Mac mini with Lion Server

Environmental Report

Model MC936
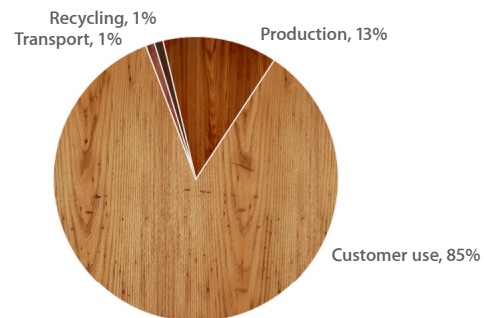
Date introduced
July 20, 2011

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 with Lion Server 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 Mac mini with Lion Server over its life cycle.

Greenhouse Gas Emissions for Mac mini with Lion Server

Recycling, 1%
Transport, 1%
Production, 13%
Customer use, 85%

Total greenhouse gas emissions: 1130 kg CO_2e

Energy Efficiency

Because one of the largest portions 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.

Mac mini with Lion Server outperforms the stringent requirements of the ENERGY STAR Program Requirements for Computers Version 5.2. The following table details the power consumed in different use modes.

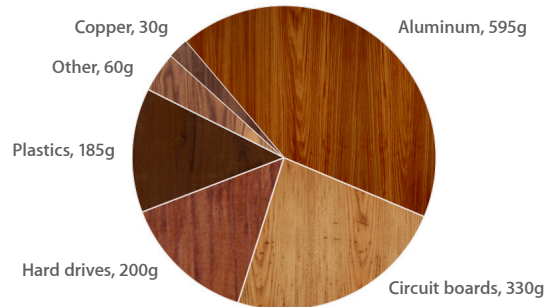**Power Consumption for Mac mini with Lion Server**

Mode	100V	115V	230V
Off	0.20W	0.21W	0.25W
Sleep	1.02W	1.02W	1.11W
Idle	11.98W	12.02W	12.36W
Power supply efficiency	89%	89%	89%

Material Efficiency

Apple's ultracompact product and packaging designs lead the industry in material efficiency. The Mac mini with Lion Server uses 68 percent less plastic than the first generation as well as a compact and highly recyclable aluminum enclosure, making it one of the most material-efficient desktop computers available. The chart below details the materials used in Mac mini with Lion Server. [3]

Material Use for Mac mini with Lion Server

Copper, 30g
Other, 60g
Plastics, 185g
Hard drives, 200g
Aluminum, 595g
Circuit boards, 330g

Mac mini with Lion Server retail packaging uses 15 percent less volume than the first-generation Mac mini Server and uses no expanded polystyrene (EPS).

Packaging

The corrugate and paperboard packaging for Mac mini with Lion Server is made from at least 50 percent recycled content, derived primarily from post-consumer sources. The following table details the materials used in its packaging.

Packaging Breakdown for Mac mini with Lion Server (U.S. Configurations)

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard, molded fiber)	285g	762g
Other plastics	9g	9g

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. Mac mini with Lion Server goes even further than the requirements of the RoHS Directive by incorporating the following more aggressive restrictions:

• Brominated flame retardant (BFR)–free

• Polyvinyl chloride (PVC)–free[1]

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 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 system is permanently on for a four-year period. Power draw is measured at a 50 percent load using the SPECPower benchmark tool.

- **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 5.2 for small-scale servers. For more information, visit www.energystar.gov.

- **Off:** Lowest power mode of the system when it's shut down. Also referred to as Standby.

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

- **Sleep:** Low power state that can be enabled in System Preferences or activated by selecting Sleep from the Apple menu. By default, servers are not set to enter sleep mode automatically. Wake-on-LAN is enabled (default).

- **Power supply efficiency:** Average of the power supply's measured efficiency when tested at 100 percent, 50 percent, and 20 percent of the power supply's rated output power.

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. PVC-free in all countries except China, Korea, and South Africa.

2. Mac mini with Lion Server achieved a Gold rating from EPEAT in the United States and Canada.

3. Material mass includes AC cord. Product mass will vary by configuration and region.