

Product Compare Report

Friday, 2022-02-11 10:22:51 AM

Environmental Impact Using Screening Life Cycle Analysis

Goal & Scope

This LCA compares 1000kg of finished Essential Superior Living to 1000kg of finished Eternal Living Vegetarian. Due to the manufacturing yields, it takes 1299kg and 1075kg of raw materials to produce 1000kg of finished Essential Superior Living and Eternal Living Vegetarian respectively.

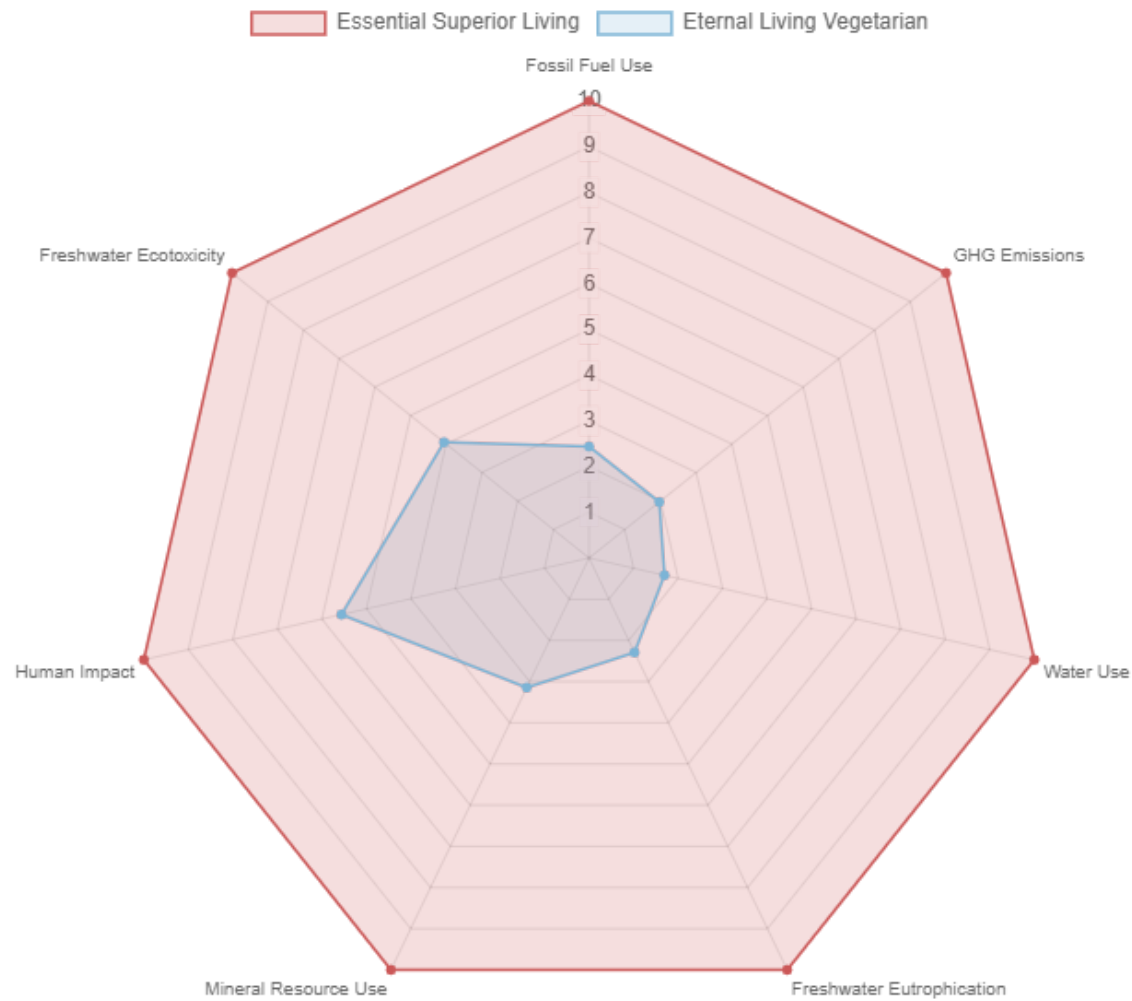
Report Details

Project Name: Essential Foods
Project Description: Project Description
Analysis Method: COMPASS (2021)
Analysis Type: Compass Impact
User: megan.wingarter@trayak.com
Company: Essential Foods
Number of BOMs in Analysis: 2
Status: NA
Type: NA

Note: This COMPASS report uses life cycle inventory (LCI) data that represents an industry average for materials, manufacturing processes, and end of life impacts. The Life Cycle Analysis (LCA) in this report can be used for directional guidance in internal decision making and understanding trade-offs. COMPASS follows the guidelines of ISO 14040 in determining and documenting the scope, assumptions, consistent boundary conditions and data sources. According to ISO 14040, LCA results should not be used to make comparative assertions between competitive products to be disclosed to the public without first conducting a third party critical review.

Overview

The overview is shown as a spider chart which includes the selected indicators for environmental impact assessment. It serves as a representation of how the packages compare to each other, with a smaller shaded area representing less of an environmentally harmful package.



Assumptions & Comments

- All packaging components required to achieve the LCA goal are added to the BOM and included in the analysis : NA
- All significant manufacturing processes are included for the components of the BOM : NA
- Any components or manufacturing steps that are omitted are documented along with the reason for omission. : NA
- All relevant transportation modes & distances are included in the analysis. : No
- Any proxies used for any of the data are documented. : Yes
- All end-of-life rates for recycling, landfill, incineration etc. are appropriate for the selected end-of-life region. Any changes made are documented. : Yes

Total Environmental Impact

This section shows the total impact for each of the selected indicators used for the Life Cycle Analysis. Each indicator is composed of the material extraction, manufacturing, transportation, end of life, and use phase impacts. This will allow you to determine which life cycle phase has the greatest impact.

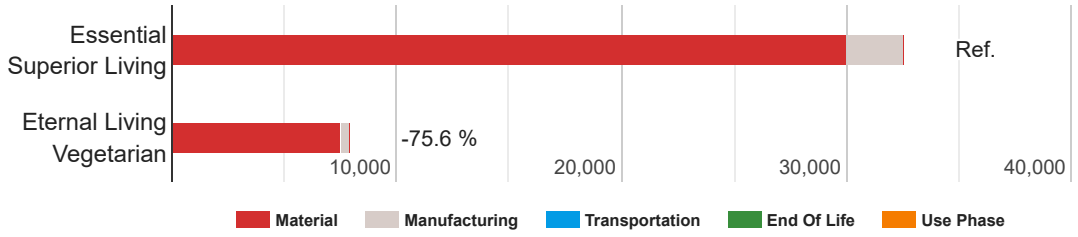
Note: The material phase measures the environmental footprint of extracting and processing materials. The manufacturing phase calculates the impact of the manufacturing or conversion processes that companies use to add value and create the package or product. Use phase includes the environmental impact during the useful life of the package/product. Typically, the use phase impact is due to the consumption of resources like electricity, fuel, or other consumables. For the transportation phase, the impact is calculated based on the mode of transportation (road, rail, air, sea) as well as the distances travelled. The end of life impact calculation incorporates the most likely fate of the product/package and its components based on typical curbside municipal waste management. Typical percentage rates for region based recycling, incineration, and landfill are used to calculate the impacts.

Fossil Fuel Use (MJ deprived)

Total quantity of fossil fuel consumed throughout the life cycle reported in megajoules (MJ) equivalents deprived. This calculation uses the IMPACT World+ method and assumes fossil resources mainly used for energy purposes. Fossil fuels include coal, petroleum, and natural gas. Inputs for nuclear fuel such as uranium are accounted for in the MINERAL CONSUMPTION metric.

Essential Superior Living	Material 30,015.3 (92.11%)	Manufacturing 2,570.51 (7.89%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 32,585.81
Eternal Living Vegetarian	Material 7,526.88 (94.68%)	Manufacturing 422.55 (5.32%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 7,949.43

Fossil Fuel Use (MJ deprived) by Life Cycle Phases



SIMPLE Indicators

Fossil Fuel Use Differences for Each BOM Compared to the Reference

Eternal Living Vegetarian

24,636.38 MJ deprived

4.03 Barrels of Oil

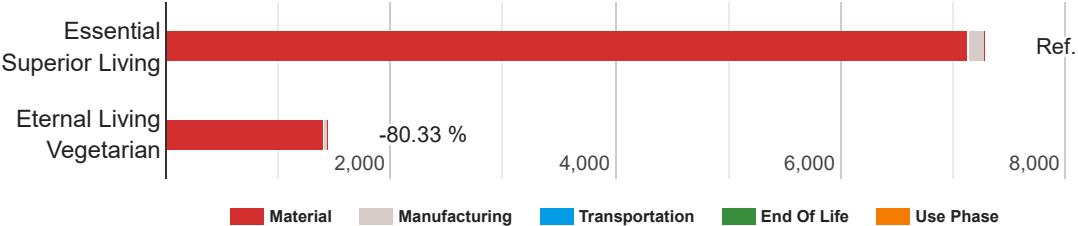
1.74 Average Homes Powered Yearly

GHG Emissions (kg CO₂ eq)

The total quantity of greenhouse gases (GHG) emitted throughout the lifecycle reported in kilograms of CO₂ equivalents. This calculation follows the latest IPCC 2013 method and considers climate feedback loops.

Essential Superior Living	Material 7,136.99 (97.94%)	Manufacturing 149.95 (2.06%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 7,286.93
Eternal Living Vegetarian	Material 1,408.92 (98.28%)	Manufacturing 24.65 (1.72%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 1,433.57

GHG Emissions (kg CO₂ eq) by Life Cycle Phases



SIMPLE Indicators

GHG Emissions Differences for Each BOM Compared to the Reference

Eternal Living Vegetarian

5,853.36 kg CO₂ eq

3.46 Passenger Vehicles Driven Yearly

28,006.53 Miles Driven by Passenger Vehicles Yearly

2,493.24 Liters of Gasoline Consumed

151.68 Tree Seedlings Grown for 10 Years

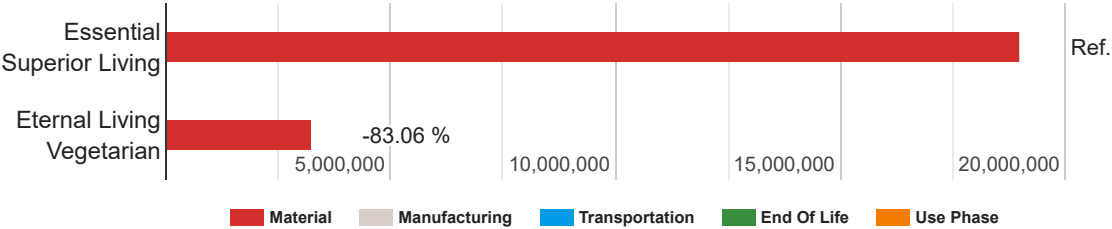
6.89 Acres of Forests Yearly

Water Use (L)

The relative available water remaining per area in a watershed after the demand of humans, aquatic ecosystems, and manufacturing process has been met. This metric accounts for water scarcity and the result represents the relative value in comparison with the average liters consumed in the world. Essentially, the total water consumed to make the package is multiplied by the region's scarcity factor which will either increase or decrease the water usage value based on the scarcity or excess availability of water in a specific region, respectively.

Essential Superior Living	Material 18,972,827.98 (99.95%)	Manufacturing 9,624.28 (0.0507%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 18,982,452.26
Eternal Living Vegetarian	Material 3,213,428.9 (99.95%)	Manufacturing 1,582.07 (0.0492%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 3,215,010.97

Water Use (L) by Life Cycle Phases



SIMPLE Indicators

Water Use Differences for Each BOM Compared to the Reference

Eternal Living Vegetarian

15,767,441.29 L

4,165,770.49 Gallons of Water

262,790.69 Average Showers

719.97 People Showering Daily for a Year

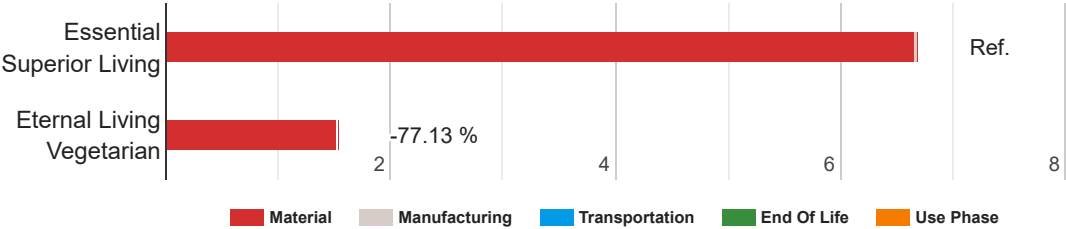
6.31 Olympic Sized Swimming Pools

Freshwater Eutrophication (kg PO₄ eq.)

Eutrophication is the abnormal increase in chemical nutrients that results in excessive plant/algal growth and decay resulting in an anoxic condition in freshwater systems. (The major consequence are algal blooms.) Typically, these are emissions of phosphorus compounds released during the production of materials. It is reported in phosphate (PO₄) equivalents and is calculated with Impact World+ characterization factors.

Essential Superior Living	Material 6.65 (99.46%)	Manufacturing 0.0362 (0.5413%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 6.69
Eternal Living Vegetarian	Material 1.53 (99.61%)	Manufacturing 0.006 (0.388%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 1.53

Freshwater Eutrophication (kg PO₄ eq.) by Life Cycle Phases

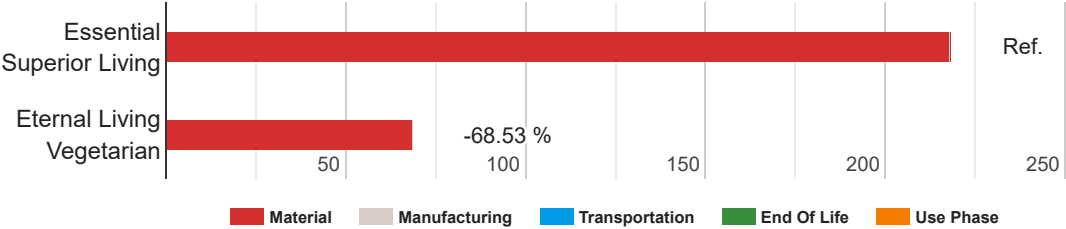


Mineral Resource Use (kg deprived)

This indicator uses the material competition scarcity index from de Bruille (2014) as a midpoint indicator. The factor represents the fraction of material needed by future users that are not able to find a reliable substitute for the mineral. It is expressed in units of kilograms of deprived resource per kilogram of resource dissipated. It considers mineral scarcity and viable substitutes.

Essential Superior Living	Material 217.58 (99.73%)	Manufacturing 0.5953 (0.2729%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 218.18
Eternal Living Vegetarian	Material 68.57 (99.86%)	Manufacturing 0.0979 (0.1425%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 68.67

Mineral Resource Use (kg deprived) by Life Cycle Phases

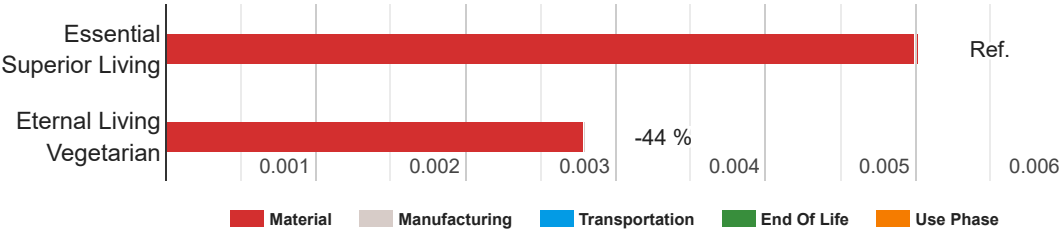


Human Impact (DALY)

The quantity of environmental emissions resulting in particulate, cancer & toxic non-cancer impacts to humans released throughout the lifecycle. The metric reports these three measurements in Disability Adjusted Life Years (DALY). Calculated using Impact World+ and considers severity factors of any adverse effects.

Essential Superior Living	Material 0.005 (99.56%)	Manufacturing 0.000021922 (0.4369%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 0.005
Eternal Living Vegetarian	Material 0.0028 (99.87%)	Manufacturing 0.0000036036 (0.1291%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 0.0028

Human Impact (DALY) by Life Cycle Phases



Freshwater Ecotoxicity (CTUe)

The quantity of environmental emissions resulting in aquatic toxic impacts released throughout the lifecycle reported in Comparative Toxic Unit ecosystem (CTUe). CTUe corresponds to a fraction of disappeared species over a cubic meter of freshwater (or marine water) during one year. This is a measure of ecotoxicity impact of chemical releases to air, water, and land using aquatic toxicity factors and is calculated using characterization factors from USEtox 2.0.

Essential Superior Living	Material 50,322.91 (99.39%)	Manufacturing 307.33 (0.607%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 50,630.25
Eternal Living Vegetarian	Material 20,520.65 (99.75%)	Manufacturing 50.52 (0.2456%)	Transportation 0 (0%)	EndOfLife 0 (0%)	UsePhase 0 (0%)	Total 20,571.17

Freshwater Ecotoxicity (CTUe) by Life Cycle Phases

