

Product Environmental Report

Fridge/Freezer Combination

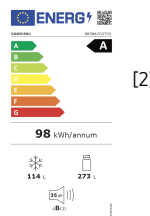
2024.07.30.

At Samsung, we strive to integrate innovative and efficient technology into our product, aiming to create better value at each stage of the product life cycle.



[1]

* Certification: R*38A7CGTS9/**



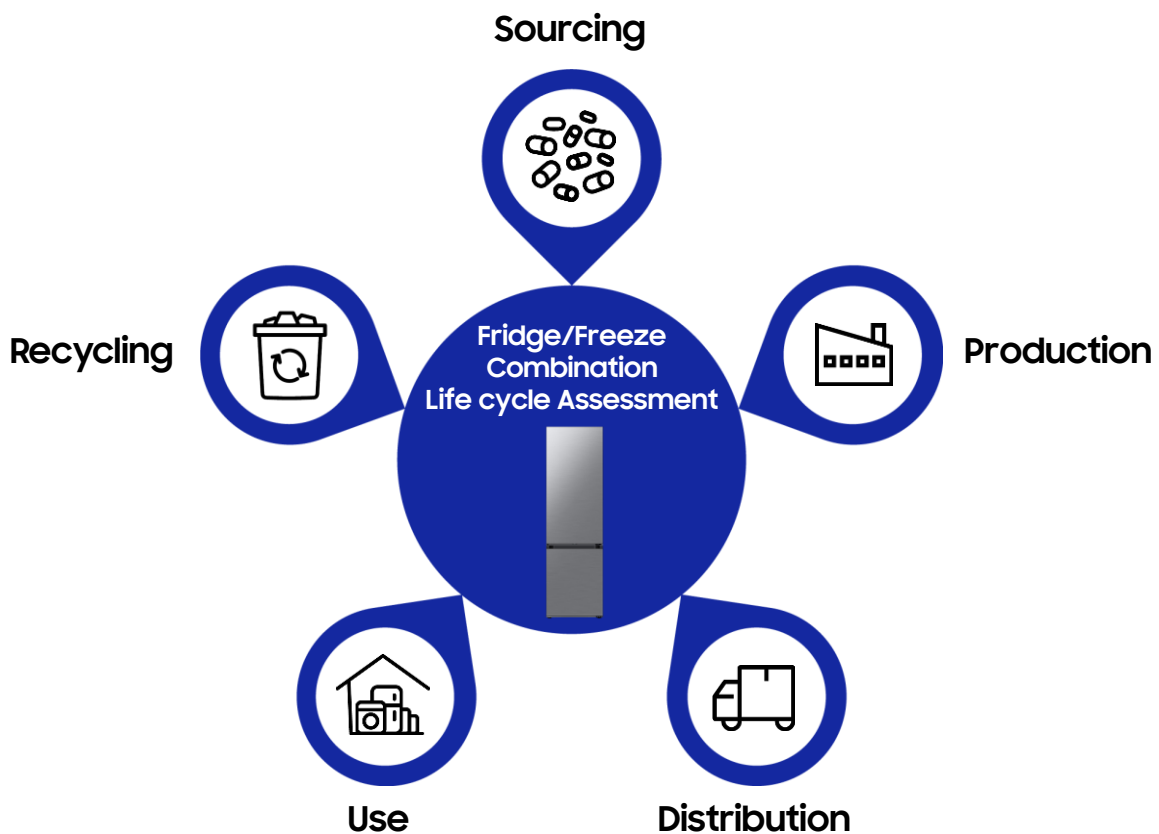
[2]

* Certification : R*38A7CGTS9/**

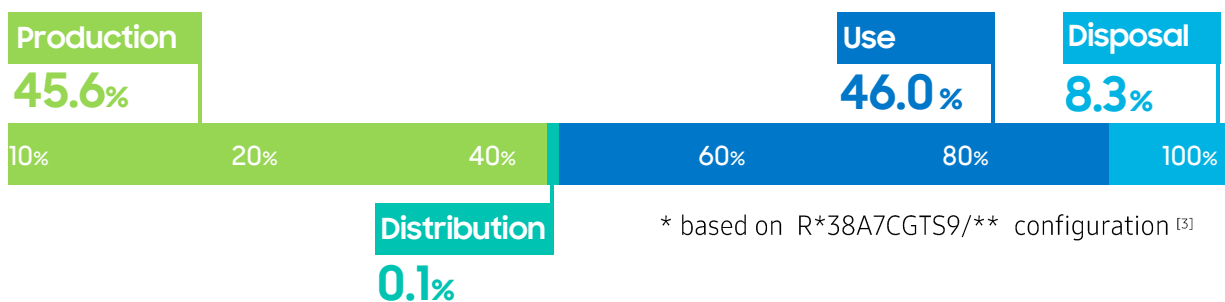
Product Carbon Footprint

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 reduce packaging volume and weight to reduce carbon emissions. Through improving product energy efficiency, we are trying to improve the environmental impact at the use stage.

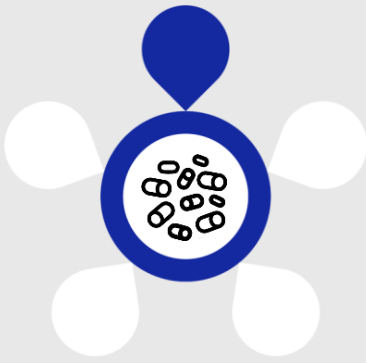


Fridge/Freezer Combination Life cycle carbon emissions



※ The above figures (%) are the basis for calculating the environmental impact throughout the entire life cycle of a product into CO2 emissions. ^[3]

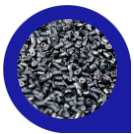
Sourcing



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(Device eXperience) products to incorporate recycled resin. By 2050, we anticipate this figure to increase to 100%.

Samsung Electronics uses recycled materials for parts in the refrigerator R*38A7CGTS9/** model. In addition, we are trying to manage its supply chain so that minerals used in its products are mined in accordance with OECD due diligence guidelines.



Plastic

R*38A7CGTS9/** model's Cover Evaporator contains at least 45% recycled plastic , and the Door handle contains at least 20% recycled plastics certified by UL.^[4]



Responsible minerals

For internationally disputed minerals such as copper, nickel, we elect to only use minerals supplied by smelters that have obtained global third-party certifications. Minerals that raise human rights violations or environmental destruction issues during mining are included in the list of management ^[5] and are avoided in our management of the mineral supply chain.



Chemical Mgmt.

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

Our standards for the Control of Substances Used in Products^[6] are based on global regulations and standards. We voluntarily established reduction plans for the use of potentially hazardous substances 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

We plan to run all operations of the DX(Device eXperience) Division on renewable energy by 2027.^[7]

We are constantly trying to reduce waste and expand recycling. We plan to obtain a platinum-level zero Waste to Landfill Certification, issued by safety certification organization Underwriters Laboratories(UL), for all our global operations by 2025.

Sites that produce Samsung Electronics refrigerators, washing machines, dryers, air conditioners, ovens, microwave ovens, vacuum cleaners, etc have been certified for environmental management(ISO14001) and energy management(ISO50001).^[8]



Reducing material

Samsung Electronics is increasing the efficiency of using raw materials to analyze environmental impact during the production stage. In the production of the refrigerator R*38A7CGTS9/** model, the use of aluminum used for production was reduced by up to 39% by reducing the number of molds required through mold standardization. ^[9]



Distribution



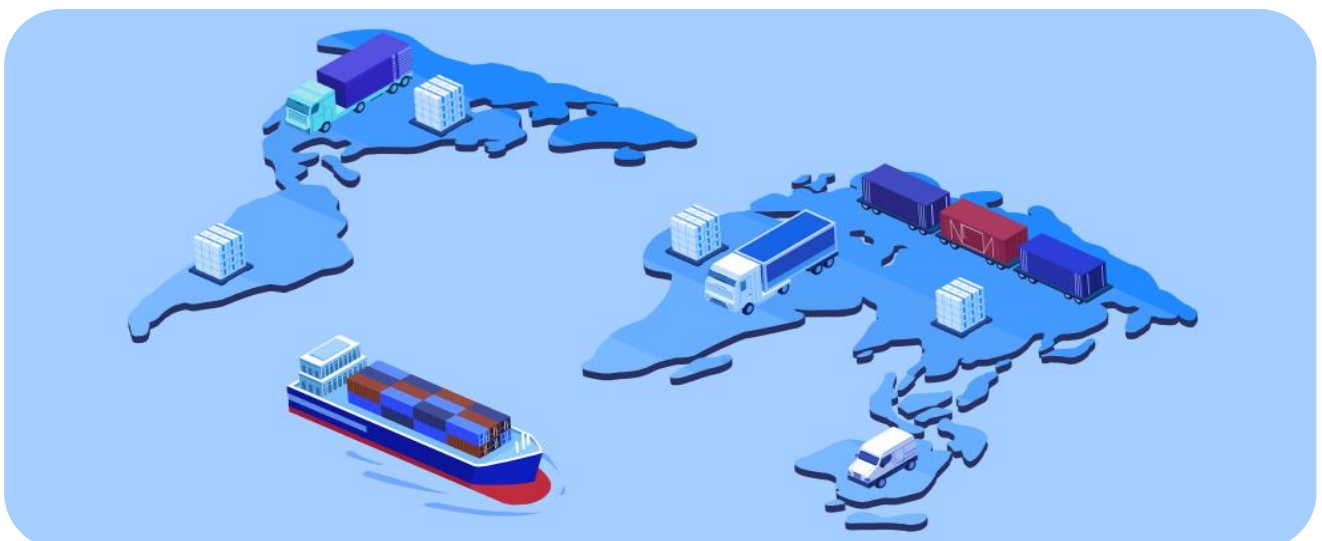
To reduce the environmental impact of our product packaging, we are replacing plastic packaging and vinyl wraps with paper and recycled materials.

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



Samsung Electronics uses FSC(Forest Stewardship Council)* certified paper for the paper packaging of all refrigerators, washing machines, dryers, air conditioners, air dressers, air purifiers, cooking appliances, and vacuum cleaners.

* Forest management certification system established by the Forest Management Council, an international NGO to protect forest resources and spread sustainable forest management.



Use



Environmental experts participate throughout product development at Samsung Electronics to analyze the environmental impacts associated with the use of our products.

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.



Energy Efficiency

To analyze use-phase carbon emissions, we set our plan to reduce power consumption by 30% on average by 2030, compared to products with the same specifications in 2019.^[10]

* Yearly Power consumption of R*38A7CGTS9/** (As of year 2022)^[11]

	RB38A7CGTS9/EF	RB38A7CGTS9/EU	RL38A7CGTS9/EG
Yearly Power Consumption [kWh/year]	98	98	98

We are developing solutions that support energy efficiency at the use stage.

SmartThings Energy Saving mode

The Fridge/Freezer Combination (R*38A7CGTS9/**) can save up to 15% of energy when used through the Energy Saving mode in SmartThings App .^[12]



Use



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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

We want to reduce household appliance waste by providing warranty service for digital inverter compressors and motors, which are key components of home appliances. We provide a 20-year warranty service for the Fridge/Freezer Combination (R*38A7CGTS9/**)'s digital inverter compressor, including free repair and replacement during that period. ^[13]

Repairability is one of our main priorities in the product development. We started a self-repair program for some models of refrigerators, washing machines and dishwashers in Europe in March 2021 and will continue to expand this program. For the parts of refrigerators, washing machines, dryers and ovens that have been replaced by modules, we are changing the design so that they can be separately repaired. ^[14]



Recycling



To promote the circular economy and a low-carbon society, we are expanding responsible recycling in more than 50 countries around the world.

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



Upcycle packaging is applied to vacuum cleaners, air purifiers, Qookers, cube refrigerators and some microwave ovens. We are considering expanding into other products in future.^[15]

Upcycle packaging is designed so that consumers can upcycle the packaging box that was discarded after product transportation. Customers can make various items, such as magazine holders and pet products, using dot patterns printed on the surface of the packaging box. Through this, the recyclability of packaging materials can be increased, and the impact on the environment can be reduced.



Endnotes

Disclaimer

1. The Carbon Trust of the U.K. calculated greenhouse gas generated in the entire process from production to disposal of products in accordance with evaluation standards, and Samsung obtained a "carbon footprint" certification that evaluates carbon emissions of products.
Certification model: R*38A7CGTS9/**
2. The EU Energy Label is a label that helps consumers choose more efficient products and provides usage-related data such as energy consumption, noise emission, and water consumption.
The Fridge/Freezer Combination has been classified as A by the EU Energy Label.
Certification model: RB38A7CGTS9/EF, RB38A7CGTS9/EU, RL38A7CGTS9/EG
3. Life Cycle Assessment System Boundary
 - Production: Pre-manufacturing (parts and materials that make up the product) and assembling the product at Samsung Electronics
 - Distribution: Distribution from Poland to each country in Europe
 - Use: Used for 7 years
 - Disposal: Waste disposal of parts and materials
4. Environmental Claim Validation (ECV) verification was obtained from UL for recycled materials
Verification method: Environmental Claim Validation Procedure for Recycled content, UL 2809 – Fifth Edition
 - Cover Evaporator : At least 45.5% of recycled polypropylene (PP) is included (measured by weight)
 - Door handle : At least 20.9% of recycled Acrylonitrile-Butadiene-Styrene (ABS) is included (measured by weight)
5. Samsung Electronics operates a mineral management process based on OECD due diligence guidelines for responsible minerals.
<https://www.samsung.com/global/sustainability/people/supply-chain/#anchor4>
6. Product Environment Management Substances Operation Rules
<https://www.samsung.com/global/sustainability/digital-library/policy-document/>
7. Details of the conversion of renewable energy
Samsung Electronics joined RE100, a global initiative to reduce indirect carbon emissions from power usage (Scope 2), and is pursuing the conversion of used electricity to renewable energy by 2050.
First, Samsung Electronics aims to achieve its renewable energy target at all overseas operations by 2027. In the case of the US, China, and Europe, which have already reached this target, we plan to expand direct power purchase agreements (PPAs) centering on the regions equipped with active renewable energy policies and systems.
The DX division aims to achieve its renewable energy target by 2027, both at home and abroad.
※ Samsung Electronics' Device eXperience (DX) division is in the business of producing and selling TVs, monitors, refrigerators, washing machines, air conditioners, smartphones, tablets, PCs, and wearable products, etc.
<https://www.samsung.com/global/sustainability/planet/climate-action/#anchor2>

Endnotes

8. Samsung Electronics adopts global standards such as environmental management(ISO14001) and energy management system(ISO50001), mandates all workplaces to obtain the certification, and recommends partner companies to obtain related international certifications to spread environmental safety management, which is reflected in the comprehensive evaluation of partner companies.

As of 2022, all business sites of Samsung Electronics have attained the certifications(ISO14001, ISO50001).

9. In the production of the R*38A7CGTS9/** model, we replaced the existing mold with LEGO Mold and were able to reduce aluminum usage by 44 tons.

- Aluminum usage (Tons)

Existing Mold	LEGO Mold
72	28

10. We plan to reduce power consumption by an avg. of 30% in 2030 compared to the same performance model in 2019 by applying low power technology to representative models of seven major electronic products such as TVs, monitors, smartphones, refrigerators, washing machines, air conditioners, and PCs.

We are conducting twice/yearly implementation checks on the annual improvement goals of the representative models for each product line, and we are trying to spread the energy efficiency technology applied to the representative models horizontally to other models.

11. Yearly Power consumption of R*38A7CGTS9/**(As of year 2022)

	RB38A7CGTS9/EF	RB38A7CGTS9/EU	RL38A7CGTS9/EG
Yearly Power Consumption [kWh/year]	98	98	98

- Power consumption measurement criteria: IEC 62552:2015

- Standard temperature of refrigerator: freezing -18°C, refrigerating +4°C

Energy measurement Ambient temperature: ambient temperature 32°C, 16°C measured and then energy interpolation.

Power consumption is calculated based on the power measured in our laboratory based on the respective prerelease model.

Different countries have different regulatory conditions or measurement standards, and measurement methods may be updated to change measurements when each country's regulatory conditions change.

The model name/model code of the product may vary by region or country where Samsung Electronics sells the product.

12. The energy saving effect through the SmartThings – Energy Saving mode was confirmed through a third-party (Intertek) evaluation*

- Test result :

Temperature stability under factory setting conditions of freezer (-19°C) and fridge (3°C) in chamber at room temperature (25°C/50%)

Comparison of energy before/after AI 2.0 control operation under refrigerator usage conditions including door opening/closing

Endnotes

- 13.** To reduce e-waste, we plan to strengthen, make more durable, and offer 20-year warranty for the most important components of our home appliances. We offer 20-year warranty for Digital Inverter Motors and Digital Inverter Compressors in the Europe and offer 10-year warranty in the U.S. and then in other parts of the world in phases.
- The warranty refers to a repair without any cost and it does not apply to product exchanges or purchase price refunds.
 - The product is guaranteed for one year, and for more information on the 20-year warranty, please refer to the product warranty.
- 14.** By applying about 116,000 single-product repairs in 106 countries of about 45 subsidiaries by November 2022, we are trying to reduce the burden of repair costs on consumers by reducing about \$20 compared to the previous average repair costs, as well as reducing environmental impact by extending the life of products. (It may vary by country)
- 15.** Providing drawings for upcycle packaging production props
<https://www.samsung-upcyclepackaging.com>

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 for Samsung products in countries with local take-back legislation. We are always looking to expand to additional locations.

<https://www.samsung.com/global/sustainability/digital-library/policy-document/>

Environmental Strategy

Samsung Electronics announced the New Environmental Strategy in September 2022 with the aim of addressing global environmental issues through our innovative technologies. This paradigm shift is essential for our sustainable growth and will create meaningful momentum to reinforce our competitiveness.

The New Environmental Strategy was developed based on our commitment to achieve Net Zero by 2050, joining the world's effort to combat climate change, maximize resource circularity to advance towards a circular economy, and continuously address environmental challenges with technological innovation. This effort is expected to bring positive change to the broader ecosystem of the ICT industry as we engage in the manufacturing and supply of an extensive range of products and services.

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/>



Carbon Footprint Label

Samsung Electronics

has measured the product carbon footprints of their

Refrigerator (R*38A7CGTS9/**)

Carbon Trust Assurance has certified that this project has met all the requirements for using the Carbon Trust Carbon Footprint Label.



The above is the generic version of the Carbon Trust Label which you are licensed to use, you may agree bespoke text with the Carbon Trust if you wish to use alternate text.

A full description of the scope of certification and a detailed list of certified Carbon Footprints results can be found in the associated Certification Letter CERT-13597

Awarded: 13 December 2023

Valid Until: 12 December 2025

for and on behalf of Carbon Trust Assurance Ltd,

A handwritten signature in black ink, appearing to read "M Hockaday".

Martin Hockaday,
Head of Assurance

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SAMSUNG

RB38A7CGTS9



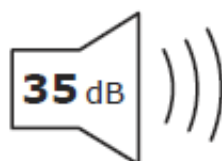
98 kWh/annum



114 L



273 L



AB_{CD}

2019/2016