# Product Environmental Report

## iPad Pro (12.9-inch)

Date introduced
April 20, 2021

### Made with better materials

**100%**
recycled aluminum enclosure

**98%**
recycled rare earth elements

### Tackling climate change

**100%**
We're committed to transitioning our entire manufacturing supply chain to 100 percent renewable electricity by 2030.

### Energy efficient

**62%**
less energy consumed than the ENERGY STAR® energy efficiency requirement

### Smarter chemistry[1]

- Arsenic-free display glass
- Mercury-free
- Brominated flame retardant–free
- PVC-free
- Beryllium-free

### Responsible packaging

**100%**
of the wood fiber comes from recycled and responsible sources

**96%**
of the packaging is fiber based, due to our work to use less plastic in packaging

### Apple Trade In

Return your device through Apple Trade In and we'll give it a new life or recycle it for free.

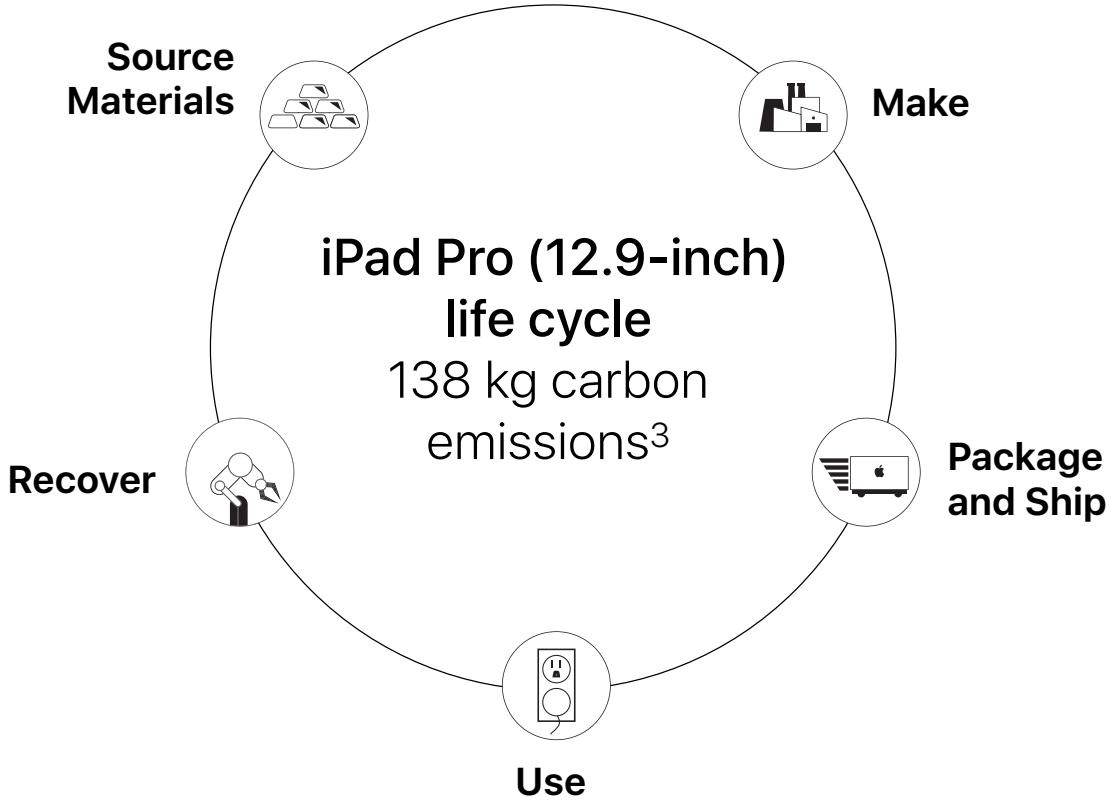
## Enclosure made with 100% recycled aluminum

This report includes data current as of product launch. Product evaluations are based on U.S. configuration of iPad Pro (12.9-inch).

# Taking responsibility for our products at every stage

We take responsibility for our products throughout their life cycles—including the materials they are made of, the people who assemble them, and how they are recycled at end of life. And we focus on the areas where we can make the biggest difference for our planet: reducing our impact on climate change, conserving important resources, and using safer materials.

**We sell millions of products. So making even small adjustments can have a meaningful impact.**

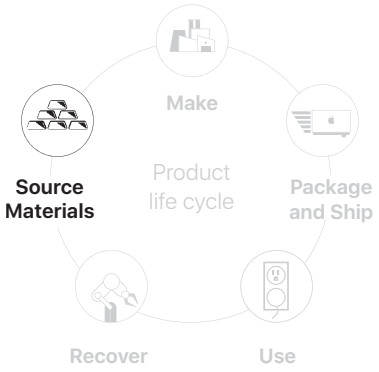



### Carbon footprint

We continue to make progress in reducing Apple's contribution to climate change—by focusing on making energy-efficient products with renewable or recycled materials and with renewable energy. While impacted by the new display technology, the iPad Pro (12.9-inch) carbon footprint remains about the same as the previous generation due to use of recycled content and supplier's use of renewable energy.[4] Apple is committed to using carbon life cycle assessments to identify opportunities to drive down product greenhouse gas emissions.

**iPad Pro (12.9-inch) life cycle carbon emissions**

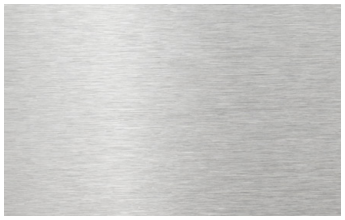
| | |
|---|---|
| 80% | Production |
| 10% | Transport |
| 9% | Use |
| <1% | End-of-life processing |




# Source Materials

iPad Pro (12.9-inch) is the first iPad made with 98 percent recycled rare earth elements.

To conserve important resources, we work to reduce the material we use and aim to one day source only recycled or renewable materials in our products. And as we make this transition, we remain committed to the responsible sourcing of primary materials. We map many materials, some to the mineral source, and establish the strictest standards for smelters and refiners. We're proud to be recognized as a worldwide leader in the responsible sourcing of minerals in our products. Our product designs also consider the safety of those who make, use, and recycle our products, restricting the use of hundreds of harmful substances. Our standards go beyond what's required by law to protect people and the environment.



**Aluminum**

Apple created an aluminum alloy made of 100 percent certified recycled aluminum, which we use for the enclosure of iPad Pro (12.9-inch).[5] This alloy delivers the same strength, durability, and flawless finish—without mining any new bauxite (aluminum ore) from the earth.

**Plastic**

We're transitioning to plastics from renewable or recycled sources as alternatives to fossil fuel–based plastics. For iPad Pro (12.9-inch), we use 35 percent or more recycled plastic in 11 components.

**Tin**

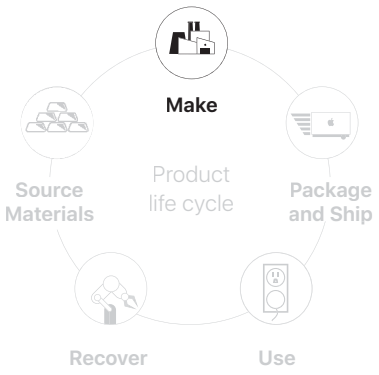
We use 100 percent recycled tin in the solder of the main logic board, True Tone flash, and wireless charger for Apple Pencil. Apple also requires 100 percent of identified tin, tantalum, tungsten, gold, and cobalt smelters and refiners to participate in third-party audits.[6]

**Rare earth elements**

We use 100 percent recycled rare earth elements in the magnets of the speakers and the enclosure, representing 98 percent of the total rare earth elements in the device—a first for iPad.

**Smarter chemistry**

iPad Pro (12.9-inch) is free of harmful substances like beryllium, brominated flame retardants, PVC, phthalates, arsenic in the display glass, and mercury.[1] And 100 percent of the materials in iPad Pro (12.9-inch) are covered by our Regulated Substances Specification. We go beyond what's required by aiming to understand the non-regulated substances in every part of every product—an effort that requires an industry-leading level of transparency through the entire supply chain. We consistently identify the makeup of over 75 percent by mass of iPad devices.




# Make

The Apple Supplier Code of Conduct sets strict standards for the protection of people in our supply chain and the planet that we all share. Every year, we assess our suppliers' performance in upholding the standards required by our Code.

We work closely with our suppliers to provide safe and healthy workplaces where people are treated with dignity and respect, and to reduce suppliers' environmental impact. Our requirements apply across our supply chain, and include the responsible sourcing of materials. From the strong foundation set by our Code, we go further—from helping suppliers transition to renewable energy, to providing educational opportunities for their employees, to supporting final assembly suppliers in reducing waste.

**Greener chemicals**

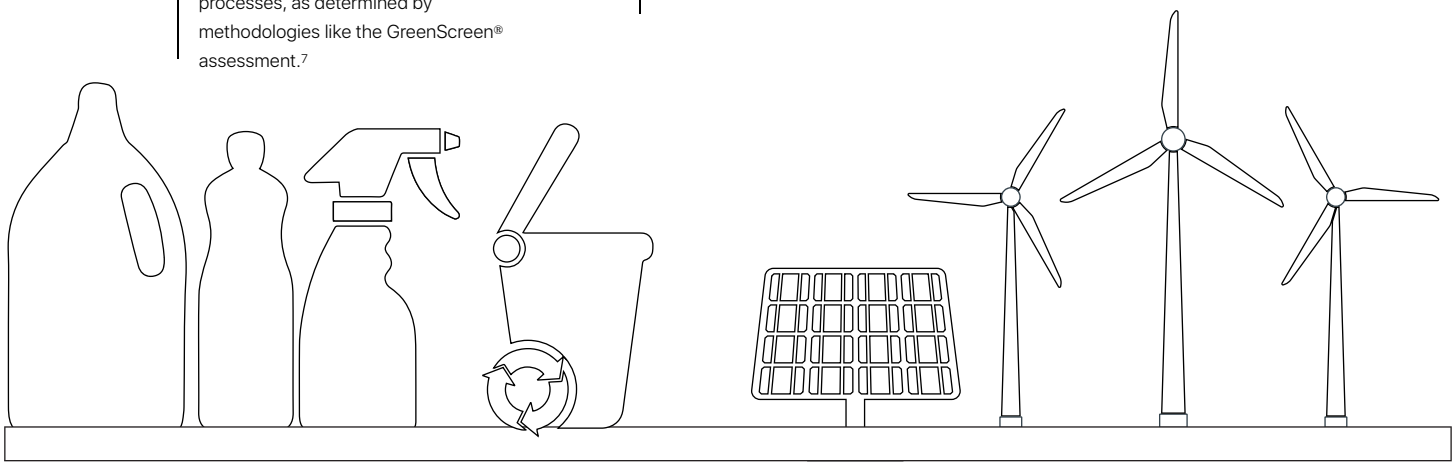
All iPad Pro (12.9-inch) final assembly supplier sites use safer cleaners and degreasers in their manufacturing processes, as determined by methodologies like the GreenScreen® assessment.[7]

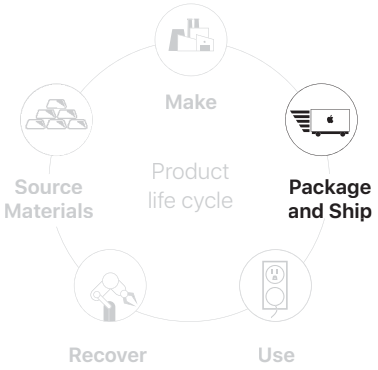
**Zero Waste to Landfill**

All established iPad Pro (12.9-inch) final assembly supplier sites do not generate any waste sent to landfill.[8]

**Supplier energy use**

All iPad Pro (12.9-inch) final assembly supplier sites are transitioning to 100 percent renewable energy for Apple production.






# Package and Ship

The iPad Pro (12.9-inch) packaging is made with 100 percent recycled and responsibly sourced wood fiber.

To improve our packaging, we are working to eliminate plastics, increase recycled content, and use less packaging overall. All of the wood fiber in our packaging is either recycled or comes from responsibly managed forests.[9] And we have protected or created enough responsibly managed forests to cover all the virgin wood fiber we use in our packaging.[10] This ensures working forests are able to regrow and continue to clean our air and purify our water.

**96%**

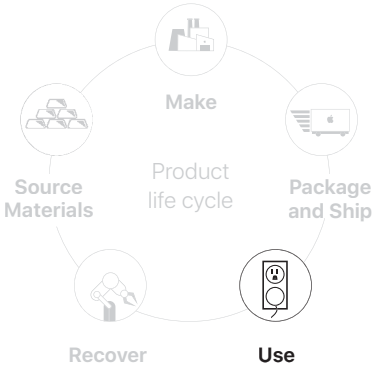
of the packaging[11] is fiber based, due to our work to use less plastic in packaging

**44%**

recycled content in fiber packaging

**100%**

of the virgin wood fiber in the packaging comes from responsibly managed forests[9]



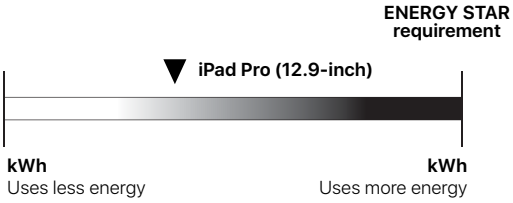

# Use

iPad Pro (12.9-inch) uses 62 percent less energy than the requirement for ENERGY STAR.

We design our products to be energy efficient, long lasting, and safe. iPad Pro (12.9-inch) uses software and power-efficient components that intelligently manage power consumption. We also run our own Reliability and Environmental Testing Labs, so our products go through rigorous testing before they leave our doors. Our support continues throughout each product's life cycle, with regular software updates to keep devices current and a network of authorized repair professionals to service them, if necessary.

**Energy consumption of ENERGY STAR–rated products**

Apple devices consistently rank among the high-performing products rated by ENERGY STAR, which sets specifications that typically reflect the 25 percent most energy-efficient devices on the market. iPad Pro (12.9-inch) consumes 62 percent less energy than the requirement for ENERGY STAR.[12]



## Designed to last

iPad Pro (12.9-inch) features a durable unibody construction and has undergone rigorous testing for durability.

## Made with smarter chemistry

We apply rigorous controls for materials users touch—all based on recommendations from toxicologists and dermatologists.

# Recover

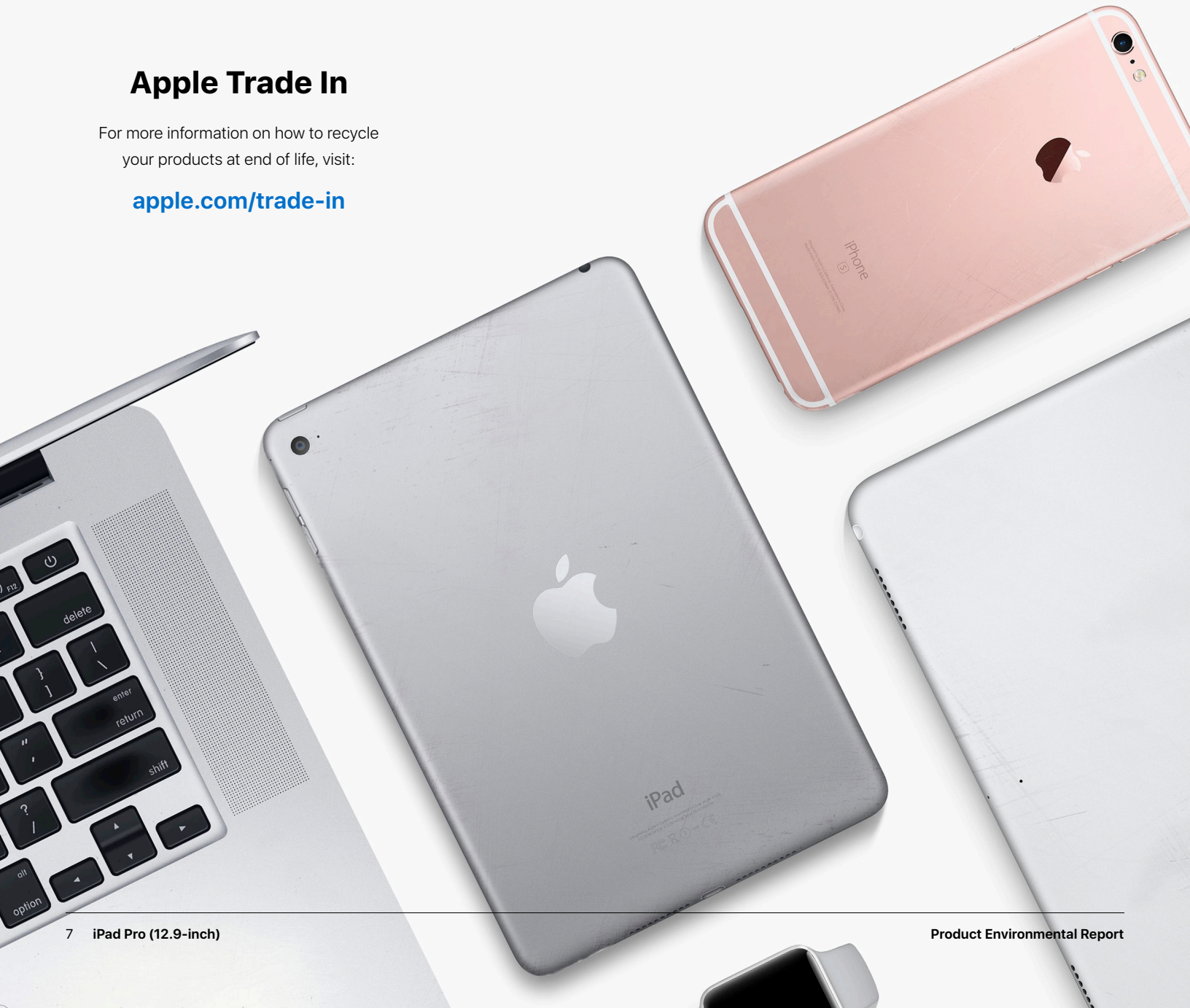
Return your product with Apple Trade In and we'll ensure it has a long life or recycle it for free.

When products are used longer, fewer resources are extracted from the earth. That's why we launched Apple Trade In—it offers customers a seamless way to return their old devices and accessories to Apple. Eligible devices can be traded in for credit or an Apple Store Gift Card, while accessories and other devices can be recycled for free.[13] We also offer and participate in product take-back and recycling collection programs for 99 percent of the countries where we sell products—and we hold our recyclers to high standards. Our efforts to keep harmful substances out of our products also mean our materials are safer to recover and reuse.

## Apple Trade In

For more information on how to recycle your products at end of life, visit:

**apple.com/trade-in**



# Definitions

**Recycled materials:** Recycling makes better use of finite resources by sourcing from recovered rather than mined materials. Recycled content claims for materials used in our products have been verified by an independent third party to a recycled content standard that conforms to ISO 14021.

**Bio-based plastics:** Bio-based plastics are made from biological sources rather than from fossil-fuel sources. Bio-based plastics allow us to reduce reliance on fossil fuels.

**Renewable materials:** We define bio-materials as those that can be regenerated in a human lifespan, like paper fibers or sugarcane. Bio-materials can help us use fewer finite resources. But even though bio-materials have the ability to regrow, they are not always managed responsibly. Renewable materials are a type of bio-material managed in a way that enables continuous production without depleting earth's resources. That's why we focus on sources that are certified for their management practices.

**Supplier Clean Energy Program:** Since the electricity used to make our products is the largest contributor to our overall carbon footprint, we're helping our suppliers become more energy efficient and transition to new renewable energy sources. We're committed to transitioning our entire manufacturing supply chain to 100 percent renewable electricity by 2030.

**Carbon footprint:** Estimated emissions are calculated in accordance with guidelines and requirements as specified by ISO 14040 and ISO 14044. There is inherent uncertainty in modeling carbon emissions due primarily to data limitations. For the top component contributors to Apple's carbon emissions, Apple addresses this uncertainty by developing detailed process-based environmental models with Apple-specific parameters. For the remaining elements of Apple's carbon footprint, we rely on industry average data and assumptions. 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 manufacturing site to regional distribution hubs. Transport of products from distribution hubs to end customers is modeled using average distances based on regional geography.
- **Use:** Apple assumes a three- or four-year period for power use by first owners based on the product type. Product use scenarios are based on historical customer use data for similar products. Energy use is simulated in various ways; for example, by modeling daily battery drain or through performing activities like movie and music playback. Geographic differences in the power grid mix have been accounted for at a regional level.
- **End-of-life processing:** Includes transportation from collection hubs to recycling centers and the energy used in mechanical separation and shredding of parts. For more information on the carbon footprint, visit apple.com/environment/answers.

# Endnotes

[1] Apple defines its restrictions on harmful substances, including definitions for what Apple considers to be "free of," in the Apple Regulated Substances Specification. Every Apple product is free of PVC and phthalates with the exception of AC power cords in India, Thailand (for 2-prong AC power cords), and South Korea, where we continue to seek government approval for our PVC and phthalates replacement. Apple products comply with the European Union Directive 2011/65/EU and its amendments, including exemptions for the use of lead such as high-temperature solder. Apple is working to phase out the use of these exempted substances where technically possible.

[2] iPad Pro (12.9-inch) achieved a Gold rating in the United States and Canada, in accordance with IEEE 1680.1 or UL 110, and is listed as such on the Electronic Product Environmental Assessment Tool (EPEAT) Registry. EPEAT registers computers, displays, and mobile phones based on environmental requirements in these standards. For more information, visit www.epeat.net.

[3] Greenhouse gas emissions were calculated using a life cycle assessment methodology in accordance with ISO 14040 and 14044 standards and based on iPad Pro 12.9-inch (5th generation) Wi-Fi + Cellular 128GB. We often update our carbon models to leverage new information. As a result, our estimate for the carbon footprint of the previous generation—iPad Pro 12.9-inch (4th generation) Wi-Fi + Cellular 128GB—increased from 140 kg $CO_2e$ (as published in its Product Environmental Report) to 142 kg $CO_2e$.

| | iPad Pro (12.9-inch) Wi-Fi + Cellular carbon footprint | |
|---|---|---|
| | 5th generation | 4th generation |
| 128GB | 138 kg $CO_2e$ | 142 kg $CO_2e$ |
| 256GB | 166 kg $CO_2e$ | 153 kg $CO_2e$ |
| 512GB | 187 kg $CO_2e$ | 180 kg $CO_2e$ |
| 1TB | 228 kg $CO_2e$ | 227 kg $CO_2e$ |
| 2TB | 286 kg $CO_2e$ | — |

# Endnotes

[4] iPad Pro 12.9-inch (4th generation) Wi-Fi + Cellular 128GB was used for comparison as the most recently released and similar device. Preproduction iPad Pro 12.9-inch (5th generation) Wi-Fi + Cellular 128GB was compared to shipping iPad Pro 12.9-inch (4th generation) Wi-Fi + Cellular 128GB since these are the two lowest storage configurations offered.

[5] Recycled material claim applies to the enclosure and is based on auditing done by UL LLC.

[6] Third-party assessments seek to confirm sourcing practices and are part of our responsible sourcing program. In addition, our efforts consider conflict, human rights, and other risks.

[7] Chemicals that meet GreenScreen® benchmark 3 or 4 or other equivalent methodologies like U.S. EPA Safer Choice are considered safer and preferred for use. Final assembly sites for iPad Pro (12.9-inch) are among the final assembly supplier facilities that have adopted these safer cleaners. GreenScreen® is a comprehensive hazard assessment tool that evaluates substances against 18 different criteria. For more information, visit www.greenscreenchemicals.org.

[8] All established final assembly supplier sites—or those that have been Apple suppliers for more than one year—for iPad Pro (12.9-inch) are third-party certified as Zero Waste by UL LLC (UL 2799 Standard). UL requires at least 90 percent diversion through methods other than waste to energy to achieve Zero Waste to Landfill (Silver 90–94 percent, Gold 95–99 percent, and Platinum 100 percent) designations.

[9] Responsible sourcing of wood fiber is defined in Apple's Sustainable Fiber Specification. We consider wood fibers to include bamboo.

[10] For more information about our work to protect and create responsibly managed forests, please read our Environmental Progress Report.

[11] Breakdown of U.S. retail packaging by weight.

[12] Energy consumption and energy efficiency values are based on the ENERGY STAR Program Requirements for Computers, including the max energy allowance for iPad Pro (12.9-inch). For more information, visit www.energystar.gov. ENERGY STAR and the ENERGY STAR mark are registered trademarks owned by the U.S. Environmental Protection Agency.

iPad Pro (12.9-inch) is tested with a fully charged battery and powered by the 20W USB-C Power Adapter with the USB-C Charge Cable (1m).

- 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 20W USB-C Power Adapter with the USB-C Charge Cable (1m) is connected to AC power, but not connected to the system.
- Power adapter efficiency: Average of the 20W USB-C Power Adapter with the USB-C Charge Cable (1m) measured efficiency when tested at 100 percent, 75 percent, 50 percent, and 25 percent of the power adapter's rated output current.

| | Power consumption for iPad Pro (12.9-inch) | | |
|---|---|---|---|
| **Mode** | **100V** | **115V** | **230V** |
| Sleep | 0.30W | 0.32W | 0.35W |
| Idle—Display on | 3.90W | 3.92W | 3.97W |
| Power adapter, no-load | 0.04W | 0.04W | 0.05W |
| Power adapter efficiency | 86.8% | 87.9% | 87.8% |

[13] Trade-in values vary based on the condition, year, and configuration of your trade-in device, and may also vary between online and in-store trade-in. You must be at least 18 years old. In-store trade-in requires presentation of a valid, government-issued photo ID (local law may require saving this information). Additional terms from Apple or Apple's trade-in partners may apply.

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