carboncalcpcf.com

Bioethanol Product Carbon Footprint Dashboard

Total Net PCF: **2.811 kg CO2e**

Product

Bioethanol

Carbon Intensity

2.811 kg CO2e/L

Primary Emission Scope

Scope 3

System Boundary

Cradle-to-Factory-Gate

GHG Scope Breakdown (Relative to 2.861 kg CO2e)

Top Material & Energy Hotspots

0.750 kg	0.520 kg	0.488 kg	0.450 kg
N-Fertilizer	Farm Diesel	Nat. Gas (Heat)	Electricity

Highlights & Critical Impacts

- ✓ Feedstock cultivation (N-fertilizer, N2O emissions, farm machinery diesel) is the largest contributor to the PCF.
- ✓ Energy consumption during production (natural gas for heat, purchased electricity) drives significant emissions.
- ✓ Scope 3 emissions, primarily from upstream activities, account for over two-thirds of the total footprint.

Action Plan for Reduction

- ✓ Implement sustainable agriculture practices to reduce fertilizer use and enhance soil carbon.
- ✓ Transition to renewable energy sources for the production facility to lower Scope 2 emissions.
- ✓ Invest in energy-efficient technologies and process optimization within the bioethanol plant.
- ✓ Explore Biogenic CO2 Capture and Utilization (CCU) during the fermentation process.
- ✓ Optimize supply chain logistics to minimize transportation-related emissions.