



Chromecast with Google TV (HD)  
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 Chromecast with Google TV over its full life cycle, from design and manufacturing through usage and recycling.

## Product highlights

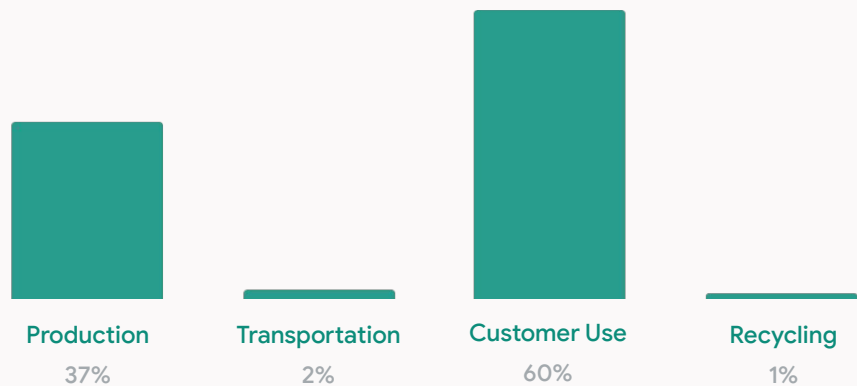
Chromecast with Google TV is designed with the following key features to help reduce its environmental impact:

-  PVC-free<sup>1</sup>
-  Brominated Flame Retardant (BFR)-free<sup>1</sup>
-  49% of its plastic part weight is made with recycled material<sup>2</sup>
-  94% plastic-free packaging<sup>3</sup>
-  Power adapter with Level VI efficiency rating<sup>4</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 Chromecast with Google TV assuming four years of use:  $30^5$  kg CO<sub>2</sub>e



## Energy efficiency

Chromecast with Google TV uses an energy efficient DOE Level VI power adapter.<sup>4</sup>

### Energy efficiency of Chromecast with Google TV

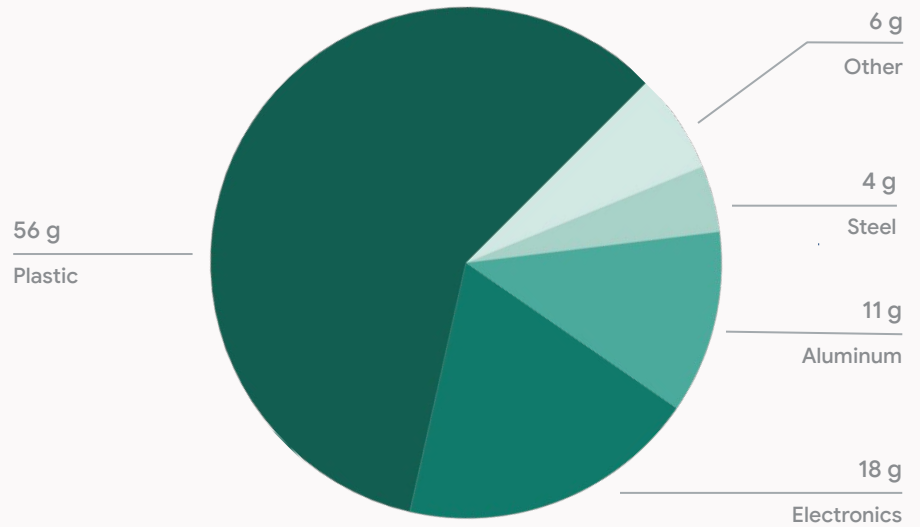
	115 V, 60 Hz	230 V, 50 Hz
Power adapter average efficiency <sup>6</sup>	81.9%	79.8%
Active	1.36 W	1.39 W
Ambient mode	1.56 W	1.56 W
Standby / Sleep mode	0.77 W	0.81 W
Annual energy use estimate <sup>7</sup>	8 kWh	9 kWh
Annual cost of energy estimate	US\$1.23 <sup>8</sup>	€2.13 <sup>9</sup>

## Material use

Chromecast with Google TV is designed to be light and compact. Minimizing the size and weight of the Chromecast with Google TV 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 Chromecast with Google TV

Total materials:<sup>10</sup> 95 g



### Recycled materials

♻️ 49% of its plastic part weight is made with recycled material<sup>2</sup>

### Battery

✔️ 2 Alkaline AAA

### 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 Chromecast with Google TV 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

Chromecast with Google TV also meets the following voluntary substance restrictions:<sup>11</sup>

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

## Packaging

Packaging for Chromecast with Google TV uses 94% plastic-free materials.<sup>3</sup> We have designed the Chromecast with Google TV packaging to minimize its weight and volume, which helps conserve natural resources and allows more devices to be transported in a single shipping container.

## 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 [2022 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 [2022 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. This does not include accessories, including Chromecast Voice Remote, power cable, power adapter, and batteries. Plastic part weight 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. Based on U.S. retail packaging weight with adhesive materials excluded.
4. 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](#).
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, in-box 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 and tested at the highest rated output voltage of 5V. Tested in accordance with the [U.S. Department of Energy Uniform Test Method for Measuring the Energy Consumption of External Power Supplies](#).
7. Estimated energy use is based on 4.8 hours per day of streaming video per day.
8. The average residential cost of energy for U.S. households is \$0.15 per kWh (source: [U.S. Energy Information Agency June 2022 report](#)).
9. The average household cost of energy for consumers in the EU-27 was €0.24 per kWh in the second half of 2021 (source: [Eurostat Statistics Explained](#)).
10. Product material masses are for the Chromecast with Google TV and Google Chromecast Voice Remote only, excluding packaging and accessories. For the U.S. configuration, an additional 69 g of electronic accessories can be included in-box.
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](#).