

# STREAMLINED LIFE CYCLE ASSESSMENT\* SHAMPOO PACKAGING CASE STUDY

## SHAMPOO PACKAGE COMPARISON

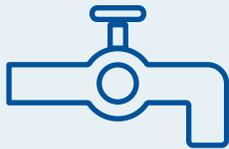
Many types of shampoo available today are packaged in HDPE plastic bottles. For this Life Cycle Assessment study with a cradle-to-grave boundary, a comparison was made between a popular shampoo brand in an HDPE bottle versus the premade STANDCAP Pouch, an award-winning inverted flexible pouch.



STANDCAP POUCH



HDPE BOTTLE



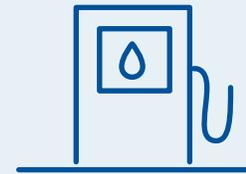
### WATER CONSUMPTION

When looking at water use during the life cycle of the two package formats, the premade STANDCAP Pouch results in about one-third **(-34.4%)** less water usage. This is largely driven by the water that is needed in the blow molding manufacturing process for the rigid bottle.



### GREENHOUSE GAS EMISSIONS

The premade STANDCAP Pouch has a GHG emissions impact of only half **(-50.5%)** that of the HDPE bottle. This is because of the amount of material used and the greater end-of-life impact for the plastic bottle.



### FOSSIL FUEL CONSUMPTION

The premade STANDCAP Pouch uses about **54.8%** less fossil fuel than an HDPE bottle to manufacture. This is hardly a surprise, as the bottle uses more than twice the material to make.



## END OF USE SUMMARY

### SOURCE REDUCTION BENEFITS

According to the U.S. EPA Waste Hierarchy, the most preferred method for waste management is source reduction and reuse.

A major benefit of flexible packaging is the high product-to-package ratio that it offers.

High product-to-package ratio:



Low product-to-package ratio:



### RECOVERY BENEFITS

STANDCAP POUCH



**1x**

amount of material ending up as municipal solid waste

While many multi-material flexible packages are not yet recovered and recycled in any significant amount, they still result in a substantial reduction in the amount of material sent to landfill versus other types of packaging.

HDPE BOTTLE



**1.7x**

amount of material ending up as municipal solid waste

Even though HDPE bottles are recycled at a rate of **31.1%**, there is still a larger end-of-life impact with **40%** more material ending up as municipal solid waste compared to the premade STANDCAP Pouch format.

## IMPLICATIONS

The premade STANDCAP Pouch has a number of sustainability benefits when compared to a HDPE bottle for packing and shipping shampoo. These include lower fossil fuel and water use, GHG emissions, better product-to-package ratio and considerably less material discarded at end-of-life.

FORMAT	FOSSIL FUEL CONSUMPTION (MJ-EQUIV)	GHG EMISSIONS (KG-CO <sup>2</sup> EQUIV)	WATER CONSUMPTION (L)	PRODUCT-TO-PACKAGE RATIO (%)	PKG LANDFILLED ((G)/1000 KG SHAMPOO)
STANDCAP POUCH 	502 <b>(-54.8%)</b>	23.56 <b>(-50.5%)</b>	7,245 <b>(-34.4%)</b>	22.5:1 <b>(95.7%:4.3%)</b>	44,523 <b>(-41.4%)</b>
HDPE BOTTLE 	1,111	47.61	11,043	10.1:1	75,918