oxy-gen® POWERED

Supreme

Carbon Life Cycle Assessment Report

Oxygen-Supreme Dispenser & Grande Cartridge

carbon footprint standard

CO_2e Assessed Product

APPROVED carbon footprint PRODUCT

Methodology

Assessed with the principles outlined in Greenhouse Gas Protocol ISO 14067:2018.

Dispenser

Cradle to Gate Assessment focuses on the embodied GHG emissions of raw materials, the transport of these materials to the manufacturing facility, the manufacturing energy consumption, and distribution of the product to its distribution facilities globally.

Cartridge

Cradle to Grave Assessment focuses on the embodied GHG emissions of raw materials, the transport of these materials to the manufacturing facility, the manufacturing energy consumption, and distribution of the product to its distribution facilities globally as well as the disposal of the product at its end-of-life.

carbon footprint standard™ CO_2e Assessed Product

Carbon Footprint Assessment conducted in conjunction with Carbon Footprint Ltd, has assessed the Cradle-to-Gate and Cradle-to-Grave carbon emissions associated with its Oxygen-Supreme Dispenser and Grande Cartridge respectively. By achieving this, we have qualified to use the Carbon Footprint Standard Carbon Assessed Product branding.

Executive Summary

New Carbon Lifecycle Assessment highlights lower carbon impact of Oxygen Supreme vs Aerosols.

Summary of Results

The total Cradle-to-Gate product life cycle emissions for one dispenser are **2.76 kgCO2e,** whilst the total Cradle-to-Grave product life cycle emissions for the cartridge are **1.22 kgCO2e**. These emissions totals relate to the reporting period 1st January 2024 to 31st December 2024. The breakdown of total life cycle carbon emissions for each product is shown in the following table.

	Emissions per life cycle stage (gCO_2e)			
Process	**Oxygen-Supreme Dispenser**	**% Contribution**	**Grande Cartridge**	**% Contribution**
Raw materials – embodied	1,806.38	65.4%	1,067.16	87.3%
Raw materials transport	68.71	2.5%	3.12	0.3%
Manufacture	782.41	28.3%	31.50	2.6%
Product distribution	102.60	3.7%	116.69	9.5%
Disposal	-	0.0%	3.84	0.3%
Total gCO_2e	**2,760.09**	**100%**	**1,222.31**	**100%**
Total $kgCO_2e$	**2.76**	**-**	**1.22**	**-**

Avoided Emissions from Product Recycling

The table below shows the emissions savings achieved by the manufacturer of the new product, using those recycled materials sourced from the disposal of the Grande Cartridge.

Material	Weight (g)	Primary Material Production (gCO_2e)	Recycled Material Production (gCO_2e)	% Emissions Savings
Paper	367.29	450.40	351.19	-22.0%
Board	144.10	172.05	157.41	-8.5%
Plastic	113.77	319.64	172.31	-46.1%
Cellulose	2.51	3.37	2.63	-22.0%
Rubber	1.87	6.05	2.91[1]	-52%
Total	**629.55**	**951.51**	**686.45**	**-27.9%**

Although Velair does not directly benefit from the emissions savings of recycling within its own product's life cycle, by encouraging its customers to recycle their used cartridges it is a key enabler of downstream emission reductions. This is a crucial, tangible contribution to the wider circular economy.

[1] An emission factor for the recycled material production of rubber is unavailable. Emissions were estimated based on the percentage difference between Defra 2024 primary material production and closed-loop source emission factors for all construction materials.

Market Analysis

Embodied emissions from raw materials

Other aerosol refills in the wider market include a mixture of fragrance oil, propellent (to expel the product), and solvent. The Oxygen Supreme Dispenser fragrance is made from 100% fragrance oil. Therefore, on average, the embodied emissions associated with the fragrance in the Oxygen Supreme Dispenser are 70% less than the embodied emissions of the 100 ml product examples, and 88% less than the embodied emissions of the 250 ml product examples available in the wider market.

Due to the lighter weight of the Grande Fragrance Cartridge, the emissions associated with both the transport of its ingredients and its transport within the final product are less per tonne.km. Additionally, whilst the Grande Fragrance Cartridge is made of a range of plastics, other aerosol refill cans are typically made from aluminium which is a higher density material. These raw materials differences also contribute to higher transport emissions per tonne.km.

Emissions from standard aerosol use

The propellent commonly used in other aerosol refills is LPG, which is primarily composed of propane, butane, and isobutane. Although minimal, each element of this propellent has a Global Warming Potential (GWP) meaning the gases contribute to the greenhouse effect and climate change.
Therefore, the lifetime emissions associated with the expulsion of the product from the propellent-fuelled aerosol chamber used in this case study example are 60.55 kgCO2e for the 100 ml refill and 151.36 kgCO2e for the 250 ml refill. The Oxygen Supreme Dispenser uses a patented fuel cell to generate a small, continuous amount of Oxygen, which creates the pressure needed to physically push the fragrance out of the chamber. As a result of this technology, the fragrance does not contain a propellant as an ingredient and the usage emissions over the air fresheners' lifetime are therefore zero.

Key Findings Supreme vs Aesorol:

1

Up to **88% Lower Raw Material Emmissions*** vs 250ml aerosols

2

Up to **70% Lower Raw Material Emmissions*** vs 100ml aerosols

3

Zero emissions associated with product use

4

100% Fragrance Oil - No added propellants.