



# LCA of Old Spice Bear Glove Deodorant vs. Degree Women's Motion Sense

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## LCA of Old Spice Deodorant vs. Degree Deodorant

The two products that are being compared are two different brands of deodorant-Old Spice and Degree. I will discuss which deodorant is environmentally safer to use by determining the CO2 emission rates are for transport and which one has the least amount of Aluminum Zirconium Trichlorohydrate Gly in the product. Assume the deodorants have the same containers that hold the actual product. Assume that both deodorants have the same quantity and weight.

### Product 1 LCA (Old Spice)

- *Material Extraction*
  - The ingredients needed for the product are extracted from the earth using mining tactics and drilling (Refer to diagram)
  - Emissions from fuels are released into air from operating machines
- *Product Manufacture*
  - According to the madehow.com website the process of getting the materials needed to make deodorant starts by blending the active ingredients with waxes, oils, and silicones and molding the mixtures into stick form
  - Emissions from aluminum zirconium and other ingredients are released into air
  - Sticks are packaged in hollow tubes
  - Ingredients are mixed together in a stainless steel kettle with a set temperature of heat
  - The deodorant sticks are then placed inside tube that will hold it in place
  - The finished sticks will go under an infrared lamp to solidify the deodorant and to finish operations for the finished product
- *Package and Transportation*
  - The finished product goes through cleaning stations to clear any excess scraps that will either be reused or sent to the landfill
  - The deodorant is packed onto trucks and sent to Humboldt state from Cincinnati, Ohio 45202 (Product 1)
- *Product Marketing*
  - The deodorant is shelved onto HSU inventory at the Marketplace for students and staff to purchase
- *Product Use*
  - The deodorant is used by consumer multiple times (times used can vary)
- *End Of Life*
  - Deodorant not used to landfill and packaging recycled

## Quantitative Calculation

CO2 in Diesel

$$\frac{2788gC}{1 \text{ Gallon of Diesel}} \times 0.99 \text{ Oxidation factor} \times \left(1 \text{ mol } \frac{C}{12g} C\right) \times \left(\frac{1 \text{ mol}}{1 \text{ mol}} CO_2\right) \times \left(1 \text{ lb } \frac{CO_2}{454g CO_2}\right)$$
$$= 22.21 \text{ lbs } \frac{CO_2}{1 \text{ Gallon Diesel}}$$

Product 1

$$\frac{2510 \text{ Miles}}{1 \text{ Trip}} \times \frac{1 \text{ Gallon of Diesel}}{7 \text{ MPG}} \times \frac{1 \text{ Trip}}{1000 \text{ lbs Deodorant}} \times 22.21 \frac{\text{ lbs } CO_2}{1 \text{ Gallon of Diesel}}$$
$$= 7.96 \frac{\text{ lbs } CO_2}{\text{ Deodorant}}$$

Product 2

$$\frac{3100 \text{ Miles}}{1 \text{ Trip}} \times \frac{1 \text{ Gallon of Diesel}}{7 \text{ MPG}} \times \frac{1 \text{ Trip}}{1000 \text{ lbs Deodorant}} \times 22.21 \frac{\text{ lbs } CO_2}{1 \text{ Gallon of Diesel}}$$
$$= 9.83 \frac{\text{ lbs } CO_2}{\text{ lbs Deodorant}}$$

## Product 2 LCA (Degree)

- *Material Extraction*
  - The ingredients needed for the product are extracted from the earth using mining tactics and drilling (Refer to diagram)
  - Emissions from fuels are released into air from operating machines
- *Product Manufacture*
  - Sticks are packaged in hollow tubes
  - According to the madehow.com website the process of getting the materials needed to make deodorant starts by blending the active ingredients with waxes, oils, and silicones and molding the mixtures into stick form
  - Emissions from aluminum zirconium and other ingredients are released into air
  - Ingredients are mixed together in a stainless steel kettle with a set temperature of heat
  - The deodorant sticks are then placed inside body that will hold it in place
  - The finished sticks will go under an infrared lamp to solidify the deodorant and to finish operations for the finished product
- *Package and Transportation*
  - The finished product goes through cleaning stations to clear any excess scraps that will either be reused or sent to the landfill
  - Deodorant is packed onto trucks and sent to Humboldt state from Unilever Trumbull, CT 06611
- *Product Marketing*
  - Shelved onto HSU inventory at the Marketplace for students and staff to purchase
- *Product Use*
  - The deodorant is used by the consumer multiple times (times can vary)
- *End Of Life*
  - Deodorant not used to landfill and packaging recycled

### Conclusion

Since the percentage of Aluminum Zirconium Trichlohydrex Gly (a CFC that was used in aerosol spray cans that was put into stick form to cause less harm to the ozone) is lower in Old Spice deodorant than Degree deodorant I conclude that Old Spice is environmentally safer than Degree because the CFC emissions are lower than Degree's CFC emission rate and also the transportation process emits less CO2 emissions into the air.

	Material Extraction	Product Manufacture	Package/Transportation	Product Marketing	Product Use	End of Life
Old Spice	x	Same	x	Same	same	Same
Degree		same		same	Same	Same