



Pixel 5a with 5G
Product environmental report



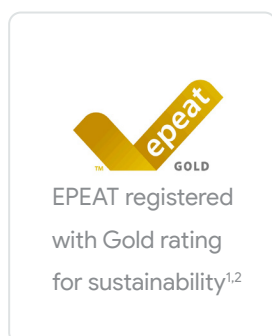
Environmental sustainability at Google

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 Pixel 5a with 5G over its full life cycle, from design and manufacturing through usage and recycling.

Product highlights

The Pixel 5a with 5G phone is designed with the following key features to help reduce its environmental impact:

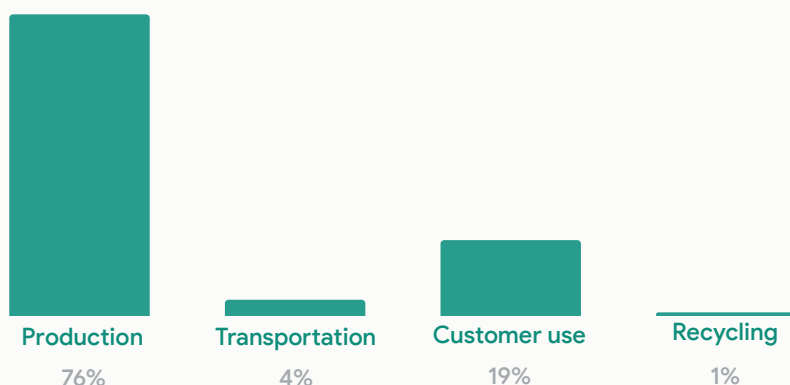


- ✓ EPEAT Gold¹
- ✓ PVC-free³
- ✓ Brominated Flame Retardant (BFR)-free³
- ♻️ 98% paper- and fiber-based packaging
- ⚡ Power adapter with Level VI efficiency rating⁴

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 5a with 5G assuming three years of use⁵: 60 kg CO₂e



Energy efficiency

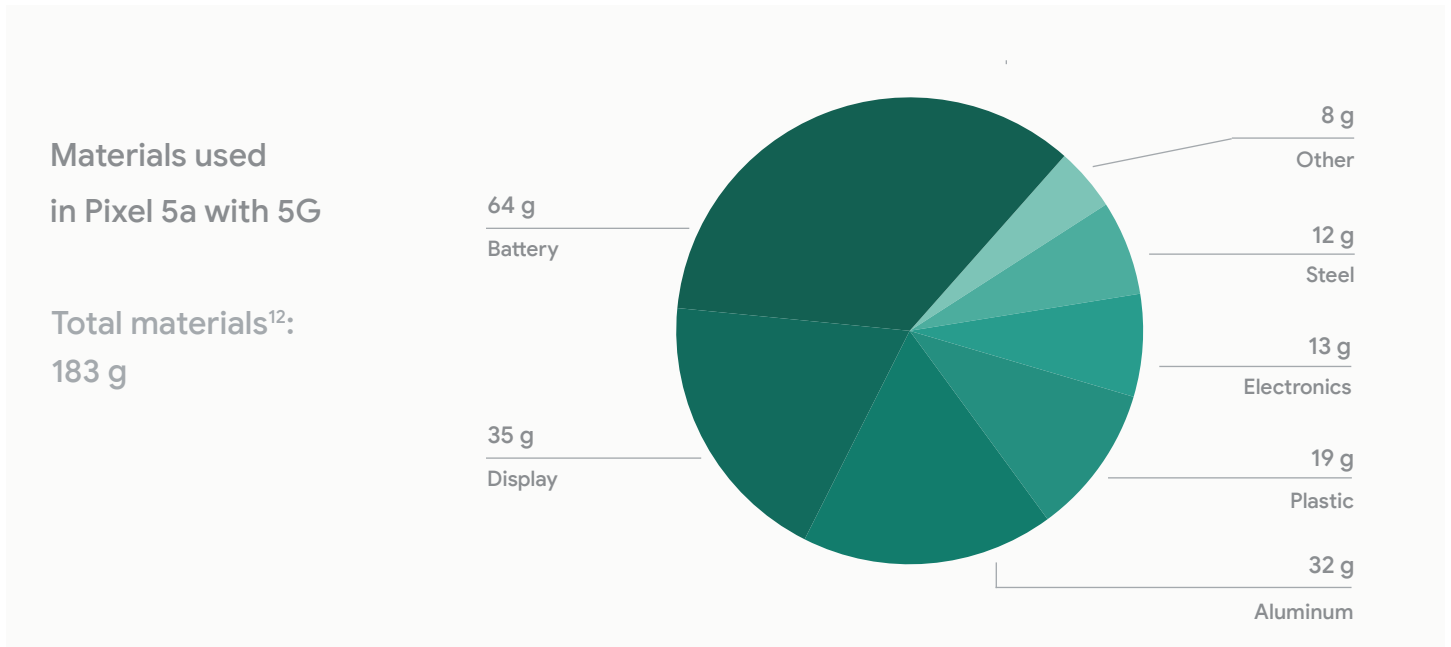
The Pixel 5a with 5G uses an energy efficient DOE Level VI power adapter⁴ and incorporates power-management software to maximize battery-charging efficiency and extend battery life during use.

Energy efficiency of Pixel 5a with 5G

Mode	115 V, 60 Hz	230 V, 50 Hz
Power adapter average efficiency ⁶	84.6% at 5 V output 87.4% at 9 V output	83.6% at 5 V output 86.9% at 9 V output
Power adapter no-load power ⁷	0.03 W	0.02 W
Standby (battery maintenance mode) power ⁸	0.22 W	0.22 W
Annual energy use estimate ⁹	7 kWh	7 kWh
Annual cost of energy estimate	US\$0.98 ¹⁰	€1.49 ¹¹

Material use

Pixel 5a with 5G is designed to be light and compact. Minimizing the size and weight of the Pixel 5a with 5G allow 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 5a with 5G is made with approximately 19% recycled materials based on product weight

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 the Pixel 5a with 5G 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

The Pixel 5a with 5G also meets the following voluntary substance restrictions¹³:

- ✓ PVC-free³
- ✓ Brominated Flame Retardant (BFR)-free³

Packaging

Packaging for the Pixel 5a with 5G uses 98% paper- and fiber-based materials. The greyboard used in the box base and lid is made with 100% recycled content. We have designed the Pixel 5a with 5G packaging to minimize its weight and volume, which helps conserve natural resources and allows more devices to be transported in a single shipping container.

Packaging materials for Pixel 5a with 5G

(U.S. configuration retail packaging)

Material	Mass
Paper- / fiber-based	128 g
Plastic	2 g
Total packaging	130 g

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 [2020 Responsible Supply Chain 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 [2020 Environmental Report](#).

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

Endnotes

1. EPEAT registered in the US only.
2. Pixel 5a with 5G is designed with approximately 14% recycled content across its plastic parts and approximately 24% biobased plastic across its plastic parts. This does not include plastics in printed circuit boards, labels, cables, connectors, electronic components and modules, optical components, electrostatic discharge (ESD) components, electromagnetic interference (EMI) components, films coatings and adhesives.
3. Google defines its restrictions on harmful substances in the [Google Restricted Substances Specification](#).
4. Level VI is the highest available efficiency rating for power adapters as defined in the [U.S. DOE International Efficiency Marking Protocol for External Power Supplies Version 3.0](#).
5. 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.
6. Average efficiency of power adapter when input and output power is measured at 25%, 50%, 75%, and 100% of rated output current and averaged. Tested in accordance with the [U.S. DOE Uniform Test Method for Measuring the Energy Consumption of External Power Supplies](#).
7. Power measured when the power adapter is plugged into an AC power source without being connected to the product. Tested in accordance with the [U.S. DOE Uniform Test Method for Measuring the Energy Consumption of External Power Supplies](#).
8. Power measured with phone connected to cellular and WiFi networks in standby mode with fully charged battery and attached to the power adapter. Tested in accordance with the [U.S. DOE Uniform Test Method for Measuring the Energy Consumption of Battery Chargers](#).
9. Based on average charging of previous generation devices. Actual energy consumption will vary by user.
10. The average residential cost of energy for U.S. households is \$0.14 per kWh (source: [U.S. Energy Information Agency May 2021 report](#)).
11. The average household cost of energy for consumers in the EU-27 was €0.21 per kWh in the second half of 2020 (source: [Eurostat Statistics Explained](#)).
12. Product material masses are for the Pixel 5a with 5G only, excluding packaging and accessories. For the U.S. configuration, an additional 84 g of electronics accessories can be included in-box.
13. 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](#).