Mac mini
Environmental Report

Model MC238, MC239

Date introduced
October 20, 2009

Environmental Status Report

Mac mini is designed with the following features to reduce environmental impact:

- Brominated flame retardant–free
- PVC-free internal cables
- Highly recyclable aluminum and polycarbonate enclosure

Meets ENERGY STAR® Version 5.0 requirements.

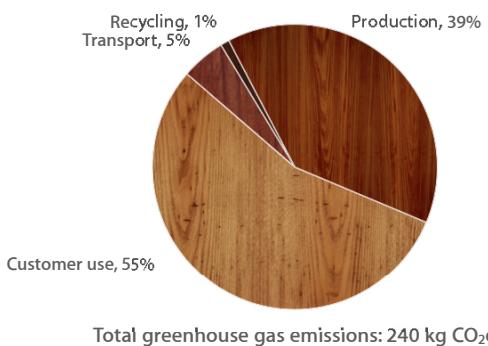Mac mini achieved a Gold rating from EPEAT. [1]

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 type of materials used in their manufacture, improving their energy efficiency, and designing them for better recyclability. The information below details the environmental performance of Mac mini as it relates to climate change, energy efficiency, restricted substances, and material efficiency.

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 Mac mini over its life cycle.

Greenhouse Gas Emissions for Mac mini

Recycling, 1%
Transport, 5%
Production, 39%
Customer use, 55%

Total greenhouse gas emissions: 240 kg CO_2e

Energy Efficiency

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

Mac mini outperforms the stringent requirements of the ENERGY STAR Program Requirements for Computers Version 5.0. Mac mini consumes 45 percent less power in idle mode than the Mac mini with Intel integrated graphics. The following table details the power consumed in different use modes:
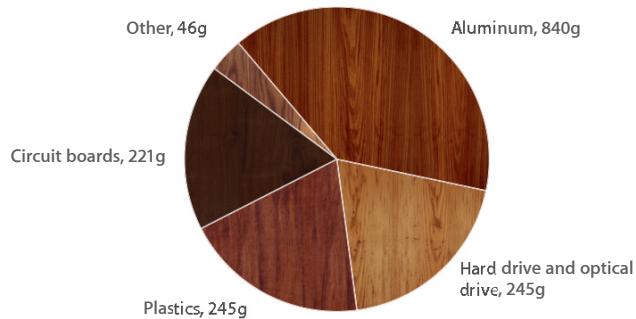
Power Consumption for Mac mini

Mode	100V	115V	230V
Power adapter, no-load	0.18W	0.20W	0.38W
Off	0.81W	0.80W	0.99W
Sleep	1.39W	1.39W	1.63W
Idle	13.5W	13.4W	13.8W
Power adapter efficiency	87%	87%	87%

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 as well as material waste generated at the end of the product's life. The Mac mini enclosure is made of highly recyclable aluminum and polycarbonate. The chart below details the materials used in Mac mini.

Material Use for Mac mini

Other, 46g
Aluminum, 840g
Circuit boards, 221g
Hard drive and optical drive, 245g
Plastics, 245g

Mac mini retail packaging uses 31 percent less volume than the Mac mini with Intel integrated graphics. In addition, the volume of the shipping box has decreased by 60 percent compared with the Mac mini with Intel integrated graphics. This allows Apple to send many more units per shipping container and to generate fewer transport-related greenhouse gas emissions.

Packaging

The new packaging design of Mac mini uses corrugated cardboard made from a minimum of 25 percent post-consumer recycled content, and is free of expanded polystyrene (EPS). The following table details the materials used in Mac mini packaging.

Packaging Breakdown for Mac mini (U.S. Configurations)

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard, molded fiber)	301g	609g
Other plastics	7g	7g

Restricted Substances

Apple has long taken the lead 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 PBB and PBDE brominated flame retardants (BFRs). Mac mini goes even further than the requirements of the RoHS Directive by incorporating the following more aggressive restrictions:

• Brominated flame retardant (BFR)-free

• All internal cables free of polyvinyl chloride (PVC)

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/environment/recycling/.

Definitions

Electronic Product Environmental Assessment Tool (EPEAT): A program that ranks computers and displays based on environmental attributes in accordance with IEEE 1680. 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 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 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 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 and 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 5.0 and 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 it is shut down. Also referred to as Standby.

- **Idle:** System is on and has completed loading Mac OS X.

- **Sleep:** Low power state that is entered automatically after 10 minutes of inactivity (default), or by selecting Sleep from the Apple menu. Wake-on-LAN is enabled.

- **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 chlorine.

1. Mac mini achieved a Gold rating from EPEAT in the United States and a Silver rating from EPEAT in Canada, France, Germany, and the UK.