Google Home
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 Home over its full life cycle, from design and manufacturing through usage and recycling.

Product highlights

The Google Home device is designed with the following key features to help reduce its environmental impact:
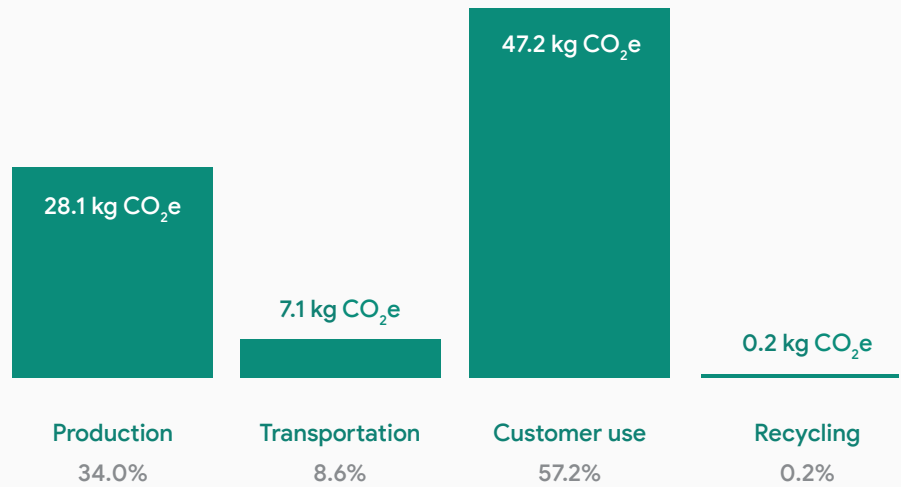
- Total of 42% post-consumer recycled plastic for external enclosure and speaker housing

- PVC-free

- Brominated flame retardant-free

- 86% paper and fiber-based packaging

- Energy-efficient Level VI–rated power adapter

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 Google Home[1]

Total GHG emissions over four-year life cycle: 82.6 kg CO_2e

28.1 kg CO_2e	7.1 kg CO_2e	47.2 kg CO_2e	0.2 kg CO_2e
Production 34.0%	Transportation 8.6%	Customer use 57.2%	Recycling 0.2%

Energy efficiency

Energy efficiency of Google Home

Google Home uses an efficient Level VI–rated[2] external power supply.

Mode	115 V, 60 Hz	230 V, 50 Hz
Power adapter average efficiency[3]	87.7%	87.4%
Power adapter no-load power[4]	0.029 W	0.051 W
Standby power	2.09 W	2.20 W
Active mode[5]	3.38 W	3.14 W
Annual energy use estimate[6]	20.2 kWh	20.6 kWh
Annual cost of energy estimate	US$2.63[7]	€4.35[8]

Material use

Google Home's compact design helps minimize its size and weight and allows materials to be used more efficiently. This design approach also helps reduce the energy consumed during production and shipping as well as minimize the amount of packaging.

Materials used in Google Home

Total materials: 477 g[9]

257 g (53.9%)
Plastics

181 g (37.9%)
Electronic components

8 g (1.7%)
Miscellaneous

31 g (6.5%)
Steel
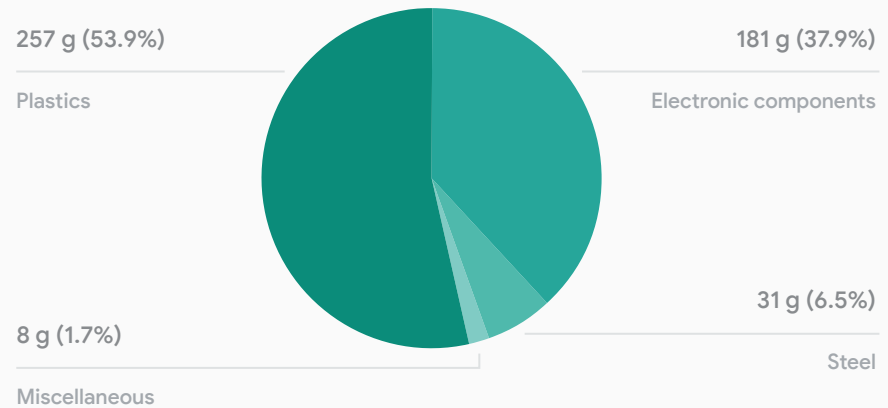
Restricted substances

Historically, many electronic devices contained materials such as lead, mercury, cadmium, and brominated flame retardants that pose environmental and health risks. We designed Google Home 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 Packaging Directive restrictions on lead, mercury, cadmium, and hexavalent chromium in packaging

Voluntary substance restrictions

Google Home also meets the following Google voluntary substance restrictions:

- ✓ PVC-free

- ✓ Brominated flame retardant–free

Packaging

Packaging for Google Home uses 86% 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 Google Home 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 Google Home

(U.S. configuration retail packaging)

Material	Weight
Paper	455 g
Plastics	67 g
Miscellaneous	5 g
Total packaging	527 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 2016 Creating a 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 Environment website and our Environmental Report: 2017 Progress Update.

Learn how to recycle your used device in the Google Store Help section of our website.

Endnotes

1. 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.

2. 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.

3. This is the average efficiency of the power adapter when input and output power is measured at 25%, 50%, 75%, and 100% of rated output current and averaged as part of testing in accordance with the U.S. Department of Energy Uniform Test Method for Measuring the Energy Consumption of External Power Supplies.

4. Power is measured when the power adapter is plugged into an AC power source without being connected to the product. Testing is done in accordance with the U.S. Department of Energy Uniform Test Method for Measuring the Energy Consumption of External Power Supplies.

5. Average power is measured when using the digital assistant, playing music at a moderate volume, or both.

6. Estimated energy use is based on four hours per day of using the digital assistant, playing music at a moderate volume, or both.

7. The average residential cost of energy for U.S. households is $0.13 per kWh (source: U.S. Energy Information Agency May 2017 report).

8. The average household cost of energy for consumers in the European Union was €0.211 per kWh in the second half of 2015 (source: Eurostat Statistics Explained).

9. Product material weights are for Google Home only. For the U.S. configuration, an additional 144 g of electronic accessories can be included in-box.