Product Carbon Footprint

Product Carbon Footprint: Life Cycle Assessment Report for Orion Corporation, Orion Pharma

A study of 6 Easyhaler® products and the Easyhaler® protective cover

September 2025

Executive Summary

This assessment provides an overview analysis of the greenhouse gas (GHG) emissions associated with Orion Corporation, Orion Pharma's (Orion Pharma) Easyhaler® and its protective cover. Carbon emissions for the products assessed in this report include those derived from the extraction and processing of virgin raw materials, the transport of these materials to the manufacturing facilities, the manufacturing energy consumption, the distribution of the product, and its disposal at end-of-life.

The Easyhaler® is an inhaler device used for the efficient administration of dry-powder active pharmaceutical ingredients (APIs) to the lungs. Orion Pharma manufacturers several products of the Easyhaler®. These include the Easyhaler® with budesonide-formoterol, Easyhaler® with salmeterol-fluticasone propionate, Easyhaler® with salbutamol, Easyhaler® with formoterol, Easyhaler® with budesonide, and Easyhaler® with beclomethasone, all of which are included in this assessment.

The inhaler itself is predominantly made from injection moulded thermoplastic components; and within the medicine, the lactose 'carrier' accounts for the largest proportion in mass. Considering the product as a whole with its packaging, the carboard accounts for 36% of the total mass of the product. The raw materials of the inhalers are all sourced from within Europe and the inhaler is assembled at Orion Pharma's factory in Espoo, Finland. These are then transported to the warehouse in Salo, Finland, where the Easyhalers are distributed to distribution centres across the world.

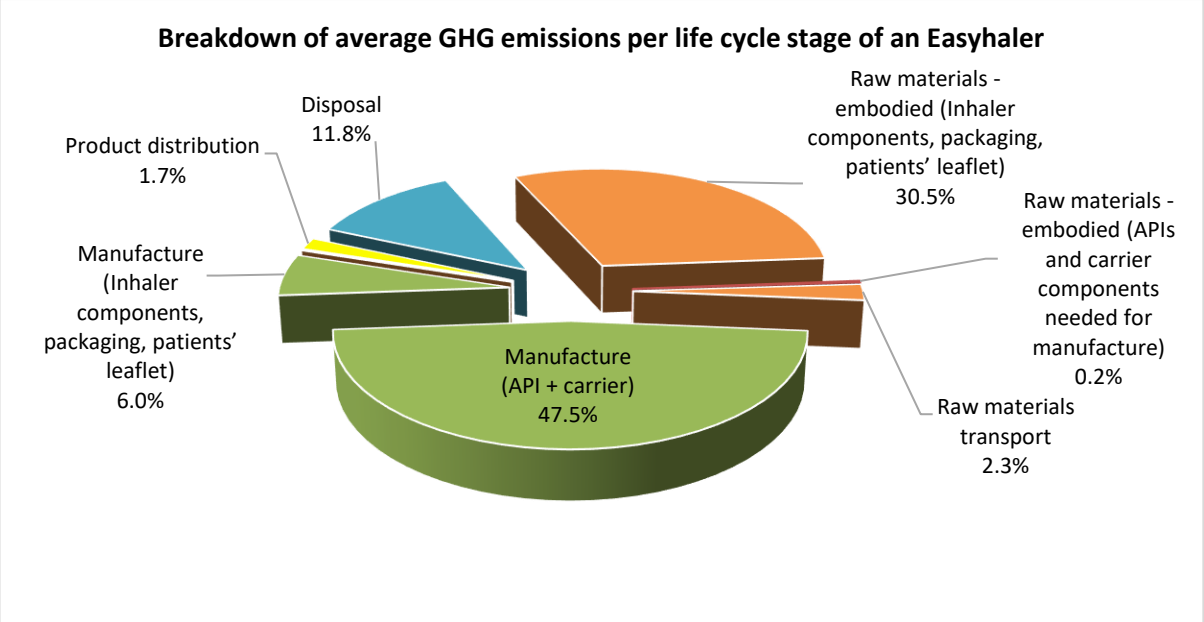
At its end of life, patients are recommended to return the inhaler to a pharmacy so that it can be incinerated. Where this is not the case, the assessment assumes that the products are disposed of at a landfill site.

The Cradle-to-Grave product life cycle emissions for 1 Easyhaler® (averaged across all 6 products) is **468.90 gCO_2e.** This is an 8.7%[1] reduction in the emissions calculated in the previous assessment, and a 20.3% reduction in the emissions calculated in the 2019 assessment. The main differences in the emissions associated with the different Easyhaler products arise from the manufacture. This is due to the different APIs used in the inhalers and the amount of lactose. The Easyhaler with salbutamol has the largest emissions associated with its manufacture since it requires the largest amount of lactose.

[1] Following an update to the emissions arising from the manufacture of budesonide's API and carrier, to produce an updated average product life cycle emissions of 513.74 gCO_2e.

The table below provides a consolidated overview of the emissions of each stage in the life cycle of each Easyhaler® product.

Process	Life Cycle Emissions per one Easyhaler® (gCO_2e)					
	Easyhaler® with salbutamol	Easyhaler® with salmeterol-fluticasone propionate	Easyhaler® with formoterol	Easyhaler® with budesonide -formoterol	Easyhaler® with budesonide	Easyhaler® with beclomethasone
Strength and dose[2]	100 µg 200 doses	50 / 250 µg 60 doses	12 µg 120 doses	160 / 4.5 µg 120 doses	200 µg 200 doses	200 µg 200 doses
Raw materials – embodied *(Inhaler components, packaging, patients' leaflet)*	142.93	142.93	142.93	142.93	142.93	142.93
Raw materials - embodied *(APIs and carrier components needed for manufacture)*	0.90	2.47	0.26	0.61	0.69	0.77
Raw materials transport	10.90	10.71	10.68	10.62	10.63	10.74
Manufacture *(API + carrier)*	286.72	240.23	214.95	158.05	159.43	278.17
Manufacture *(Inhaler components, packaging, patients' leaflet)*	28.15	28.15	28.15	28.15	28.15	28.15
Manufacture *(Assembly of the final product; inhaler and formulation (API & carrier) and packaging[3])*	0.00	0.00	0.00	0.00	0.00	0.00
Product distribution	8.00	7.94	7.91	7.84	7.84	7.99
Disposal	55.31	55.31	55.31	55.31	55.31	55.31
Total emissions (gCO_2e)	**532.91**	**487.74**	**460.19**	**403.51**	**404.98**	**524.06**
Emissions per dose	**2.66**	**8.13**	**3.83**	**3.36**	**2.02**	**2.62**
Emissions per day[4]	**n/a**	**16.26**	**7.66**	**6.72**	**4.04**	**5.24**



[2] For each Easyhaler® product, the strength and dose of the most used product in Europe was used.
[3] Facility's electricity is generated via nuclear hence emissions are zero.
[4] Emissions per day was estimated for all Easyhaler® products with the exception of Easyhaler® with salbutamol since the inhaler's typical daily use cannot be assessed due to the product only being used as rescue medication. For all other Easyhaler® products, typical use according to each respective SPC is two doses per day.

The Easyhaler® protective cover is a reusable cover that may be used to improve the durability of the inhaler. The cover is the same for all Easyhaler® products. There are product packages with and without the protective cover and their distribution to suppliers varies.

The table below shows the GHG emissions per life cycle stage for 1 protective cover.

Life cycle stage	Emissions per protective cover (gCO_2e)	% Contribution
Raw materials – embodied	68.29	79.2%
Raw materials transport	4.23	4.9%
Manufacture	10.53	12.2%
Product distribution	3.01	3.5%
Disposal	0.14	0.2%
Total gCO_2e	**86.20**	**100%**

Orion Corporation, Orion Pharma in conjunction with Carbon Footprint Ltd, has assessed and reduced the **Cradle-to-Grave** carbon emissions associated with its Easyhaler® (Easyhaler® with salbutamol, Easyhaler® with salmeterol-fluticasone propionate, Easyhaler® with formoterol, Easyhaler® with budesonide-formoterol, Easyhaler® with budesonide and Easyhaler® with beclomethasone), and assessed the carbon emissions associated with its Easyhaler® protective cover. By achieving this, Orion Corporation, Orion Pharma has qualified to use the Carbon Footprint Standard branding.

The reduction in emissions across all Easyhaler® products compared to the previous assessment is primarily due to changes in the emissions intensity of the manufacturing facilities electricity supply. The switch to nuclear electricity at the assembly facility in Espoo has resulted in a zero-emission manufacturing process here. Additionally, changes in the emission factors used has also contributed to the reduction in emissions. For example, improvements in vehicle technology and efficiency, shifts in the energy mix used to power freight transport, and ongoing methodological updates in the calculation of these factors, cause the emission factors to decrease year-on-year.

The shift to sustainable technologies for producing Easyhaler products, such as nuclear power and electric or (Hydrotreated Vegetable Oil) HVO lorries, creates environmental burden shifting. While these changes successfully reduce greenhouse gas emissions, they introduce new environmental challenges, including risks from radioactive materials, water resource strain, and the impact of energy-intensive battery production or deforestation from HVO crops. It is noted that due to a change in the assessment methodology, the current environmental factor results cannot be directly compared to the 2023 results.