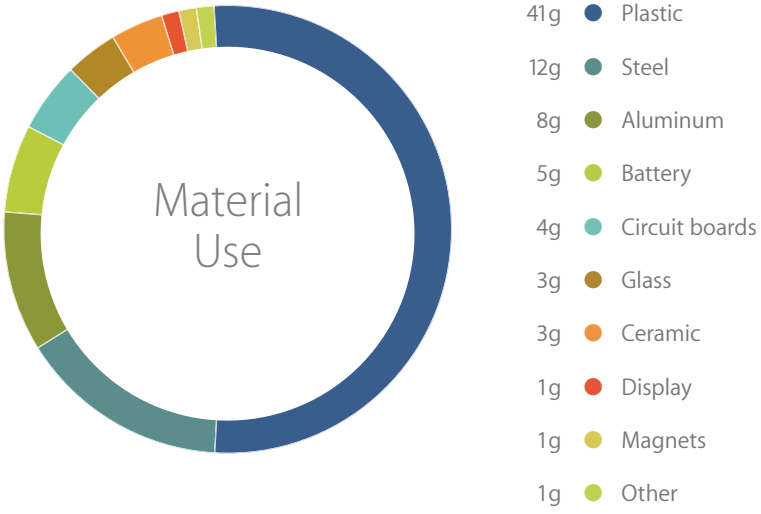
Mode	100V	115V	230V
Power adapter, no-load	0.014W	0.014W	0.012W
Power adapter efficiency	74.3%	74.3%	73.1%

Material Efficiency

Apple's ultra-compact 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 energy consumed during production and material waste generated at the end of the product's life. Apple Watch cases are available in stainless steel and aluminum—materials highly desired by recyclers. The chart below details the materials used in Apple Watch Series 2.

Material Use for Apple Watch Series 2

42mm Aluminum Case with Sport Band[3]



Apple Watch Series 2 retail packaging is made primarily from fibers sourced from sustainably managed forests, bamboo, and waste sugarcane fiber.[1]

Packaging

The retail box for Apple Watch Series 2 contains at least 39 percent recycled content. The retail box for the Apple Watch with an Aluminum Case is made primarily from fiber-based materials originating from recycled content, agricultural by-products, or sustainably managed sources. The following table details the complete set of materials used in the Apple Watch Series 2 packaging.

Packaging Breakdown for Apple Watch Series 2

42mm Aluminum Case with Sport Band[1]

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard, non-wood fiber)	416g	579g
Other plastics	1g	7g

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, and the European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals, also known as the REACH regulation. Apple Watch Series 2 goes further by incorporating more aggressive restrictions on mercury, brominated flame retardants (BFRs), PVC, and beryllium.

In addition, we paid special attention to the materials that will be in prolonged skin contact and applied rigorous controls for them. We developed a list of restricted substances based on existing Apple policies, leading standards, international laws and directives, and recommendations from toxicologists and dermatologists.

Apple then tested and evaluated materials for the concentration of restricted substances, using both Apple and independent laboratories. Toxicologists reviewed the test results to evaluate safety. Finally, we took the added step of having toxicologists review the chemical formation of each material that may have prolonged contact with the skin.

Only materials that passed these reviews were acceptable for use in Apple Watch Series 2.

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 countries 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 CO_2 equivalency factors (CO_2e):

- **Production:** Includes the extraction, production, and transport of raw materials, as well as the manufacture of the product 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.
- **Customer use:** Apple conservatively assumes a three-year period for power use by first owners. Product use scenarios are modeled on data that reflects intensive daily use of the product. Geographic differences in the power grid mix have been accounted for at a regional level.
- **Recycling:** Includes transportation from collection hubs to recycling centers as well as 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 with the Apple Watch Magnetic Charging Cable (1m) is connected to AC power, but not connected to Apple Watch Series 2.
- **Power adapter efficiency:** Average of the Apple USB Power Adapter with the Apple Watch Magnetic Charging Cable (1m) 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. A complete list of Apple's restrictions on hazardous substances is available at www.apple.com/environment/answers.

1. Product evaluations based on U.S. configurations of 42mm Aluminum Case with Sport Band. Values will vary by configuration.
2. Greenhouse gas emissions vary according to the configuration of Apple Watch. The following table details the estimated greenhouse gas emissions for U.S. configurations of Apple Watch over its life cycle.

Configuration	Greenhouse Gas Emissions
Apple Watch Series 2 42mm Aluminum Case with Sport Band	30kg CO_2e
Apple Watch Series 2 42mm Stainless Steel Case with Leather Loop Band	42kg CO_2e
Apple Watch Edition with Sport Band	157kg CO_2e

3. Excludes Apple Watch Magnetic Charging Cable and Apple USB Power Adapter. Mass will vary by configuration.