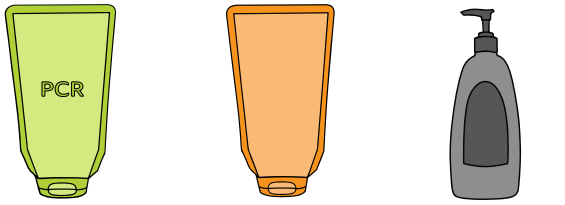
STREAMLINED LIFE CYCLE ASSESSMENT* HAND LOTION PACKAGING CASE STUDY

HAND LOTION PACKAGE COMPARISON

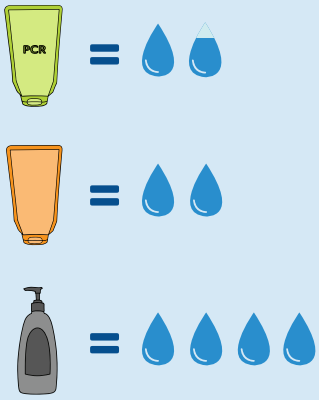
Lotion is packaged in a variety of formats, including an HDPE bottle with a pump mechanism. For the following Life Cycle Assessment study with a cradle-to-grave boundary, lotion packaged in an HDPE bottle and pump was compared to the premade STANDCAP Pouch, an eco-friendly inverted flexible pouch.



PCR STANDCAP | STANDCAP | HDPE BOTTLE

Water Consumption

Water use for the flexible premade STANDCAP Pouch is nearly a **50% reduction** versus the rigid bottle, with nearly **54% reduction** when using PCR content. This is a result of the bottle's manufacturing process, which requires water to cool molds during production. The laminating and extruding process for the multilayer pouch is less water-intensive by comparison.



Greenhouse Gas Emissions

The premade STANDCAP Pouch results in a reduction of over half in GHG emissions **(-58.7%)** with additional emission reduction through the use of PCR **(-61.0%)**, versus the rigid bottle. This is driven by the weight difference as well as the manufacturing process advantages for the pouch, which is less energy intensive than blow molding the HDPE bottle.

Fossil Fuel Consumption

Fossil fuel use for the premade STANDCAP Pouch with PCR results in a reduction of over half **(-65.5%)** that of the rigid bottle, with much of the difference attributed to the bottle's material impact.

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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

HDPE BOTTLE

2x
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:

88.4% Product weight | **11.6%** 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.

Even when current recycling rates are considered **(29.3%)** for the bottle and the flexible packaging is assumed to have a zero percent recycling rate, the premade STANDCAP Pouch results in over half **(-51.2%)** less material sent to landfill.

IMPLICATIONS

The results of this scenario show that 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 lotion.

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 LOTION)
PCR STANDCAP POUCH	1.69 (-65.5%)	.0827 (-61.0%)	23.36 (-53.8%)	19.6:1 (95.1% : 4.9%)	50,996 (-51.2%)
STANDARD STANDCAP POUCH	1.88 (-61.5%)	.08754 (-58.7%)	26.93 (-46.8%)	19.6:1 (95.1% : 4.9%)	50,996 (-51.2%)
HDPE BOTTLE	4.88	.2118	50.60	7.6:1 (88.4% : 11.6%)	104,473

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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 45-48.*