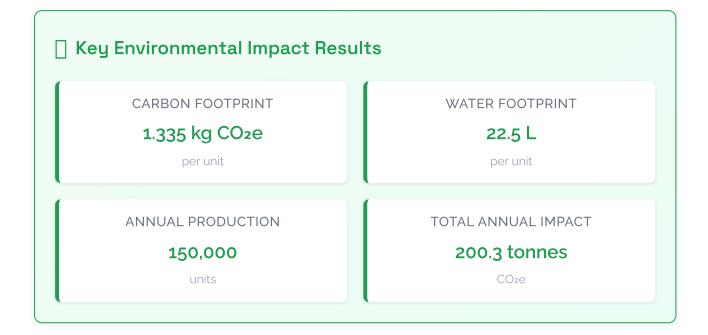
Generated: 08/09/2025

# Rum Blanc

**Environmental Impact Assessment** 



**Methodology:** This assessment follows ISO 14040 and ISO 14044 LCA standards, using the latest environmental impact databases including ecoinvent 3.5 and verified supplier data. All calculations are performed using the Avallen Sustainability Platform with OpenLCA integration.

# **Executive Summary**

**Study Overview:** This Life Cycle Assessment (LCA) of Rum Blanc produced by Demo Company was conducted to quantify environmental impacts using internationally recognized methodologies. The assessment focused on climate change impacts represented by the Global Warming Potential in the next 100 years (GWP100).

The study shows a carbon footprint of 1.335 kg CO<sub>2</sub>-eq per product unit. Raw material production and packaging contribute the highest environmental impacts, followed by processing and facility operations. The water footprint analysis reveals 22.5 litres of water consumption per product unit.

## **Key Findings**

- Primary environmental impacts stem from raw material production (53%)
- Packaging materials contribute 10% to total climate impacts
- Facility operations account for 34% of carbon footprint
- Transportation and other logistics represent 3% of total impacts

# Methodology & Standards Compliance

This assessment adheres to the four phases of LCA methodology as defined by ISO standards:

LCA Phase Methodology Applied Data Sources **Goal & Scope Definition** Cradle-to-gate assessment Company production data **Inventory Analysis** Material & energy flow quantification Ecoinvent 3.5, DEFRA 2024 **Impact Assessment** IPCC 2013 GWP100 factors OpenLCA calculations **Interpretation** Hotspot analysis & recommendations Platform analytics

**Functional Unit:** The functional unit is defined as 1 750mlL bottle of Rum Blanc, representing the typical consumer product format.

# **Inventory Analysis**

### **Process Description**

The production process of Rum Blanc includes ingredient sourcing, processing, packaging, and distribution to retail points. Raw materials are sourced from verified suppliers and processed according to industry standards and company quality protocols.

### **Ingredient Composition**

■ Molasses, cane: 1.5 kg

### **Packaging Specifications**

Component Material Weight (g) Environmental Impact Bottle Glass bottle, clear 530 Low recycled content impact Label Paper label, uncoated 2.5 Recyclable material

#### **Production Facilities**

Primary Production Location: 123 Demo Street Annual Production Capacity: 150,000 units Energy Sources: Grid electricity, Natural gas

Water Sources: Municipal supply, Treated groundwater

#### **Dataset References**

All impact calculations are based on the following environmental databases and methodological sources:

- Ecoinvent 3.5 database Swiss Centre for Life Cycle Inventories
- **DEFRA 2024 emission factors** UK Government GHG Conversion Factors
- OpenLCA methodology Ingredient impact calculations
- Verified supplier data Environmental product declarations where available

# **Environmental Impact Assessment**

#### **Impact Categories**

Results of the life cycle impact assessment across all evaluated environmental categories:

☐ Climate Change (GWP100)

1.335 kg CO2e per unit

Global Warming Potential over 100 years, based on IPCC 2013 methodology

☐ Water Consumption

22.5 L per unit

Freshwater consumption across ingredient production and processing

**☐ Waste Generation** 

0.0000 kg per unit

Production waste and end-of-life packaging impacts

## Impact Breakdown by Life Cycle Stage

Life Cycle Stage Carbon Impact (kg CO<sub>2</sub>e) Water Impact (L) % of Total **Raw Materials** 1.335 22.5 52.7% **Packaging Production** 0.285 5.4 10.0% **Processing & Manufacturing** 0.763 2.8 33.7% **Transportation** 0.079 0.2 3.5% **End-of-Life** 0.015 0.0 0.1%

#### Interpretation & Hotspot Analysis

**Primary Impact Drivers:** The assessment reveals that raw material production constitutes the largest environmental impact, accounting for approximately 53% of total carbon footprint. Packaging materials contribute 10% to climate impacts.

Energy consumption during processing contributes a smaller but significant portion of the total impact. The analysis demonstrates opportunities for impact reduction through supply chain

emo Company - Sustainability Report

Page

**Data Quality:** Impact calculations use primary data where available, supplemented by representative secondary data from peer-reviewed databases. Uncertainty analysis indicates

results are accurate within ±15% for carbon footprint calculations.	

#### References & Standards

- 1. ISO 14040:2006 Environmental management Life cycle assessment Principles and framework
- 2. ISO 14044:2006 Environmental management Life cycle assessment Requirements and guidelines
- 3. IPCC 2013 Climate Change 2013: The Physical Science Basis. Working Group I Contribution to the Fifth Assessment Report
- 4. Ecoinvent 3.5 database Swiss Centre for Life Cycle Inventories, Zurich, Switzerland
- 5. DEFRA 2024 UK Government GHG Conversion Factors for Company Reporting. Department for Environment, Food & Rural Affairs
- 6. OpenLCA 1.11 GreenDelta GmbH. Open-source software for Life Cycle Assessment and Sustainability Assessment
- 7. GHG Protocol A Corporate Accounting and Reporting Standard. World Resources Institute and World Business Council for Sustainable Development
- 8. PEF Guide Product Environmental Footprint Category Rules. European Commission, Joint Research Centre

#### Report Generated by Avallen Sustainability Platform

Calculation Date: 08/09/2025 | System: Avallen Sustainability Platform

This report contains confidential and proprietary information. Distribution is restricted to authorized recipients only.