



## Google Home Hub Product environmental report

Model H1A, introduced October 9, 2018

## 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 Hub over its full life cycle, from design and manufacturing through usage and recycling.

## Product highlights

Google Home Hub is designed with the following key features to help reduce its environmental impact:

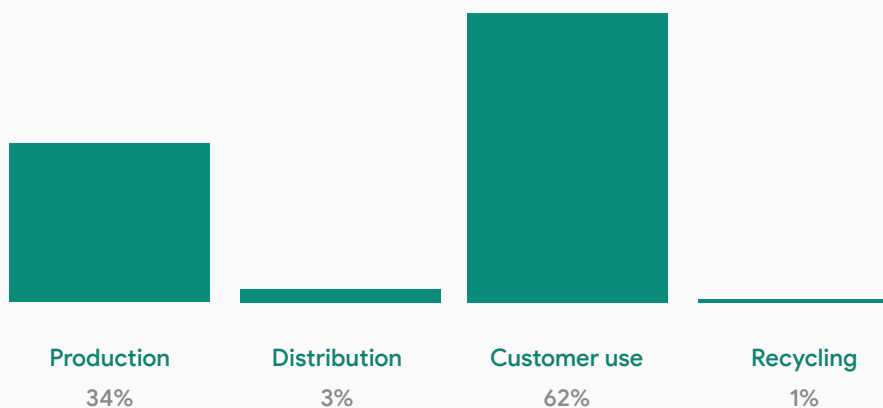
- ✓ Mercury-free LED-backlit display
- ✓ Arsenic-free glass
- ✓ PVC-free
- ✓ Brominated flame retardant-free
- ↻ External enclosure contains 20% post consumer recycled plastic
- ↻ 98% paper and fiber-based packaging
- ⚡ Power adapter with Level VI efficiency rating

## 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 Google Home Hub<sup>1</sup>

Total GHG emissions over four-year life cycle: 90 kg CO<sub>2</sub>e



## Energy efficiency

Google Home Hub uses an energy efficient DOE Level VI power adapter.<sup>2</sup>

### Energy efficiency of Google Home Hub

Mode	115 V, 60 Hz	230 V, 50 Hz
Power adapter average efficiency <sup>3</sup>	84.9%	84.8%
Power adapter no-load power <sup>4</sup>	0.05 W	0.07 W
Idle power	3.00 W	3.10 W
Active mode – Music	3.40 W	3.50 W
Active mode – Video	4.10 W	4.20 W
Annual energy use estimate <sup>5</sup>	28 kWh/y	29 kWh/y
Annual cost of energy estimate	US\$3.64 <sup>6</sup>	€5.80 <sup>7</sup>

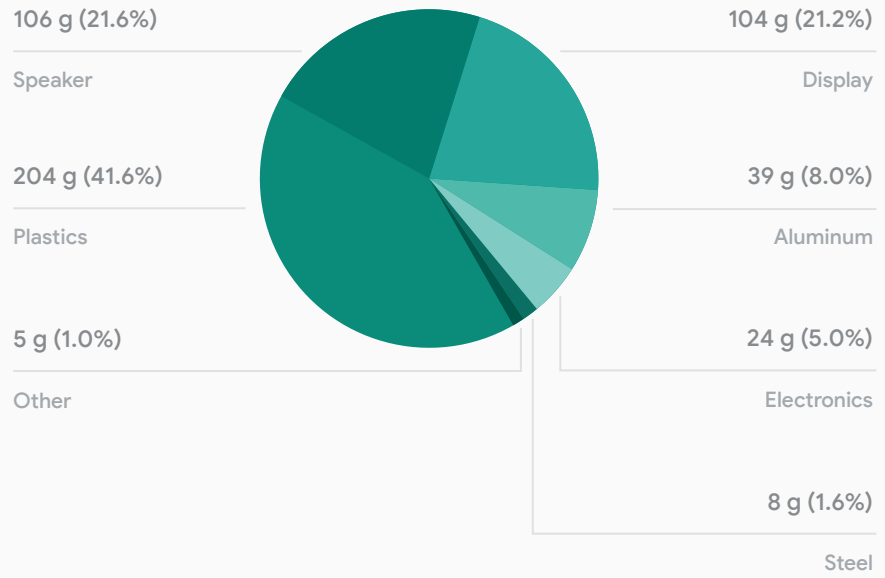
## Material use

Google Home Hub is designed to be small. Minimizing the size and weight of the Google Home Hub 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 Google Home Hub

Total materials:  
490 g<sup>8</sup>

External enclosure contains  
20% post consumer recycled plastic



## 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 Hub 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 Hub also meets the following voluntary substance restrictions:

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

## Packaging

Packaging for Google Home Hub uses 98% paper and fiber-based materials. We have designed the Google Home Hub 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 Hub (U.S. configuration retail packaging)

Material	Weight
Paper	428 g
Plastics	8 g
Total packaging	436 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. 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. 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](#).
4. 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](#).
5. Estimated energy use is based on 2 hours per day of using the digital assistant and/or playing music at a moderate volume and 2 hours per day of playing video content at a moderate volume.
6. The average residential cost of energy for U.S. households is \$0.13 per kWh (source: [U.S. Energy Information Agency June 2018 report](#)).
7. The average household cost of energy for consumers in the EU-28 was €0.20 per kWh in the second half of 2017 (source: [Eurostat Statistics Explained](#)).
8. Product material weights are for Google Home Hub only. For the U.S. configuration, an additional 79 g of electronic accessories can be included in-box.