



iPad Pro (12.9-inch) Environmental Report



Date introduced
June 5, 2017

Environmental Status Report

iPad Pro (12.9-inch) 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
- Beryllium-free
- Recyclable aluminum enclosure
- Greenhouse gas emissions from aluminum enclosure reduced by 87 percent
- Speaker enclosures made with 60 percent post-consumer recycled plastic



Meets ENERGY STAR® requirements



Achieves a Gold rating from EPEAT³

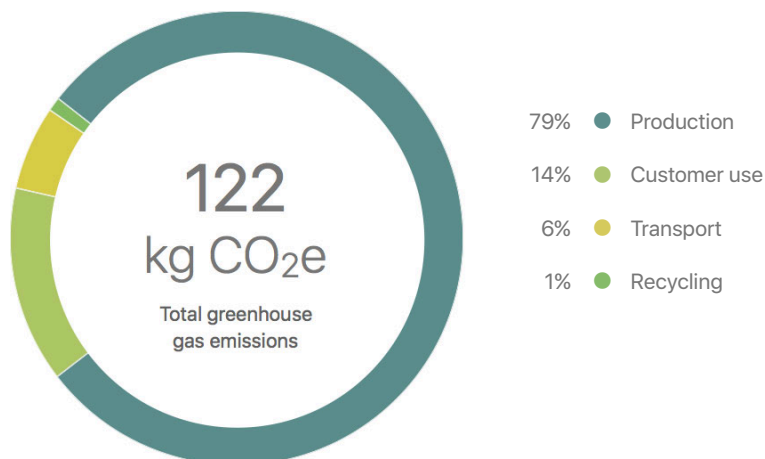
Apple and the Environment

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 iPad 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 designing products to be as energy efficient as possible, sourcing materials with lower-carbon emissions, and partnering with suppliers to procure clean energy to power their facilities. For example, by decreasing virgin aluminum use and increasing low-carbon aluminum manufacturing, the greenhouse gas emissions associated with the aluminum enclosure of iPad Pro (12.9-inch) are 87 percent less than those of the previous generation. The chart below provides the estimated greenhouse gas emissions for iPad Pro (12.9-inch) over its life cycle.²

Greenhouse Gas Emissions for iPad Pro (12.9-inch) 64GB with Wi-Fi model





Battery design

iPad Pro (12.9-inch) features a lithium-ion polymer battery chemistry that is free of lead, cadmium, and mercury. This allows for an extended lifespan and is designed to deliver up to 1000 full charge and discharge cycles before it reaches 80 percent of its original capacity.

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. iPad Pro (12.9-inch) uses power-efficient components and software that intelligently manages power consumption. In addition, iPad Pro (12.9-inch) outperforms the ENERGY STAR Program Requirements for Computers. The following table details the power consumed by iPad Pro (12.9-inch) in different use modes.

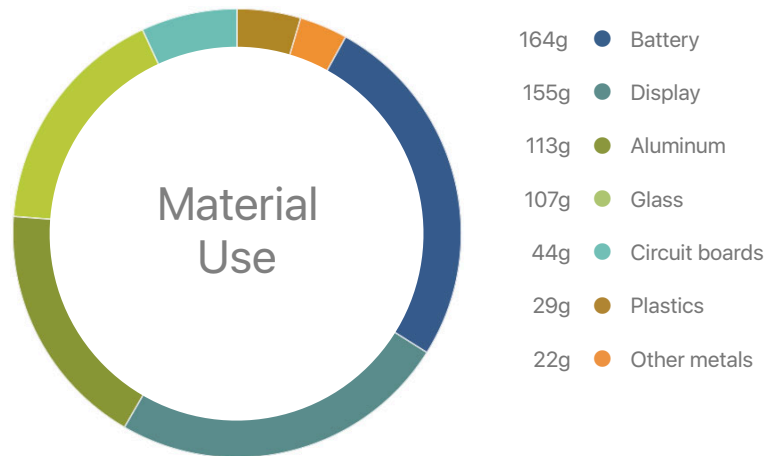
Power Consumption for iPad Pro (12.9-inch)

Mode	100V	115V	230V
Sleep	0.28W	0.28W	0.29W
Idle—Display on	3.32W	3.33W	3.62W
Power adapter, no-load	0.042W	0.041W	0.044W
Power adapter efficiency	81.0%	81.4%	77.5%

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 end of the product’s life. The iPad Pro (12.9-inch) enclosure is made of aluminum and other materials highly desired by recyclers. In addition, the speaker enclosure is made from 60 percent post-consumer content, which reduces dependence on petroleum-based plastics. The chart below details the materials used in iPad Pro (12.9-inch).⁴

Material Use for iPad Pro (12.9-inch)



Packaging

The packaging for iPad Pro (12.9-inch) is highly recyclable, and 100 percent of the fiber in its retail box is either recycled, an agricultural by-product, or sourced from responsibly managed forests. The following table details the materials used in iPad Pro (12.9-inch) packaging.¹

Packaging Breakdown for iPad Pro (12.9-inch)

Material	Retail box	Retail and shipping box
Fiber (corrugate, molded fiber)	368g	739g
Other plastics	11g	11g

U.S. retail packaging of iPad Pro (12.9-inch) contains 84 percent less plastic than the previous-generation packaging and contains at least 38 percent recycled content. In addition, the packaging fibers originate from responsibly managed forests, bamboo, and waste sugarcane.

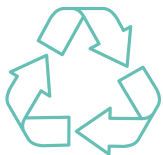
Restricted Substances

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. iPad Pro (12.9-inch) 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
- Beryllium-free

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 CO₂ equivalency factors (CO₂e):

- **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 three-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: iPad is tested with a fully charged battery and powered by the 12W USB Power Adapter with the Lightning to USB Cable (1m). The energy efficiency values in this report are based on the ENERGY STAR Program Requirements for Computers. For more information, visit www.energystar.gov.

- **Sleep:** Low power state that is entered automatically after 2 minutes of inactivity (default), or by pressing the Sleep/Wake button. Connected to Wi-Fi. All other settings were left in their default state.
- **Idle—Display on:** Display brightness was set as defined by ENERGY STAR Program Requirements for Computers, and Auto-Brightness was turned off. Connected to Wi-Fi. All other settings were left in their default state.
- **Power adapter, no-load:** Condition in which the 12W USB Power Adapter with the Lightning to USB Cable (1m) is connected to AC power, but not connected to iPad Pro (12.9-inch).
- **Power adapter efficiency:** Average of the 12W USB Power Adapter with the Lightning to USB Cable (1m) measured efficiency when tested at 100 percent, 75 percent, 50 percent, and 25 percent of the power adapter’s rated output 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. Apple defines a material as beryllium-free if it contains less than 1000 parts per million (ppm) of beryllium. 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 iPad Pro (12.9-inch) 64GB with Wi-Fi.

2. Greenhouse gas emissions vary according to the configuration of iPad Pro (12.9-inch). The following table details the estimated greenhouse gas emissions for U.S. configurations of iPad Pro (12.9-inch) over its life cycle.

Configuration	Greenhouse Gas Emissions
iPad Pro (12.9-inch) 64GB with Wi-Fi / Wi-Fi + Cellular	122 / 126 kg CO ₂ e
iPad Pro (12.9-inch) 256GB with Wi-Fi / Wi-Fi + Cellular	138 / 143 kg CO ₂ e
iPad Pro (12.9-inch) 512GB with Wi-Fi / Wi-Fi + Cellular	154 / 158 kg CO ₂ e

3. iPad Pro (12.9-inch) achieved a Gold rating from EPEAT in the United States and Canada.

4. Excludes Apple Lightning to USB Cable and Apple USB Power Adapter. Mass will vary by configuration.

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