



iPod nano

Environmental Report



Date introduced

September 9, 2009

Model numbers

MC027, MC031, MC037, MC040, MC043, MC046, MC049, MC050, MC060, MC062, MC064, MC066, MC068, MC070, MC072, MC074, MC075

Environmental Status Report



iPod nano is designed with the following features to reduce environmental impact:

- Mercury-free LED-backlit display
- Arsenic-free display glass
- Brominated flame retardant-free
- PVC-free
- Highly recyclable aluminum enclosure
- Power adapter (sold separately) outperforms strictest global energy efficiency standards

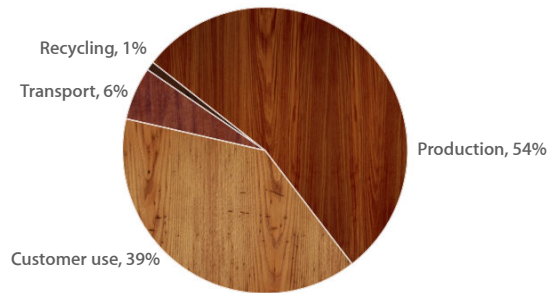
Apple and the Environment

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 for better recyclability. The information below details the life-cycle environmental performance of iPod nano 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 temperature. 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 life-cycle greenhouse gas emissions for iPod nano.

Greenhouse gas emissions for iPod nano



Total greenhouse gas equivalent: 15 kg CO₂e

Energy Efficiency

iPod nano uses power-efficient components and software that intelligently manages power consumption. In addition, the Apple USB Power Adapter (sold separately) outperforms the stringent requirements of the ENERGY STAR® specification for external power supplies. The following table details the energy efficiency of the Apple USB Power Adapter.

Energy efficiency of Apple USB Power Adapter (sold separately)

Mode	100V	115V	230V
Power adapter, no-load	0.22W	0.23W	0.25W
Power adapter efficiency	74%	75%	70%

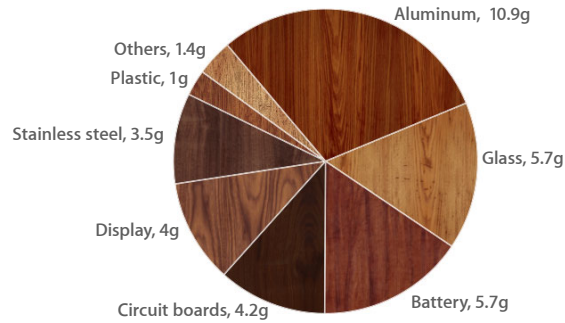
Battery chemistry

System battery: lithium-ion polymer
Free of lead, cadmium, and mercury

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 the amount of energy consumed during production and the material waste generated at end of life. The iPod nano enclosure is made of aluminum, a material highly desired by recyclers. The chart below details the materials used in the iPod nano.

Material use for iPod nano



iPod nano packaging is 32% lighter and consumes 54% less volume than the first-generation iPod nano.

Packaging

iPod nano packaging is extremely material efficient, allowing many units to be transported in a single shipping container. The following table details the materials used in iPod nano packaging.

Packaging breakdown for iPod nano

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	7g	119g
Polycarbonate	52g	52g
Other plastics	2g	2g

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 PBB and PBDE brominated flame retardants (BFRs). iPod nano goes even further than the RoHS Directive by incorporating the following more aggressive restrictions:

- Mercury-free LED-backlit display
- Arsenic-free display glass
- Brominated flame retardant-free
- Polyvinyl chloride (PVC)-free



Recycling

Through ultra-efficient design and use of highly recyclable materials, Apple has minimized material waste at product 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

Greenhouse gas emissions: Estimated emissions are calculated in accordance with guidelines and requirements as specified by ISO 14040 and ISO 14044. Calculation includes emissions contributing to Global Warming Potential (GWP 100 years) in CO₂ equivalency factors (CO₂e).

- **Production:** Includes the extraction, production, and transport of raw materials; the manufacture, transport, and assembly of all parts; and product packaging.
- **Transport:** Includes air and sea transportation of finished product and its associated packaging from manufacturing site to continental distribution hub. Transport of products from distribution centers to end customer is not included.
- **Use:** User power consumption assumes a three-year period. 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 continental level.
- **Recycling:** Includes transportation from collection hubs to recycling centers and the energy used in mechanical separation and shredding of parts.

Energy efficiency: The energy efficiency values in this report are based on the ENERGY STAR Program Requirements for Single Voltage External AC-DC and AC-AC Power Supplies Version 2.0.

- **Power adapter, no-load:** Condition in which the power adapter is connected to AC power, but not connected to the device.
- **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 output current.