Respray Solutions Kft.

Sustainability at Respray

WHAT WE BELIEVE — WHAT WE OFFER — WHAT WE EMIT

Respray

we refill deodorants.

Respray

WHAT WE BELIEVE

We at Respray created the World's first refillable deodorant solution, by providing an in-store refill station as a service, thereby enabling customers to reuse their spray packaging multiple times.

Sustainability has been at the core of our business since the beginning of our journey. We believe that the time of single-use products is over, and for a greener future, we need to implement circularity by design.

With our refill station, we aim to revolutionise the aerosol market, encourage and enhance our partners' sustainability journey, enable our customers to choose environmentally friendly products, and raise awareness about the necessity of closing the loop.

Reduce.
Reuse.
Respray.

we refill deodorants.

WHAT WE OFFER

Although our main solution is the refill station, we also pay extra attention to the design of the cans and have several joint development projects with key players in the aerosol industry to offer customers the most sustainable product possible.

Refillable

Made from post – consumer recycled aluminium

Powered by compressed gas

Painted with ecological ink

BPA free inner coating

Refillable «

After the customer uses up the product, our solution allows it to be refilled 4 more times, meaning that the same amount of deodorant use can now be achieved using only 1 can, instead of 5 separate cans, thus seriously reducing the necessary raw materials, the generated waste, and the amount of can transportation.

» Powered by compressed gas

The kind of propellant used in an aerosol product can have numerous negative environmental effects. Using compressed gas is one of the newest and most environmentally friendly solutions amongst propellants with the lowest possible emission[1]. Our refill station creates compressed air on site to use as propellant, thereby also eliminating its transportation.

Made from post-consumer recycled aluminium

Thanks to our partner Tubex, our cans are made from 50 % Real PCR®, a certified post-consumer recyclate manufactured through an energy-efficient process[2]. Re-using aluminium not only saves 95 % energy costs, but resources, time and transport routes as well[3].

BPA free inner coating

Besides the environmental impact, we need to recognise and reduce potential negative health effects. Coming into contact with Bisphenol-A (BPA), often used to coat packaging, can compromise the human hormonal system and increase the risk of hormone dependent tumours and metabolic disorders[4]. Our cans are made with a 100 % BPA free inner coating, eliminating these health-related risks.

Painted with ecological ink

The outside of our cans are painted using natural biodegradable PURe® ink and overvarnish. These are both mineral oil free, only containing renewable raw materials, and soy oil free to not contribute to the deforestation of tropical rainforests for irrigation-intensive plantations[5]. Since the components of the varnish are easily biodegradable, it does not have to be disposed of separately and therefore increases recyclability[6].

WHAT WE EMIT

The impact of our innovation can also be shown with our carbon footprint, if we compare the environmental impact of a Respray aerosol, to the footprint of an average aerosol in their CO2 equivalents. To calculate this, we have examined the three most impactful areas of aerosols, their propellant, the production of the cans, and the transportation of the products.

» Propellant

Bad reputation of aerosols

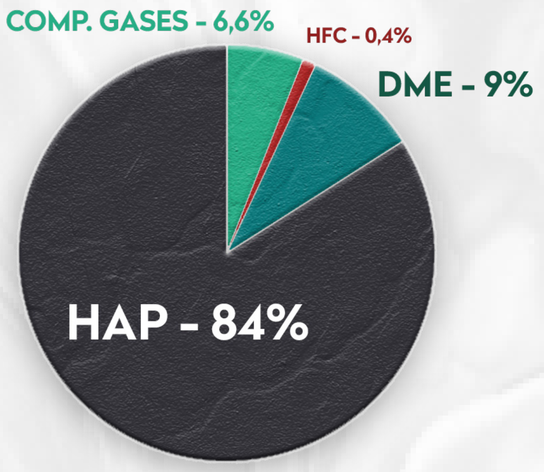
When it comes to environmental protection, aerosol products gained a bad reputation due to the propellants that were used in the past. Around the 1970s aerosol propellants mainly consisted of Chlorofluorocarbons (CFCs), which due to their chlorine content, when released into the atmosphere, strongly deplete the stratospheric ozone layer, a crucial element in absorbing UV-B radiation that hits the Earth. After scientists revealed this excessive negative impact, intensive international actions were taken to phase out CFC use, and thanks to the Montreal Protocol, the production of ozone depleting chemicals were for the most part successfully eliminated by 1996.[7]

Propellants nowadays

After phasing out the ozone depleting propellants, the industry looked for new ways to power their aerosol products. There are two categories of propellants used nowadays, compressed gases and liquified gases.

Compressed gases

Compressed gases used as propellants are compressed air, nitrogen, carbon-dioxide and nitrous-oxide. They produce a coarse spray effect, which is not favourable for most aerosol product applications, therefore compressed gases only account for 6,6 % of all aerosol propellants[8]. But these propellants have the smallest environmental impact[1]. **Compressed gases can be considered environmentally neutral**, as compressed air has a global warming potential (GWP) of 0, and CO2 has a GWP of 1, which is considered very low among chemicals, and although N20 has a higher GWP, it only accounts for a fraction of all aerosol use[9].



Liquified gases

There are 3 major types of liquified gas propellants:

HFC Hydrofluorocarbons (HFCs 152a and 134a) which have extremely high GWP values but only account for 0,4 % of propellants and are currently reduced even further[8].

DME Dimethyl ether (DME) with a low GWP of 1 but a price twice as expensive as its counterparts and therefore only accounting for 9 % of propellants, mainly in hair sprays and spray paints[8].

HAP Hydrocarbon aerosol propellants (HAPs, propane, butanes, pentanes) are the most common, taking up 84 % of all aerosols, with relatively low GWP values between 3 and 4 with a weighted average of 3,8. HAPs are the standard in most aerosol products, due to their appealing price and the fact that they are compatible with various formulations[8].

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Emission of propellant in the average deodorant

To assess the average deodorant, we are using a standard size of 150 ml, propelled with HAP, as the most common aerosol products hold these parameters[10]. Since an aerosol can this size contains on average 53 g of liquified gas as propellant[8], and HAPs have a weighted average GWP of 3,8, [8] we can say that:

the CO_2 equivalent of an average aerosol product's propellant is 201,4 g.

Average deo

Emission of propellant in a Respray filling

Respray's solution uses compressed air as the propellant, produced by the on-board air compressor in the refill stations. As previously mentioned, compressed air can be considered environmentally neutral, thereby:

the carbon footprint of the propellant in Respray's case is 0 g per filling.

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» Can production

The second main component of a deodorant is its packaging. There are two main types of cans used to contain aerosol products. Aluminium and tinplate cans are similarly common, with aluminium being slightly more dominant, taking up 52 % of all can production globally[11].

Emission of can production of the average deodorant

Since in the aerosol deodorant segment, cans are typically made from aluminium, to account for the emission of the can of an average deodorant, we have determined the CO2 footprint of an aluminium can. To estimate this, aluminium beverage cans were used as a reference, as that is a product made from the same raw material, using similar manufacturing techniques, and data is already available on their production's emission. 1 t of aluminium beverage can is responsible for 11,1 t of carbon emission[12]. Since the average weight of a standard aluminium aerosol can is around 28 g [13], we calculated that:

the carbon footprint of a single aluminium can is around 311 g.

Average deo

Emission of can production in a Respray filling

Our refillable cans are also made from aluminium, therefore the emission of manufacturing one can is the same however, Respray's deodorant cans can be refilled 4 times, therefore the deodorant use that would normally use up 5 individual cans, now only needs one single can. Thanks to our refill technology:

the carbon footprint of the can distributed to one filling is around 62 g.

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Emission of transportation of the average deodorant

To analyse the transportation's contribution to the environmental footprint of aerosol products, we considered the industrial average in the FMCG industry as a reference. The emission of FMCG product transportation sold in retail environments fall between 0,04 - 0,37 kg CO2e per item, with a median of 0,1 kg CO2e emitted per item[14]. This amount is highly dependent on the weight and size of the product, and aerosol products are generally small and light compared to the FMCG average, therefore we estimated that:

the carbon footprint of transporting a single average deodorant is around 100 g.

Average deo

Emission of transportation of a Respray filling

In our model, empty cans along with fragrance bags are transported from the manufacturers to the retail sites. Since one of the biggest contributors to CO2 emission in transportation is the size of the product, Respray's model results in a more efficient distribution in the long run. When the same amount of fragrance is supplied to the retail sites in the form of fragrance bags, it takes up 3 times less space than supplying them in the form of aluminium cans would. If we use our previous estimation that transporting a standard can emits 100 g of CO2e, then the transportation of one can and one can's worth of fragrance in our Bag-In-Box format emits about 130 g of CO2e. For the next 4 refills, only the transportation of the fragrance bag is necessary, causing only 30 g of CO2e emission per refill. This means that on average if our deodorant gets filled 5 times:

the carbon footprint of the transportation distributed to one filling is only around 50 g.

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» Additional emissions in Respray's case

To see the whole carbon footprint of our solution, we need to calculate with some extra steps that look slightly different in the case of an average deodorant.

Energy use of our refill station

Because our on-site refill stations do not provide the efficiency that comes with mass producing the average deodorant, we need to mention the energy use of the station itself. Measured with a power consumption meter device, when the station was running for 24 hours straight and refilled cans 50 times, the energy consumption was 1,12 kWh. As 1 kWh energy use equals 383 g CO_2e [15], if we assume that the station will only run during open hours (12h) and there will be around 25 refills a day with one station, then:

the CO_2 emission of the refill station for one refill is at about 8,8 g.

Average deo

Production of the Bag-in-Box packaging

In our model, the fragrance to refill the deodorants is transported to the sites in 10 liter Bag-in-Box bags. One bag is made from approximately 38,3 g of EVOH as the outer layer, and 24,7 g of PE as the inner layer. As the carbon footprint of 1 kg of EVOH is 2,5 kg CO_2e [16] and of 1 kg of PE is 1,3 kg CO_2e [17] , the footprint of one BIB bag comes out to approximately 128 g of CO_2e. With this 10 liter bag, we are able to refill deodorant cans about 133 times, therefore:

the carbon footprint of the BIB distributed to one refill is about 0,96 g.

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» Emission summary

Overall, a Respray deodorant has a

5 times smaller carbon footprint

compared to an average deodorant.

612,4 g CO2e

Average can

- Propellant 201,4 g
- Can 311 g
- Transportation 100 g

Respray can

121,76 g CO2e

- 0 g Propellant
- 62 g Can
- 50 g Transportation
- 8,8 g Station Energy Use
- 0,96 g Bag-In-Box Packaging

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DO YOU HAVE ANY QUESTIONS OR SUGGESTIONS?

GET IN TOUCH!

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LET'S MAKE THE AEROSOL INDUSTRY MORE SUSTAINABLE TOGETHER!

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