# 11-inch MacBook Air

Environmental Report



**Model MD711, MD712**

**Date introduced**

June 10, 2013

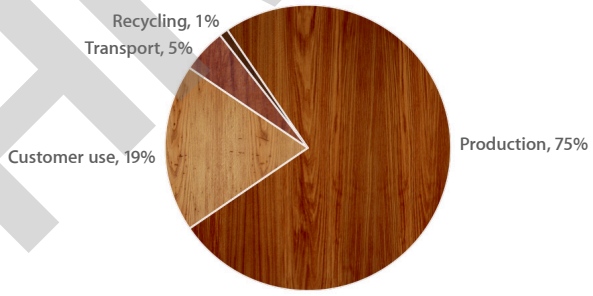
## Apple and the Environment

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 the 11-inch MacBook Air 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 the 11-inch MacBook Air over its life cycle.

**Greenhouse Gas Emissions for 11-inch MacBook Air**




**Total greenhouse gas emissions: 320 kg $CO_2e$**

## Energy Efficiency

Because one of the largest portions of product-related greenhouse gas emissions results from actual use, energy efficiency is a key part of each product's design. Apple products use power-efficient components, and software that intelligently powers them down during periods of inactivity. The result is that MacBook Air is energy efficient right out of the box.

The 11-inch MacBook Air outperforms the stringent requirements of the ENERGY STAR Program Requirements for Computers Version 5.2. Using only 5.9W in idle with the display on, it consumes less power than any Mac, and consumes 49 percent less energy than the original MacBook Air. The following table details power consumed in different use modes.

**Power Consumption for 11-inch MacBook Air**

| Mode | 100V | 115V | 230V |
|---|---|---|---|
| Off | 0.18W | 0.18W | 0.26W |
| Sleep | 0.65W | 0.66W | 0.74W |
| Idle—Display off / on | 1.6W / 5.4W | 1.6W / 5.5W | 1.6W / 5.9W |
| Power adapter, no-load | 0.008W | 0.010W | 0.028W |
| Power adapter efficiency | 87.7% | 87.8% | 87.1% |

### *Environmental Status Report*

The 11-inch MacBook Air is designed with the following features to reduce environmental impact:

- Arsenic-free display glass
- Mercury-free LED-backlit display
- Brominated flame retardant–free
- PVC-free[2]
- Recyclable aluminum enclosure

Meets ENERGY STAR® Version 5.2 requirements

Achieves a Gold rating from EPEAT[3]

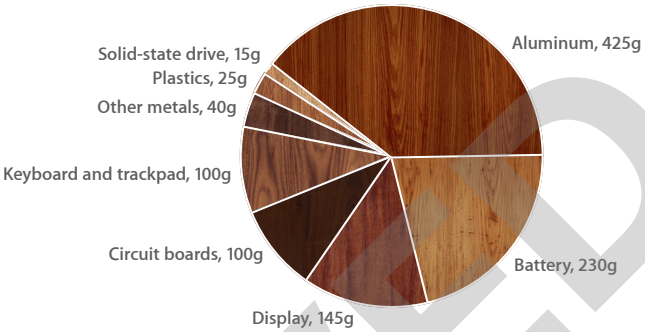
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The 11-inch MacBook Air consumes 84 percent less energy than the limit for the ENERGY STAR Program Requirements for Computers Version 5.2.

## 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 energy consumed during production and material waste generated at the product's end of life. Waste is further minimized through the use of batteries that last up to three times longer than typical notebook batteries. The 11-inch MacBook Air enclosure is made of aluminum, a material highly desired by recyclers. The chart below details the materials used in this model.

### Material Use for 11-inch MacBook Air




**Battery chemistry**

- Lithium-ion polymer, 38 Whr
- Free of lead, cadmium, and mercury




Packaging for the 11-inch MacBook Air is extremely material efficient, allowing at least 15 percent more units than the original MacBook Air to fit in each shipping container.

### Packaging

The packaging for the 11-inch MacBook Air uses corrugated cardboard made from over 30 percent recycled content, and molded fiber made entirely from recycled content. In addition, the packaging is extremely material efficient, allowing at least 15 percent more units to fit per shipping container than the original MacBook Air. The following table details the materials used in its packaging.

### Packaging Breakdown for 11-inch MacBook Air (U.S. Configurations)

| Material | Retail box | Retail and shipping box |
|---|---|---|
| Paper (corrugate, paperboard) | 329g | 627g |
| Molded fiber | — | 187g |
| High-impact polystyrene | 136g | 136g |
| Other plastics | 22g | 22g |

## 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. The 11-inch MacBook Air goes even further than the requirements of the RoHS Directive by incorporating the following more aggressive restrictions:

- Arsenic-free display glass
- Mercury-free LED-backlit display
- BFR-free
- PVC-free internal cables and power adapter DC cables
- PVC-free AC power cord available in all regions except India and South Korea

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## 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 95 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

**Electronic Product Environmental Assessment Tool (EPEAT):** A program that ranks computers and displays based on environmental attributes in accordance with IEEE 1680.1-2009. For more information, visit www.epeat.net.

**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 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 continental distribution hubs. Transport of products from distribution hubs to the end customer is not included.
- **Use:** User power consumption assumes a four-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 continental 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 values in this report are based on the ENERGY STAR Program Requirements for Computers Version 5.2 and/or ENERGY STAR Program Requirements for Single Voltage External AC-DC and AC-AC Power Supplies Version 2.0. For more information, visit www.energystar.gov.

- **Off:** Lowest power mode of the system when the battery is fully charged and the system is shut down. Also referred to as Standby.
- **Sleep:** Low-power state that is entered automatically after 10 minutes of inactivity (default), or by selecting Sleep from the Apple menu. Wake for network access enabled.
- **Idle—Display off:** System is on and has completed loading OS X; the display is set to sleep.
- **Idle—Display on:** System is on and has completed loading OS X; the display is set to its full brightness.
- **Power adapter, no-load:** Condition in which the power adapter is connected to AC power, but not connected to the system.
- **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 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.

1. Product evaluations based on U.S. configurations of Model MD712.
2. PVC-free AC power cord available in all regions except India and South Korea.
3. 11-inch MacBook Air achieved a Gold rating from EPEAT in the United States and Canada.

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