



COLLEGE & UNIVERSITY • UNDERGRAD & GRAD • AGES 19–28

Lifecycle Analysis Template

A Working Worksheet for Comparing Material Footprints

Use this template to conduct a structured cradle-to-grave lifecycle analysis (LCA) of a packaging material, comparing a conventional plastic against a compostable alternative such as PHA. Fill in each stage with sourced data or reasoned estimates, and cite assumptions clearly.

HOW TO USE THIS TEMPLATE

- Select one product pair to compare (e.g., a PHA cup vs. a conventional plastic cup).
- Complete each lifecycle stage table on the following pages using research or provided datasets.
- Summarize findings and defend one recommendation in the final section.

Stage 1 & 2: Raw Materials & Manufacturing

STAGE 1: RAW MATERIAL EXTRACTION / SOURCING

FACTOR	COMPOSTABLE MATERIAL	CONVENTIONAL PLASTIC
Feedstock source		
Renewability (renewable / finite)		
Extraction energy input		
Land or water use impact		
Notes / assumptions		

STAGE 2: MANUFACTURING & PROCESSING

FACTOR	COMPOSTABLE MATERIAL	CONVENTIONAL PLASTIC
Processing method		
Energy intensity (kWh/unit)		
Water use per unit		
Process emissions		
Notes / assumptions		

Stage 3, 4 & 5: Distribution, Use & End-of-Life

STAGE 3: DISTRIBUTION & TRANSPORT

FACTOR	COMPOSTABLE	CONVENTIONAL
Weight per unit (shipping impact)		
Transport distance / mode		
Packaging efficiency		

STAGE 4: USE PHASE

FACTOR	COMPOSTABLE	CONVENTIONAL
Expected lifespan / single-use		
Consumer handling requirements		
Performance vs. conventional equivalent		

STAGE 5: END-OF-LIFE

FACTOR	COMPOSTABLE	CONVENTIONAL
Disposal pathway (landfill / compost / recycle)		
Decomposition timeframe		
Infrastructure required		

SUMMARY & RECOMMENDATION

Based on the data gathered above, summarize which material demonstrates the lower overall environmental footprint across the full lifecycle, and identify the single stage where the difference is most significant.
