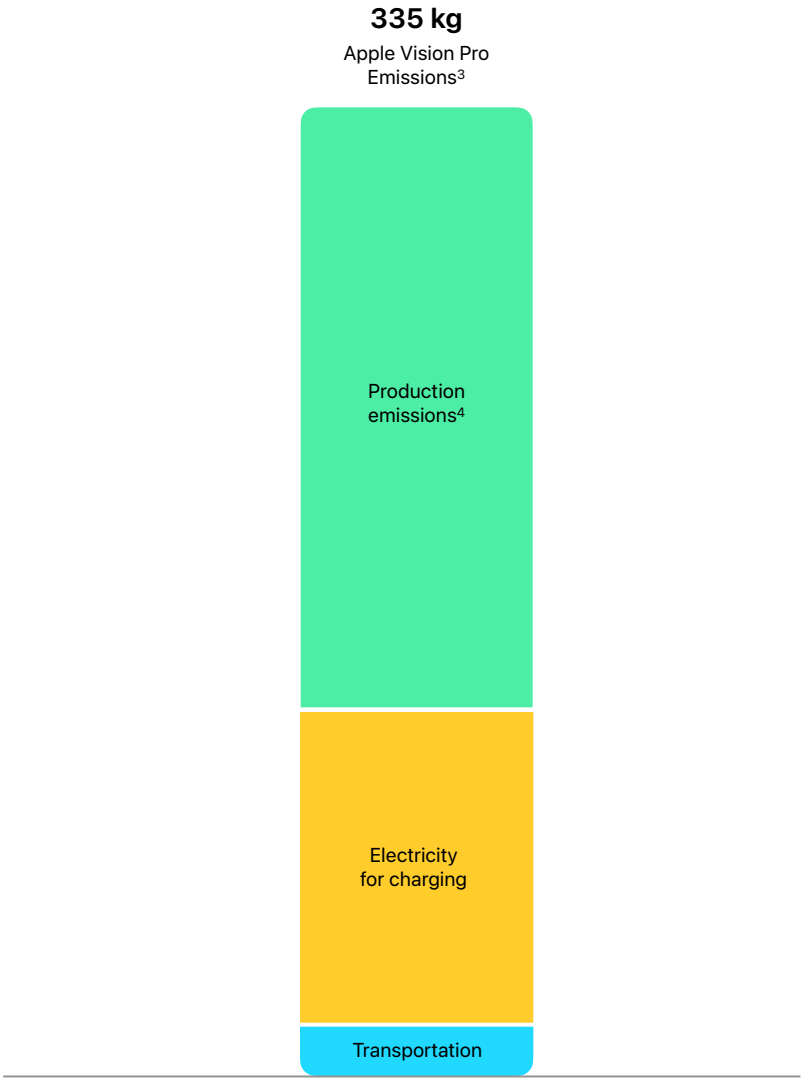
Progress toward carbon neutral

Apple Vision Pro contains 14 percent recycled content, including a 100 percent recycled aluminum frame and battery enclosure, reducing emissions by about 6 percent compared to our business-as-usual scenario. We're also working with our suppliers to transition to 100 percent clean electricity for Apple production. The clean electricity solutions that suppliers have already implemented to date have reduced total Apple Vision Pro emissions by 6 percent.



Source Materials

Apple Vision Pro contains a total of 14 percent recycled or renewable content, including in-box accessories.[5]

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 all materials, both recycled and primary. We're proud to be recognized as a worldwide leader in the responsible sourcing of minerals in our products. We map many materials, some to the mineral source, and establish the strictest standards for smelters and refiners. Apple also requires all identified tin, tantalum, tungsten, gold, cobalt, and lithium smelters and refiners to participate in third-party audits.[6] 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

Our focus on Apple's carbon footprint extends to the materials we source. We're using 100 percent recycled aluminum in both the frame and battery enclosure.

Plastic

We use at least 30 percent recycled plastic in more than 20 components.

Tin

We use 100 percent recycled tin in the solder of multiple printed circuit boards.

Rare earth elements

We use 100 percent recycled rare earth elements in all magnets.

Textiles

We use over 70 percent recycled yarn in the Solo Knit Band and over 80 percent recycled yarn in the Light Seal.

Gold

Apple is pioneering industry-leading levels of traceability in recycled materials to build a gold supply chain of exclusively recycled content. We use 100 percent recycled gold in the plating of multiple printed circuit boards and in the wire of multiple cameras.

Smarter chemistry

Apple Vision Pro 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 Apple Vision Pro 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.

Make

The Apple Supplier Code of Conduct sets strict standards for safeguarding people and the environment in our supply chain. 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 clean electricity, to providing educational opportunities, to supporting suppliers in reducing waste. For more information, see apple.com/supplier-responsibility.

Greener chemicals

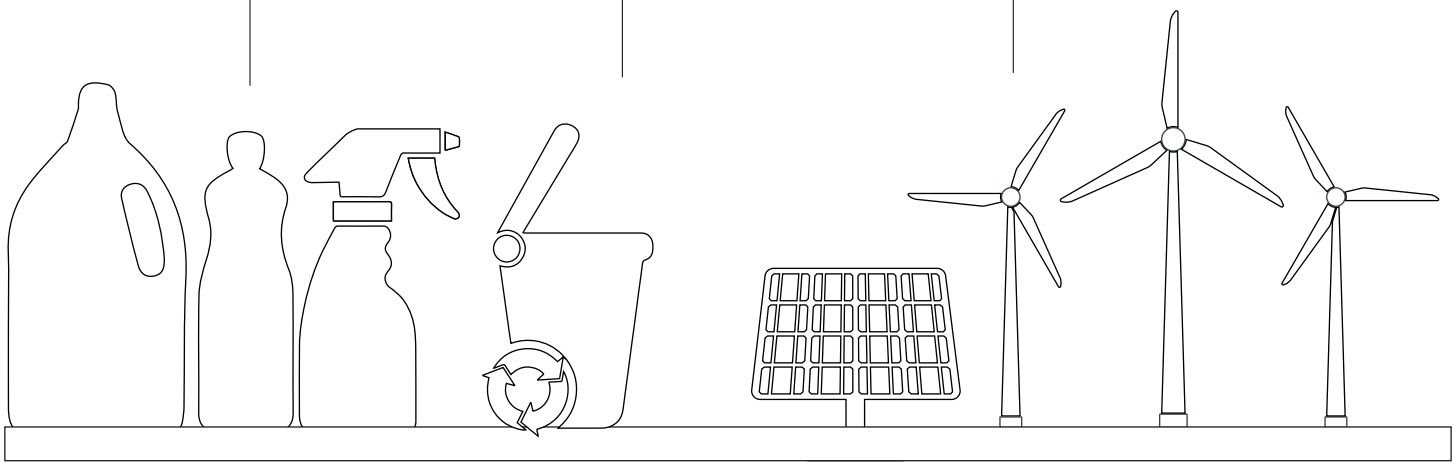
All established Apple Vision Pro final assembly supplier sites use safer cleaners and degreasers in their manufacturing processes, as determined by methodologies like the GreenScreen® assessment.[7]

Zero Waste to Landfill

No established Apple Vision Pro final assembly supplier sites generate any waste sent to landfill.[8]

Supplier energy use

The clean electricity solutions that suppliers have already implemented to date have reduced total Apple Vision Pro emissions by 6 percent.



Package and Ship

Apple Vision Pro packaging is 100 percent fiber-based and contains no plastic except for inks, coatings, and adhesives, representing our commitment to have plastic-free packaging by 2025.[9]

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.[10] And we have protected or created enough responsibly managed forests to cover all the virgin wood fiber we use in our packaging.[11] This ensures working forests are able to regrow and continue to clean our air and purify our water.

As we transport our products from our manufacturers to our consumers, we're prioritizing less carbon-intensive shipping modes than air shipping, such as rail and ocean transport.

100%

of the packaging[9] is fiber-based, due to our work to eliminate plastic in packaging

38%

recycled content in fiber packaging

100%

of the virgin wood fiber in the packaging comes from responsibly managed forests[10]

Use

Apple Vision Pro Battery uses 61 percent less energy than the energy conservation standard.[12]

We design our products to be energy efficient, long-lasting, and safe. Apple Vision Pro uses software and power-efficient components that intelligently manage power consumption. We also run our own Reliability and Environmental Testing Labs, where 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. To address emissions tied to the electricity our products use, we are building clean energy projects and engaging with our customers to educate and provide opportunities to support the decarbonization of the grid.

Designed to last

To ensure durability, we assessed Apple Vision Pro in our Reliability Testing Lab, using rigorous testing methods that simulate customers' experiences.

Made with smarter chemistry

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

Definitions

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.

Carbon footprint: Estimated emissions are calculated in accordance with guidelines and requirements as specified by ISO 14040, ISO 14044, and ISO 14067. 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. We calculate carbon emissions using the 100-year time horizon global warming potentials (GWP100) from the IPCC Sixth Assessment Report (AR6), including biogenic carbon. Our carbon footprint calculation includes emissions for the following life cycle phases in CO_2 equivalency (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 ground, 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-year period for power use by first owners for iOS, iPadOS, and watchOS devices and a four-year period for macOS, tvOS, and visionOS devices. Product use scenarios for Apple Vision Pro are based on estimated customer use and power consumed in those workflows. 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 our product carbon footprint methodology, visit apple.com/environment/answers.

Clean electricity: Refers to both renewable electricity as well as other projects that Apple considers "low carbon" but not "renewable," like nuclear and large-impact hydroelectricity projects, which may be included as a result of low-carbon electricity provided by the grid.

Low-carbon materials: Refers to materials created using production techniques with reduced carbon impact, such as Elysis (a patented technology that eliminates direct greenhouse gas emissions from the traditional aluminum smelting process) or aluminum smelted using hydroelectricity instead of coal.

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.

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 decarbonize their Apple production, including by transitioning electricity use to 100 percent renewable sources.