

# LIFE CYCLE ASSESSMENT

## SINGLE SERVE JUICE FLAVORED BEVERAGES PACKAGING CASE STUDY

### SINGLE SERVE JUICE FLAVORED BEVERAGES PACKAGE COMPARISON

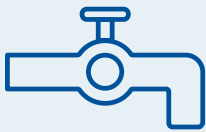
Beverages are sold in a wide variety of packaging formats based on their volume, content, usage, and audience, among many other considerations. Beverages are also heavy, requiring a package format that is robust enough to contain the volume without breaking during transport or usage. For this Life Cycle Assessment the following popular beverage formats were evaluated: a flexible drink pouch and a glass bottle, which many incorrectly assume to be more sustainable.



FLEXIBLE DRINK POUCH



GLASS BOTTLE



#### WATER CONSUMPTION

The flexible drink pouch, by far, has lower water consumption than the glass bottle because of the small amount of water required for the laminating process.

The glass bottle uses large amounts of water during manufacturing as part of the cooling process.



#### GREENHOUSE GAS EMISSIONS

The flexible drink pouch has lower overall greenhouse gas emissions because of its light weight and overall efficient material and manufacturing process.

The glass bottle has significantly higher emissions than the flexible drink pouch because of the weight of the glass bottle.



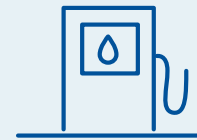
**27,734**

PKG WT.(G)/1,000 KG DRINK



**531,362**

PKG WT.(G)/1,000 KG DRINK



#### FOSSIL FUEL CONSUMPTION

The flexible drink pouch comes out with more favorable results in fossil fuel consumption.

The glass bottle requires more material to hold the same amount of product and has a more energy-intensive material production process.



**88,736**

MJ-EQUIV



**326,690**

MJ-EQUIV

# END OF USE SUMMARY

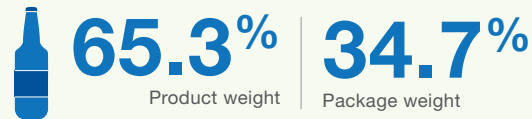
## SOURCE REDUCTION BENEFITS

The flexible drink pouch is far more efficient with a product-to-package ratio of **97.3% : 2.7%**.

High product-to-package ratio:



Low product-to-package ratio:



## RECOVERY BENEFITS

STAND-UP FLEXIBLE POUCH

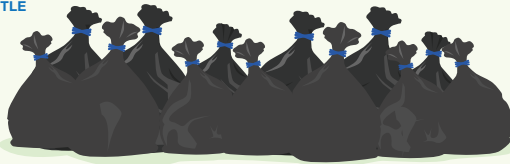


**1x**

amount of material ending up as municipal solid waste

When considering the amount of packaging that ends up as municipal solid waste based on current recycling rates, the glass bottle results in more material ending up in municipal solid waste than the flexible drink pouch (**1,213%**).

GLASS BOTTLE





**13x**

amount of material ending up as municipal solid waste

## IMPLICATIONS

The results of the data comparing the different juice packaging formats show that the flexible drink pouch has a number of significant benefits (fossil fuel usage, carbon impact, and water consumption) over the glass bottle, a format thought by many consumers to be more sustainable. The flexible drink pouch also results in much less municipal solid waste than the glass bottle.

FORMAT	FOSSIL FUEL CONSUMPTION (MJ-EQUIV)	GHG EMISSIONS (KG-CO <sup>2</sup> EQUIV)	WATER CONSUMPTION (L)	PRODUCT-TO-PACKAGE RATIO (%)	PKG LANDFILLED (G)/1,000 KG JUICE
FLEXIBLE DRINK POUCH 	88,736	4,652	12,108	97.3 : 2.7	27,734
GLASS BOTTLE 	326,690 <b>(+268%)</b>	25,612 <b>(+451%)</b>	209,809 <b>(+1,633%)</b>	65.3 : 34.7	364,169 <b>(+1,213%)</b>

For analysis on even more beverage packaging formats, be sure to read our research study, *A Holistic View of the Role of Flexible Packaging in a Sustainable World*.