



Pixel Buds Pro 2  
Product environmental report



## Environmental sustainability at Google

At Google, operating in an environmentally sustainable way has been a core value from the beginning. As our business has evolved to include the manufacturing of electronic products, we've continually expanded our efforts to improve each product's environmental performance and minimize Google's impact on the world around us.

This report details the environmental performance of the Pixel Buds Pro 2 over its full life cycle, from design and manufacturing through usage and recycling.

## Product highlights

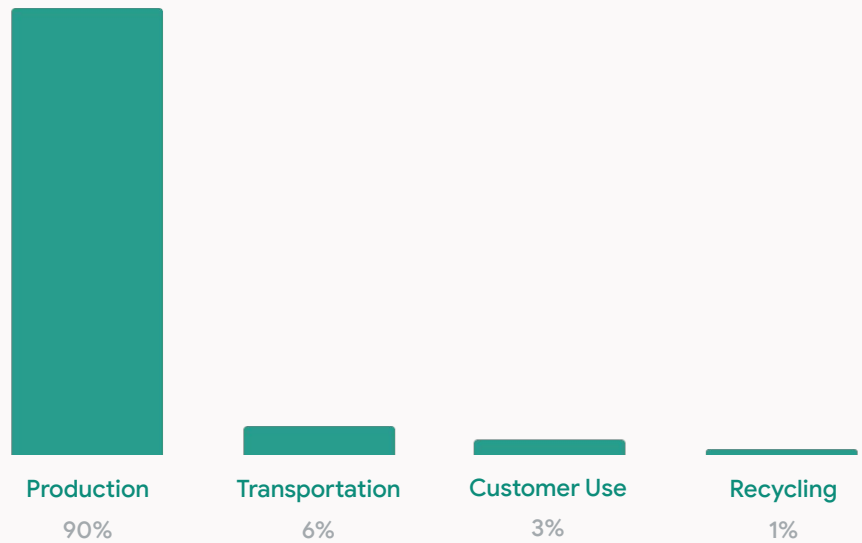
The Pixel Buds Pro 2 is designed with the following key features to help reduce its environmental impact:

- ✓ PVC-free<sup>1</sup>
- ✓ Brominated Flame Retardant (BFR)-free<sup>1</sup>
- ♻️ 100% plastic-free packaging<sup>2</sup>

## Greenhouse Gas (GHG) emissions

The production, transportation, use, and recycling of electronic products generate GHG emissions that can contribute to rising global temperatures. Google conducted a life cycle assessment on this product to identify materials and processes that contribute to GHG emissions, with the goal of minimizing these emissions.

Estimated GHG emissions for Pixel Buds Pro 2 assuming three years of use:<sup>3</sup> 9 kg CO<sub>2</sub>e



## Energy efficiency

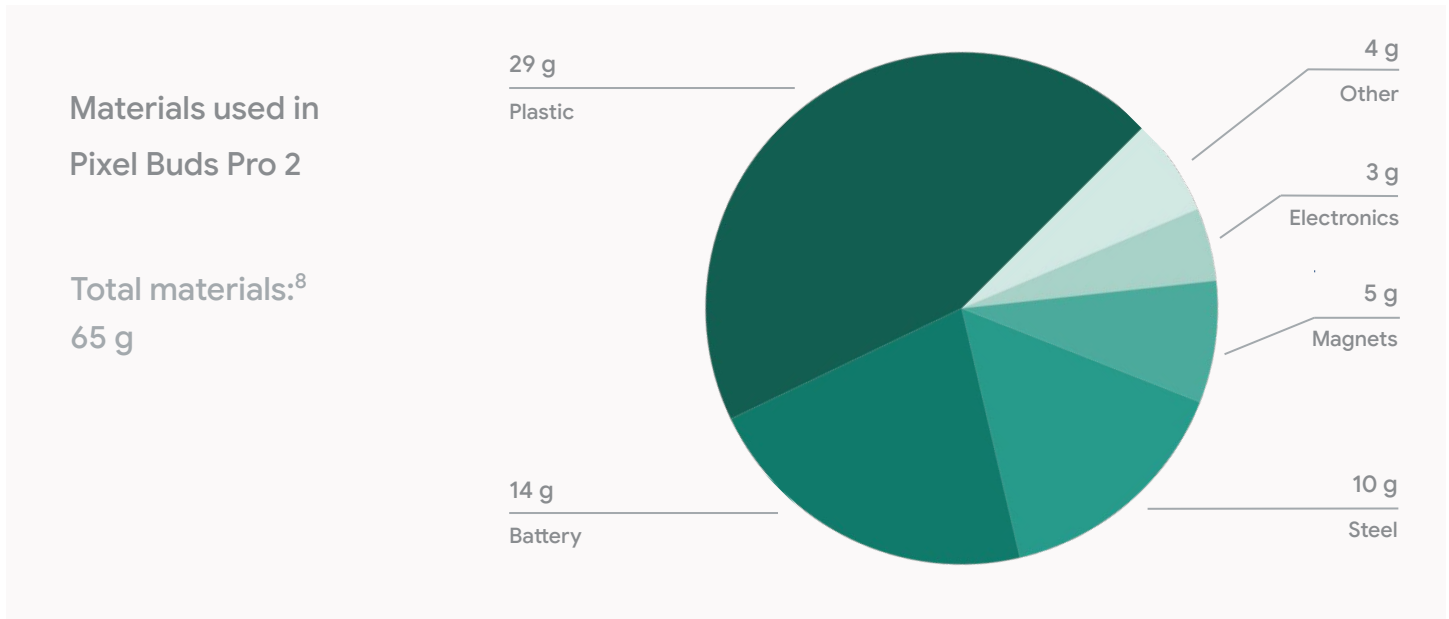
The Pixel Buds Pro 2 incorporates power-management software to maximize battery-charging efficiency and extend battery life during use.

### Energy efficiency of Pixel Buds Pro 2

	115 V, 60 Hz	230 V, 50 Hz
Standby (battery maintenance mode) power <sup>4</sup>	0.07 W	0.07 W
Annual energy use estimate <sup>5</sup>	1 kWh	1 kWh
Annual cost of energy estimate	US\$0.16 <sup>6</sup>	€0.29 <sup>7</sup>

## Material use

Pixel Buds Pro 2 is designed to be light and compact. Minimizing the size and weight of the Pixel Buds Pro 2 allows materials to be used more efficiently, thereby reducing the energy consumed during production and shipping as well as minimizing the amount of packaging.



## Recycled materials

- Pixel Buds Pro 2 is made with at least 24% recycled materials based on product weight<sup>9</sup>
- The buds and charging case magnets use recycled rare earth elements<sup>10</sup>

## Battery

- Lithium-ion polymer

## Restricted substances

Historically, many electronic devices contained materials such as lead, mercury, cadmium, and brominated flame retardants that pose environmental and health risks. We designed Pixel Buds Pro 2 to meet global regulations that restrict harmful substances, including the following:

- ✓ European RoHS Directive restrictions on lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), polybrominated diphenyl ethers (PBDE), and four different phthalates (DEHP, BBP, DBP, DIBP)
- ✓ European Battery Directive restrictions on lead, mercury, and cadmium in batteries
- ✓ European Packaging Directive restrictions on lead, mercury, cadmium, and hexavalent chromium in packaging

## Voluntary substance restrictions

Pixel Buds Pro 2 also meets the following voluntary substance restrictions:<sup>11</sup>

- ✓ PVC-free<sup>1</sup>
- ✓ Brominated Flame Retardant (BFR)-free<sup>1</sup>

## Packaging

Pixel Buds Pro 2 comes in more consciously designed packaging. Our lighter and more compact packaging is built with recycled and responsibly sourced fibers and continues to be 100% plastic-free, improving recyclability.<sup>12</sup>

## Ethical sourcing

Google and its subsidiaries are committed to ensuring that working conditions in our operations and in our supply chains are safe, that all workers are treated with respect and dignity, and that business operations are environmentally responsible and ethically conducted. Learn more about our expectations for manufacturing partners in the [Google Supplier Code of Conduct](#), our [2023 Supplier Responsibility Report](#), and our [Conflict Minerals Policy](#).

## Learn more

For more information about our environmental sustainability initiatives— including case studies, white papers, and blogs—please see our [Sustainability website](#) and our [2024 Environmental Report](#).

Learn how to recycle your used device in the [Google Store Help](#) section of our website.

## Endnotes

1. Google defines its restrictions on harmful substances in the [Google Restricted Substances Specification](#).
2. Based on retail packaging (excluding adhesive materials and required plastic stickers) as shipped by Google. To meet the request of some retail partners, stickers and/or security tags are applied to some packaging variations and may contain plastic.
3. GHG emissions estimates are calculated in accordance with ISO 14040 and ISO 14044 requirements and guidelines for conducting life cycle assessments, and include the production, transportation, use, and recycling of the product, accessories, and packaging.
4. Power measured with earbuds and case connected to Bluetooth networks in standby mode with fully charged batteries and attached to a USB-C power adapter with a USB-C cable. Tested in accordance with modified version of the [U.S. DOE Uniform Test Method for Measuring the Energy Consumption of Battery Chargers](#).
5. Estimated energy use is based on 4 hours of listening time per day with Active Noise Cancellation (ANC) on.
6. The average residential cost of energy for U.S. households was \$0.16 per kWh in May 2024 (source: [U.S. Energy Information Agency](#)).
7. The average household cost of energy for consumers in the EU-27 was €0.29 per kWh in the second half of 2023 (source: [Eurostat Statistics Explained](#)).
8. Product material masses are for the Pixel Buds Pro 2 and case only, excluding packaging and accessories. For the U.S. configuration, no additional electronic accessories are included in-box.
9. Includes earbuds and case.
10. The recycled rare earth elements are a minimum of 20% of the magnet total weight. Does not include speaker magnet.
11. Google continues to restrict arsenic content in glass, mercury in displays, and heavy metals (lead, cadmium, and mercury) in batteries as listed in [Google's Restricted Substances Specification](#).
12. Compared to Pixel Buds Pro box packaging. Based on retail box packaging weight, volume reduction and absence of plastic (excluding adhesive materials and required plastic stickers) as shipped by Google. To meet the request of some retail partners, stickers and/or security tags are applied to some packaging variations and may contain plastic. Google defines responsibly sourced fibers as those derived from recycled content, FSC-certified suppliers, or reclaimed industrial residues (such as bagasse). Recyclability improvement based on fiber yield recovered certified by the Fibre Box Association voluntary standard.