Mac Pro
Environmental Report

Models MD878, MQGG2
Date introduced
October 22, 2013

Environmental Status Report

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

- Brominated flame retardant–free
- PVC-free[3]
- Recyclable aluminum enclosure
- Energy Efficient Ethernet enabled[4]

Meets ENERGY STAR® requirements

Achieves a Gold rating from EPEAT[5]

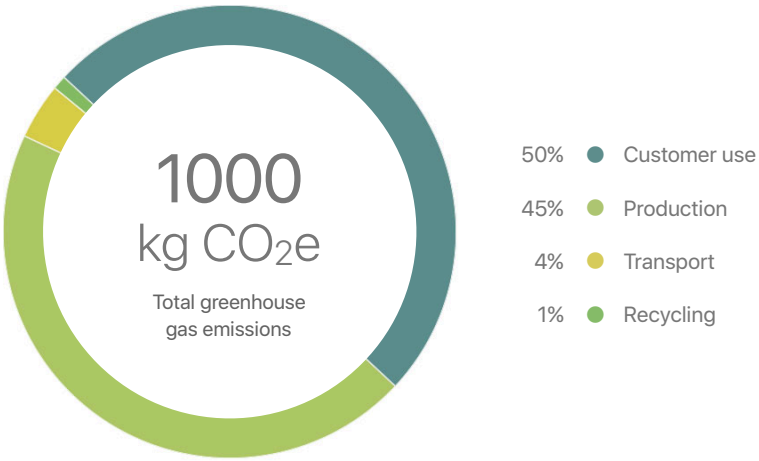
Apple and the Environment

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 Mac Pro 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 Mac Pro over its life cycle.[2]

Greenhouse Gas Emissions for Mac Pro



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. Mac Pro uses power-efficient components and software that intelligently manages power consumption. In addition, Mac Pro outperforms the stringent requirements of the ENERGY STAR Program Requirements for Computers. Mac Pro consumes 68 percent less power in idle mode than the previous-generation Mac Pro.[6] The following table details the power consumed by Mac Pro in different use modes.

Power Consumption for Mac Pro

Mode	100V	115V	230V
Off	0.25W	0.26W	0.37W
Sleep	2.80W	2.83W	2.93W
Idle	43W	43W	42W
Power supply efficiency	90.0%	90.0%	90.0%

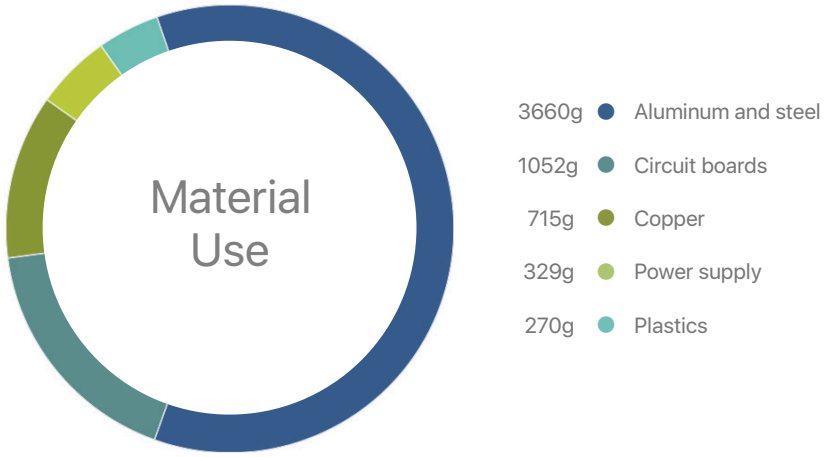
Material Efficiency

Continuous improvement of Mac Pro

Mac Pro is extremely material efficient, consuming 74 percent less aluminum and steel compared with the previous-generation Mac Pro.

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 end of the product's life. Mac Pro is made of aluminum and other materials highly desired by recyclers. The chart below details the materials used in Mac Pro.[7]

Material Use for Mac Pro



Mac Pro retail packaging consumes 82 percent less volume and weighs 84 percent less than packaging for the previous-generation Mac Pro, allowing three times more units to fit in an airline shipping container.

Packaging

The packaging for Mac Pro uses corrugated cardboard primarily made from fiber-based materials originating from recycled content or responsibly managed forests with a minimum of 33 percent post-consumer recycled content. The following table details the materials used in Mac Pro packaging.

Packaging Breakdown for Mac Pro

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	420g	970g
Molded fiber	—	160g
Expanded polystyrene	124g	124g
Other plastics	21g	21g

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 Pro goes even further than the requirements of the RoHS Directive by incorporating the following more aggressive restrictions:

- BFR-free
- PVC-free internal cables
- PVC-free AC power cord available in all regions except India and South Korea

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

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 for 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 regional distribution hubs. Transport of products from distribution hubs to end customer is modeled using average distances based on regional geography.
- **Customer use:** Apple conservatively assumes a four-year period for power use by first owners. Product use scenarios are based on historical customer use data for similar products, collected anonymously. 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 values in this report are based on the ENERGY STAR Program Requirements for Computers for desktop computers. For more information, visit www.energystar.gov.

- **Off:** Lowest power mode of the system when Mac Pro is shutdown. 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-on-LAN is enabled.
- **Idle:** System is on and has completed loading macOS.
- **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. 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 model MD878.
2. Greenhouse gas emissions vary according to the configuration of Mac Pro.
3. PVC-free AC power cord available in all regions except India and South Korea.
4. Energy Efficient Ethernet requires a compliant switch to enter low-power mode.
5. Mac Pro achieved a Gold rating from EPEAT in the United States and Canada.
6. Comparison of power in idle mode is between Mac Pro model MD878 and Mac Pro model MD771.
7. Excludes AC power cord. Mass will vary by configuration.