



Industrial Compounded Rubber | PCF Summary

Functional Unit: 1.0 MT (1,000 kg) • Cradle-to-Gate • Compounding: United States (RFCW Grid)

✓ GHG Protocol LSR 2026

99.4% Cut-Off Coverage

carboncalcpcf.com Verified

GROSS CARBON FOOTPRINT



3,273.1 kg CO₂e / MT

Gross Cradle-to-Gate (Excl. Biogenic)

CARBON INTENSITY



3.27 kg CO₂e / kg

-317.4 kg biogenic removal in latex matrix

TOP IMPACT HOTSPOT



834.0 kg CO₂e

Carbon Black N330 (25.5% of total gross)

SCOPE 3 CONCENTRATION



94.2% of lifecycle

2,919.8 kg CO₂e upstream feedstocks & freight

🏠 Lifecycle Emission Architecture

GHG Protocol standard scopes & 2026 LSR land accounting

Total 3,273.1 kg CO₂e

Scope Distribution100% Mass & Energy Balance

- 🟢 Scope 3 Feedstocks: 2,449 kg (74.8%)
- 🟢 Scope 3 Logistics: 335 kg (10.2%)
- 🟡 Land Use (dLUC/sLUC): 135 kg (4.1%)
- 🟠 Scope 2 Electricity: 211 kg (6.4%)
- 🔴 Scope 1 Boilers/Flares: 143 kg (4.4%)

2026 LSR Biogenic Sequestration Credit:
Atmospheric CO₂ stored in 320 kg natural rubber biopolymer chain-317.4 kg CO₂e

Net Inventory (Dual Reporting Track):2,955.7 kg CO₂e / MT

⚖️ Feedstock Carbon Intensity Analysis

Formula mass % vs actual life-cycle footprint %

Cradle-to-Gate Inputs

N330 Carbon Black (300 kg / 30% mass)	834.0 kg CO ₂ e (25.5%)
Emulsion SBR 1502 (220 kg / 22% mass)	750.2 kg CO ₂ e (22.9%)
Natural Rubber TSR 20 + LUC (320 kg / 32% mass)	514.4 kg CO ₂ e (15.7%)
Global Logistics (Ocean, Rail & Truck)	335.5 kg CO ₂ e (10.2%)
Silica, Oils, Sulfur, ZnO & Accelerators (160 kg / 16% mass)	485.7 kg CO ₂ e (14.8%)
US Mixing & Milling Energy (Electricity & Gas)	353.3 kg CO ₂ e (10.8%)

▮ Sustainability Assessment Highlights

Audited Compliance

Key engineering and GHG compliance takeaways

1 Extreme Upstream Concentration (Scope 3 Dominance)

Over **94.2%** of all emissions originate before raw materials enter the Ohio compounding factory gate. Synthetic elastomer synthesis (SBR) and oil-furnace carbon black account for **48.4%** of gross cradle-to-gate impact despite comprising only 52% of formulation weight.

2 GHG Protocol 2026 LSR Land-Use Change Compliance

Natural rubber is not inherently carbon-neutral. Accounting for historic land conversion in Southeast Asia adds **135.20 kg CO₂e/MT** (dLUC/sLUC). Under strict 2026 guidelines, biogenic carbon (-317.4 kg CO₂e) is reported separately to prevent net-zero greenwashing.

3 Verified Data Integrity Exceeds Mandatory Cut-Offs

Primary facility metered records and ISO 14067 tier-1 supplier EPDs cover **99.4%** of total mass and energy flows, easily surpassing the mandatory 95% minimum data threshold defined by the GHG Protocol Product Standard.

Decarbonization Action Plan & Reduction Roadmap

Engineering roadmap to reduce baseline footprint by 27.1%

-888.3 kg CO₂e Total Potential

PHASE & SCOPE	STRATEGIC INTERVENTION	TARGET MECHANISM	ABATEMENT IMPACT	TIMELINE
Immediate (Scope 2)	Virtual PPA / Certified Green Grid	Procure 100% wind/solar electricity for Banbury mixers and extruders	-210.8 kg (-6.4%)	Q1 2027
Near-Term (Scope 3 Cat 1)	Deforestation-Free Natural Rubber	Transition to 100% EUDR-compliant TSR 20 with zero-LUC penalty	-135.2 kg (-4.1%)	Q3 2027
Medium-Term (Scope 3 Cat 1)	Recovered Carbon Black (rCB)	Substitute 25% virgin N330 furnace black with tire-pyrolysis rCB	-167.3 kg (-5.1%)	2027 - 2028
Long-Term (Scope 3 Cat 1)	Bio-Circular SBR Feedstock	Procure mass-balanced ISCC PLUS bio-monomer synthetic rubbers	-375.0 kg (-11.5%)	2028 - 2030

Platform: carboncalcpf.com • GHG Protocol Product Standard & LSR 2026 Compliant

Model: AR6 100-yr GWP • Primary Auditor: Sustainability & GHG Practice Lead • Reference: October 2026