

# Product Environmental Report

## Galaxy Z Flip5

2023.07.26



At Samsung, we work to embed eco-conscious technology and innovation in all of our products. By considering sustainability throughout the product life cycle, we aim to inspire our customers to join us in our journey of building a better tomorrow.

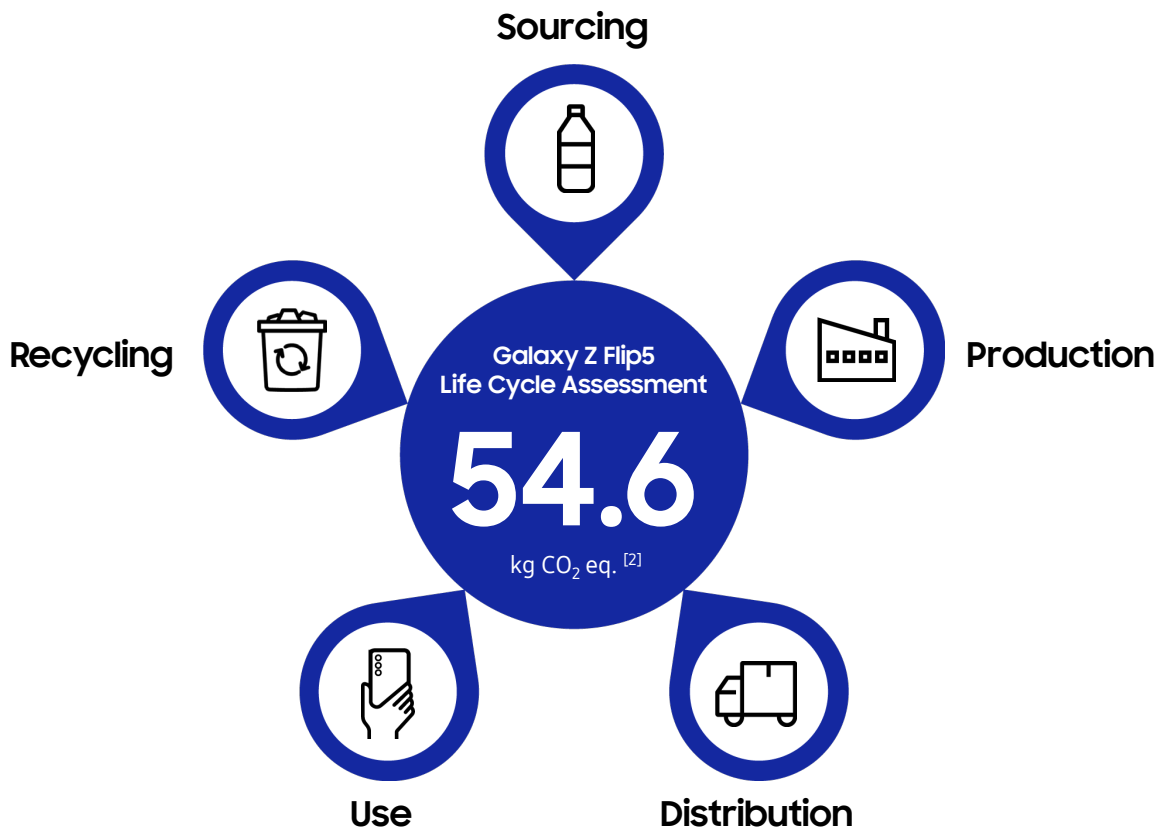


\* UL certified only for the US configuration. <sup>[1]</sup>

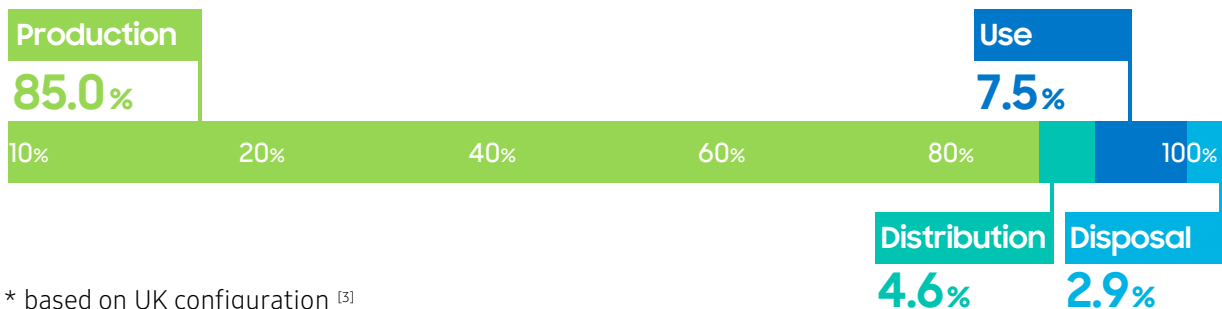
# Product Carbon Footprint

To understand the environmental impacts of our products, at Samsung Electronics, we assess a product’s entire life cycle, including the sourcing, production, distribution, product use and recycling phases.

At the production stage, we are aiming to expand the development and application of recycled materials with a lower carbon footprint. At the distribution stage, we are working to minimize packaging volume and weight to reduce carbon emissions. Through initiatives like improving the energy efficiency of chargers, we are trying to improve the environmental impact at the use stage.



## Galaxy Z Flip5 life cycle carbon emissions



\* based on UK configuration <sup>[3]</sup>

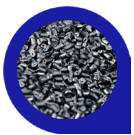
# Sourcing



Across the product lifecycle, from raw material sourcing to disposal and recycling, we are continuing our efforts to create a circular economy.

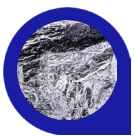
To build toward a circular system, we are using recycled materials and collecting e-waste to extract materials for reuse. By 2030, we aim for 50% of the plastic used in our DX products to incorporate recycled resin. By 2050, we anticipate to see this figure increase to 100%.

Samsung Galaxy Z Flip5 has a wider variety of recycled materials than any other Galaxy smartphone, including pre-consumer recycled aluminum and glass and post-consumer recycled plastics sourced from discarded fishing nets, PET bottles and water barrels :



## Plastic

The upper and lower of speaker module are manufactured using a minimum of 20% repurposed plastic, by weight, sourced from discarded fishing nets and water barrels. The plastic part of case front are made from a minimum of 10% plastic, by weight, from recycled PET bottles. The deco film used in the back glass contains a minimum of 80%, by weight, recycled PET. <sup>[4]</sup>



## Aluminum

In the volume key and SIM card tray components of the device, a minimum of 28% of the aluminum, by weight, is recovered scrap sourced from the manufacturing processes.



## Glass

The sub window(the outermost glass of the cover screen) and back glass contain an average of 22% pre-consumer recycled glass, by weight, recovered from scrap in manufacturing processes.



Chemical Mgmt.

To prevent hazardous substances from entering our products, we inspect manufactured parts and raw materials rigorously through our chemical management system.

Our Standards for the Control of Substances Used in Products<sup>[5]</sup> are based on global regulations and standards, and we voluntarily established reduction plans for the use of potentially hazardous substances, such as polyvinyl chloride(PVC), brominated flame retardants(BFRs), beryllium, and antimony, as well as legally regulated substances.

# Production



We are expanding the use of renewable energy at our business sites around the world.

Energy infrastructure and regulations, which vary widely by jurisdiction, require region-specific transition plans.



Renewable Energy

Safety and health certification (ISO) at our production sites

**100%**

We plan to run all operations of the DX(Device eXperience) Division on renewable energy by 2027. <sup>[6]</sup>

All of our business sites where Galaxy Z Flip5 is produced have attained ISO14001(environmental management system) and ISO50001(energy management system) certifications. <sup>[7]</sup>

Company-wide, we plan to obtain a platinum-level Zero Waste to Landfill Certification, issued by safety certification organization Underwriters Laboratories(UL), for all global operations by 2025.



# Distribution



To reduce the environmental impact of our product packaging, we are replacing plastic packaging and protective films with paper and recycled materials to the extent possible.

We are also reducing the volume and weight of packaging to mitigate Greenhouse Gas emissions in the transportation and shipping process.



Eco Packaging

Plastic in packaging **1.6%**

Reduced plastic in packaging **96.8%**

Recycled paper **100%**

Our goal is to eliminate all single-use plastics in mobile product packaging by 2025. Since 2017, we have been exploring ways to eliminate single-use plastics in packaging by assessing every aspect of packaging design, down to the smallest details. <sup>[8]</sup>

As a result, Galaxy Z Flip5 contains only 1.6% of plastic in terms of the total weight of packaging. <sup>[9]</sup>

Compared to Galaxy S7, when we began our plastic packaging elimination initiative, we reduced the use of plastic in packaging for Galaxy Z Flip5 by 96.8%. <sup>[10]</sup>

Paper used for the Galaxy Z Flip5 packaging box is 100% recycled paper. <sup>[11]</sup>



# Use



Environmental experts participate throughout product development at Samsung Electronics so that customer can more sustainably use our devices.

During the product development phase, our stress tests help ensure the longevity and consistent performance of our products. This enables users to enjoy our products for longer periods of time.



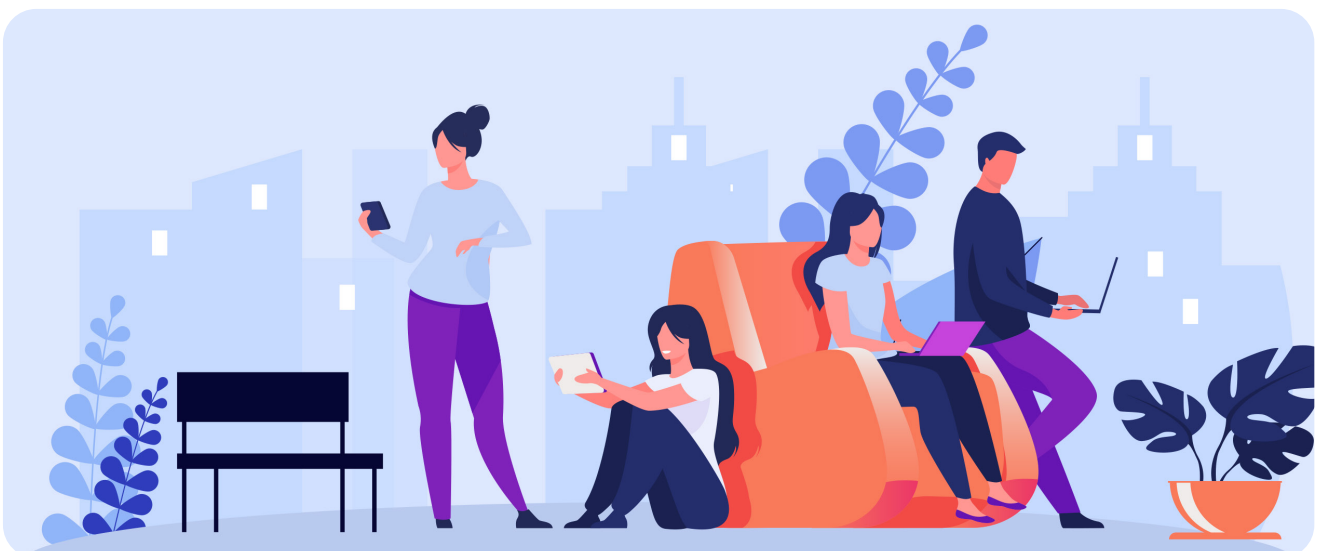
Repair & Reuse

Security Update & OS Upgrade <sup>[12]</sup>

**5 yrs & 4 gens**

Repairability is one of our main priorities in product development. In August 2022, we expanded the number of authorized and independent service providers, started a self-repair program in the US and will continue to expand this program.

Galaxy Z Flip5 has IPX8 <sup>[13]</sup> water resistance, and we provide four generations of OS upgrades and five years of security updates .





# Recycling



To promote the circular economy and a low-carbon society, we are expanding responsible recycling globally.

Samsung's local recycling programs provide collection services tailored to each region for customers disposing e-waste, and we take back all electrical and electronic waste regardless of product brand.



Collection

Samsung Electronics has installed used mobile phone and accessory collection boxes at repair centers in 34 countries including the US, Brazil, and Spain, to take back e-waste from customers. We plan to expand the scope of our e-waste collection system from approximately 50 countries to about 180 countries by 2030.

Collected electronic goods are sorted, pre-processed, and shredded to be recycled as materials. Some of the materials like plastic are used for new product manufacturing. We also internally operate Requirements for Recycling Service Partners that specify requirements such as compliance obligations related to EHS-related laws and regulations, supplier management, and prohibition of illegal waste exportation.



## Endnotes

1. Galaxy Z Flip5 devices sold, distributed, and/or produced for the US market have received UL ECOLOGO Certification in accordance with UL110 Standard for Sustainability for Mobile Phones.  
<https://www.ul.com/el>
2. The Carbon Trust of the UK calculated greenhouse gases generated in the entire process from product production to disposal in accordance with the Carbon Footprint Evaluation Standard(PAS 2050) and obtained the 'CO<sub>2</sub> Measured' certification to evaluate product carbon emissions. Based on the certification results, Samsung Electronics continues to make efforts in the product development stage to improve the environmental characteristics of the product.
  - PAS 2050:2011 – Specification for the assessment of the life cycle greenhouse gas emissions of goods and services
  - Product Carbon Footprints : Requirements for Certification v2
  - Database : Footprint Expert v4.4, Ecoinvent 3.8
3. System boundary of Life Cycle Assessment
  - Production : Pre-manufacturing(Parts and materials constituting the products and its transportation) and Product assembly by Samsung Electronics / Distribution : From Vietnam to UK / Use : 3 years use / Disposal : Waste treatment of parts and material
4. Recycled materials have undergone Environmental Claim Validation(ECV) by UL.  
Method : Environmental Claim Validation Procedure for Recycled content, UL 2809 – Fifth Edition
  - contains minimum 20% OBP : Volume Key Bracket, Display Connector Cap, FPCB RF Cable Bracket, Rear Mid
  - contains minimum 20% PCM : Volume Key, Finger Key Bracket, Receiver Deco, Connector to Connector Holder, Sim Tray
  - contains minimum 5% OBP + 15% PCM : Speaker Module (Upper & Lower), Rear Top
  - contains minimum 10% PCM : Case Front (Main), Case Front (Sub)
  - contains minimum 80% PCM : Back Glass Deco Film
  - \* OBP : Ocean Bound Plastic
  - \* PCM : Post Consumer Material
5. Standards for the Control of Substances Used in Products  
<https://www.samsung.com/us/sustainability/environment/environment-data/>
6. Samsung Electronics has joined RE100, in a collaborative effort to reduce indirect carbon emissions from power consumption, and aims to match electric power needs with renewable energy by 2050 for all operations globally. As part of this initiative, Samsung Electronics plans to run all operations outside of Korea as well as the DX Division on renewable energy within five years. The company's renewable energy sourcing methods will include, but not limited to, signing power purchase agreements(PPA), purchasing renewable energy certificates and participating in green pricing programs.
7. Our factory sites are required to meet international standards for ISO14001(environmental management system) and ISO50001(energy management system) certifications. We also strive to ensure that our suppliers have robust occupational health and safety management systems in place by encouraging them to attain certification for international standards and reflect related outcomes in the comprehensive supplier evaluations. As of 2021, all business sites of Samsung Electronics have attained the certifications and 86% of suppliers subject to comprehensive evaluation of partner have acquired the certification.
8. History of Galaxy S Eco-Conscious Packaging  
<https://news.samsung.com/us/infographic-history-of-galaxy-s-eco-conscious-packaging/>
9. To meet the request of some clients, plastic shrink vinyl or PP sealing sticker is applied to certain packaging box variation. Percentage calculated based on total weight of plastic components used in packaging divided by total weight of packaging.



## Endnotes

- 10.** Calculation based on total weight of all plastic packaging components for the Galaxy Z Flip5 compared to total weight of all plastic packaging components for the S7.
- 11.** 100% recycled paper was applied to the product package unit box, excluding PP sealing sticker and shrink vinyl at the request of some clients, and pulp tray inside packaging.
- 12.** Availability and timing of Android OS upgrades and security updates may vary by device model and market.
- 13.** Rated IPX8 under IEC standard 60529. Based on lab test conditions for submersion in up to 1.5 meters of freshwater for up to 30 minutes. Not advised for beach or pool use. Water resistance of device is not permanent and may diminish over time. Not dust-resistant.

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### **Recycling**

Samsung established waste collection systems in each region as we work tirelessly to enhance the collection and recycling of waste products. We also offer product take-back and recycling services with local take-back legislation. We are always looking to expand to additional locations.

<https://www.samsung.com/us/sustainability/environment/environment-data/>

### **Eco-Management**

Samsung Electronics set the foundation for eco-management as a philosophy for the 21st century through the commitments made in the Samsung Environmental Declaration in 1992. Since then, we have gone beyond mere passive adherence to environmental regulations and laws. We have put eco-management into action and are leading the way to a sustainable future by offering our customers eco-friendly products. We believe a healthy environment is essential to the future of society.

### **Corporate Sustainability Management**

Samsung is constantly striving to deliver innovative products and services across the value chain. This is rooted in our core values in economy, society and environment. Therefore, we monitor the financial and non-financial impacts that we exert on society in order to maximize our positive impacts while minimizing any negative ones.

<https://www.samsung.com/global/sustainability/main/>