



Google Pixel 3a
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 Google Pixel 3a over its full life cycle, from design and manufacturing through usage and recycling.

Product highlights

The Pixel 3a phone is designed with the following key features to help reduce its environmental impact:



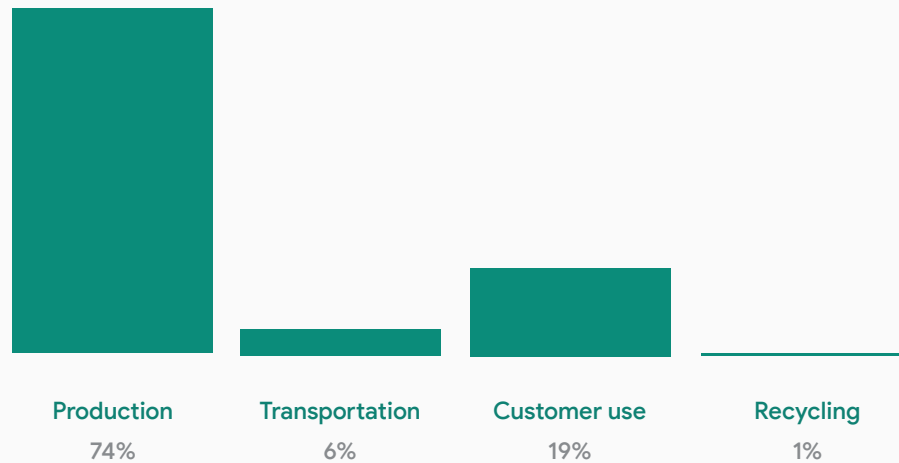
- ✓ Mercury-free LED-backlit display
- ✓ Arsenic-free glass
- ✓ PVC-free
- ✓ Brominated flame retardant-free
- ♻️ 94% paper and fiber-based packaging
- ⚡ Power adapter with Level VI efficiency rating

Greenhouse gas (GHG) emissions

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

Estimated GHG Emissions for Pixel 3a²

Total GHG emissions over three-year life cycle: 45 kg CO₂e



Energy efficiency

Pixel 3a uses an energy efficient DOE Level VI power adapter³ and incorporates power-management software to maximize battery-charging efficiency and extend battery life during use.

Energy efficiency of Pixel 3a

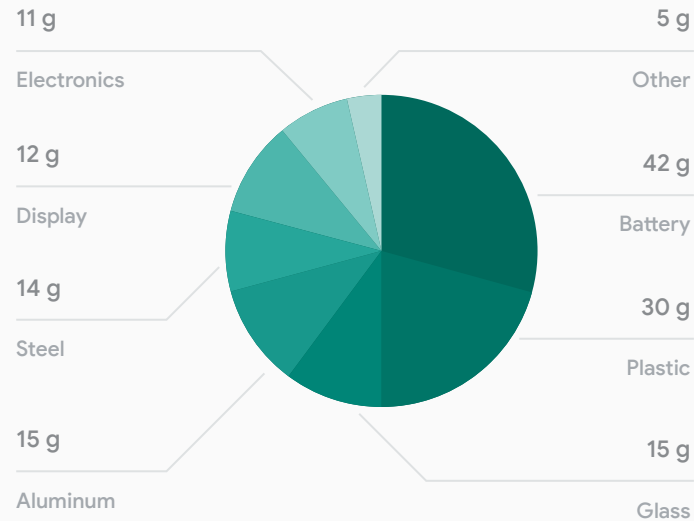
Mode	115 V, 60 Hz	230 V, 50 Hz
Power adapter average efficiency ⁴	83.5% at 5 V output 86.0% at 9 V output	82.5% at 5 V output 85.9% at 9 V output
Power adapter no-load power ⁵	0.02 W	0.02 W
Standby power (battery maintenance mode) ⁶	0.42 W	0.55 W
Annual energy use estimate ⁷	5 kWh/y	6 kWh/y
Annual cost of energy estimate	US\$0.65 ⁸	€1.20 ⁹

Material use

Pixel 3a is designed to be light and compact. Minimizing the size and weight of the Pixel 3a allows materials to be used more efficiently, thereby reducing the energy consumed during production and shipping as well as minimizing the amount of packaging.

Materials used in Pixel 3a

Total materials: 144 g¹⁰



Pixel 3a battery

- Lithium-ion polymer
- Free of cadmium, lead, and mercury

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 3a to meet global regulations that restrict harmful substances, including the following:

- European RoHS Directive restrictions on lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE)
- 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 3a also meets the following voluntary substance restrictions:

- ✓ Mercury-free LED-backlit display
- ✓ Arsenic-free glass
- ✓ PVC-free
- ✓ Brominated flame retardant-free

Packaging

Packaging for Pixel 3a uses 94% paper and fiber-based materials. The chipboard material used in the box base and lid is made with 100% recycled content. We have designed the Pixel 3a 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 3a (U.S. configuration retail packaging)

Material	Weight
Paper	185 g
Plastic	12 g
Total packaging	197 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 [2018 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 [2018 Environmental Report](#).

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

Endnotes

1. This product is EPEAT registered in the United States only.
2. 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.
3. Level VI is the highest available efficiency rating for power adapters as defined in the [International Efficiency Marking Protocol for External Power Supplies Version 3.0](#).
4. 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. Department of Energy Uniform Test Method for Measuring the Energy Consumption of External Power Supplies](#).
5. 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](#).
6. 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](#).
7. Based on average charging of previous generation devices. Actual energy consumption will vary by user.
8. The average residential cost of energy for U.S. households is \$0.13 per kWh (source: [U.S. Energy Information Agency Feb 2019 report](#)).
9. The average household cost of energy for consumers in the EU-28 was €0.20 per kWh in the first half of 2018 (source: [Eurostat Statistics Explained](#)).
10. Product material weights are for Google Pixel 3a only. For the U.S. configuration, an additional 92 g of electronic accessories can be included in-box.