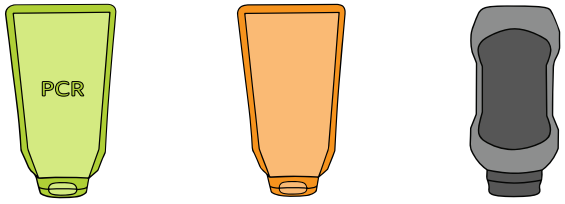
STREAMLINED LIFE CYCLE ASSESSMENT* KETCHUP PACKAGING CASE STUDY

KETCHUP PACKAGE COMPARISON

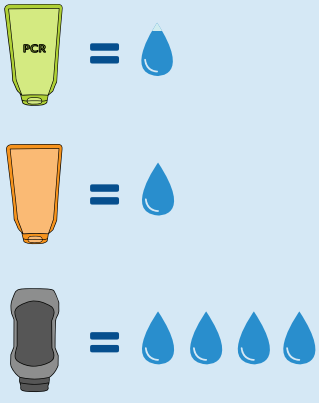
Ketchup is a universally loved condiment that is often packaged in a PET or glass bottle. For this Life Cycle Assessment study with a cradle-to-grave boundary, a popular inverted PET bottle and the premade STANDCAP Pouch, an eco-friendly inverted flexible pouch, were evaluated.



PCR STANDCAP | STANDCAP | INVERTED PET BOTTLE

Water Consumption

The premade STANDCAP Pouch comes in with about three-quarters less water use **(-75.2%)** than the rigid container and **(-78.5%)** when PCR is incorporated into the pouch. This would be driven by the water needed to cool the molds in the stretch blow molding process which is more water intensive than the laminating and extrusion process for multilayer pouches such as the premade STANDCAP Pouch.



Greenhouse Gas Emissions

The premade STANDCAP Pouch with PCR results in lower GHG emissions **(-60.7%)** than the PET bottle, which can be attributed to the additional energy and heat needed during the stretch blow molding process for the bottle.

Fossil Fuel Consumption

The premade STANDCAP Pouch results in **52.4% lower** fossil fuel use because it takes less material to make than the PET bottle. The use of PCR results in an additional reduction **(57.3%)** in fossil fuel use. Additionally, the stretch blow molding for the bottle manufacturing process uses more fossil fuel than the pouch's laminating and extruding process.

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*All environmental impact metrics were developed using the streamlined life cycle assessment tool, EcoImpact-COMPASS®

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.

RECOVERY BENEFITS

PCR STANDCAP

1x
amount of material ending up as municipal solid waste

STANDCAP

1x
amount of material ending up as municipal solid waste

INVERTED PET BOTTLE

1.6x
amount of material ending up as municipal solid waste

High product-to-package ratio:

95.1% Product weight | **4.9%** Package weight

95.1% Product weight | **4.9%** Package weight

Low product-to-package ratio:ratio:

90.5% Product weight | **9.5%** Package weight

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.

The PET bottle results in about **40%** more material that ends up at a landfill, even considering a recycling rate of **26.8%** for PET bottles and no credit for the flexible pouch for recovery.

IMPLICATIONS

The premade STANDCAP Pouch results in lower impacts across a wide range of environmental metrics, including fossil fuel and water use, GHG emissions and discarded material. This is driven by the efficient material usage of the flexible pouch, which uses less than half the amount of material needed to package the same amount of ketchup.

FORMAT	FOSSIL FUEL CONSUMPTION (MJ-EQUIV)	GHG EMISSIONS (KG-CO^2 EQUIV)	WATER CONSUMPTION (L)	PRODUCT-TO-PACKAGE RATIO (%)	PKG LANDFILLED (G)/1,000 KG KETCHUP)
PCR STANDCAP POUCH	1.69 (-57.3%)	.0827 (-60.7%)	23.36 (-78.5%)	19.6:1 (95.1% : 4.9%)	50,996 (-39.9%)
STANDARD STANDCAP POUCH	1.88 (-52.4%)	.08754 (-58.4%)	26.93 (-75.2%)	19.6:1 (95.1% : 4.9%)	50,996 (-39.9%)
INVERTED PET BOTTLE	3.95	.2104	108.61	9.5:1 (90.5% : 9.5%)	82,991

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*For more information and methodologies of assessments, please visit **www.flexpack.org** or **www.glenroy.com** to download Glenroy's "A Streamlined Life Cycle Assessment Comparison for the Glenroy Premade STANDCAP Pouch in the Sauces and Personal Care Market versus Rigid Packaging Options" report and refer to pages 23-26.*