



Carbon Footprint analysis of the NOMACORC Pops sparkling wine closure

Based on a Life Cycle Assessment

May 2024

Introduction



- Vinventions is the world's most comprehensive provider of wine closure solutions designed to support the diverse winemaker's needs. Vinventions supplies closure solutions with optimal performance, design, and sustainability. Its portfolio includes Nomacorc Green Line & Blue Line, SÜBR (micro-natural), Vintop (screwcaps), and Wine Quality Solutions (oenological devices, equipment and services) with its purpose to improve the wine quality and consistency
- Sustainability is central to Vinventions' core beliefs and heavily influences our strategic decisions. Sustainable Development, which is based on verifiable facts, serves as a guiding principle within Vinventions, guaranteeing the group's environmental integrity and credibility in the wine closure market. Therefore, **Vinventions commissioned RDC Environment to conduct a comprehensive carbon footprint study of our Nomacorc POPS sparkling wine closure and contracted South Pole for the 3rd-party review & certification**



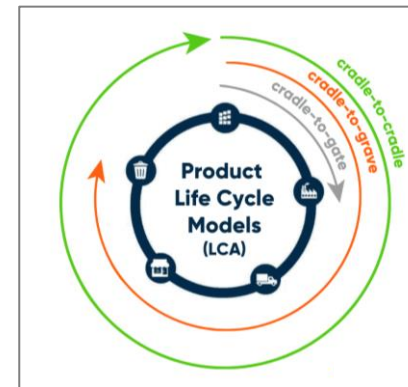
Introduction

- Following the launch of the Nomacorc Green Line in 2013, Vinventions became the first wine closure manufacturer to offer a certified Net Zero Carbon Footprint solution. Every co-extruded closure in the patented Nomacorc green line (Smart Green, Classic Green, Select Green, Reserva, **and POPS**) is produced from sustainable and renewable raw materials, e.g. derived from sugarcane
- **The Nomacorc Green line**, which was inspired by the company’s strong desire for innovation, sustainability, and continuous improvement, offers major advances in terms of performance, aesthetics, and sustainability of wine closures, and **is now extended with POPS**. Beyond being found Net Zero Carbon Footprint in this study, Nomacorc POPS also guarantees TCA-free wine closures, precise oxygen management, and perfect consistency, eliminating bottle-to-bottle variations

Nomacorc Green line								
		SMART GREEN	CLASSIC GREEN	SELECT GREEN 100	SELECT GREEN 300	SELECT GREEN 500	RESERVA	POPS
Closure Dimensions		23,0 x 42,0	23,0 x 43,0	24,0 x 44,0	24,0 x 44,0	24,0 x 44,0	24,0 x 44,0	28,5 x 48,0
	(mm x mm)							△ This study

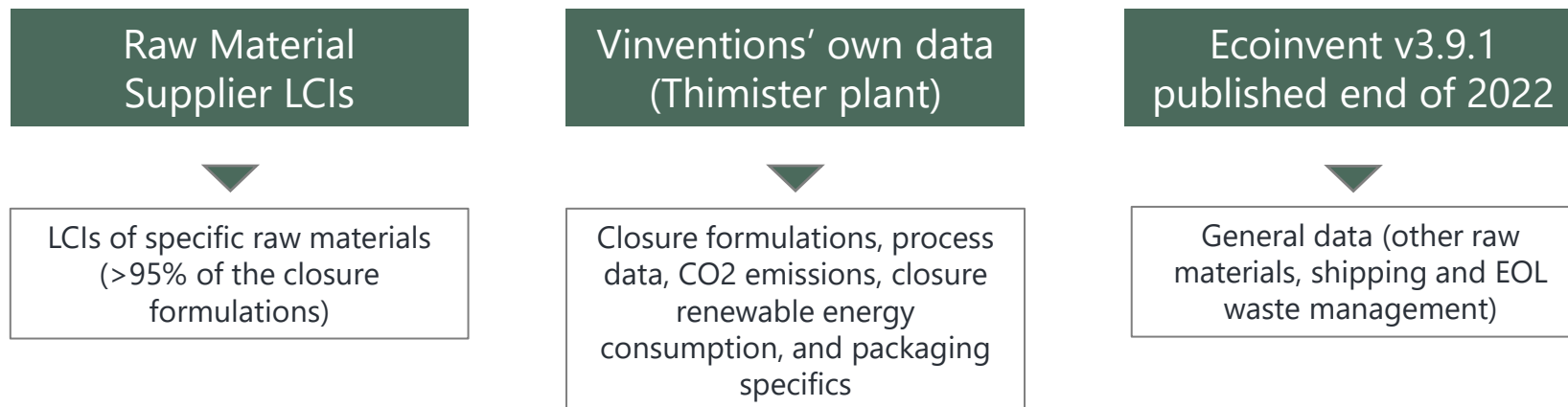
Method

- RDC Environment conducted a product life cycle assessment study to report the carbon footprint of Nomacorc POPS
- **The cradle-to-grave** carbon footprint of the product is in compliance with **the ISO 14067:2018 Standard**. Its value is the sum of all the CO₂ emissions and removals based on a life cycle assessment with the Climate Change impact category (containing all essential life cycle stages of the product)
- **The analysis follows** principles, requirements and guidelines for the quantification and reporting of the carbon footprint of a product, in a manner consistent with International **Standards on life cycle assessment (LCA): ISO 14040 and ISO 14044**. **The review process follows ISO 14071**.



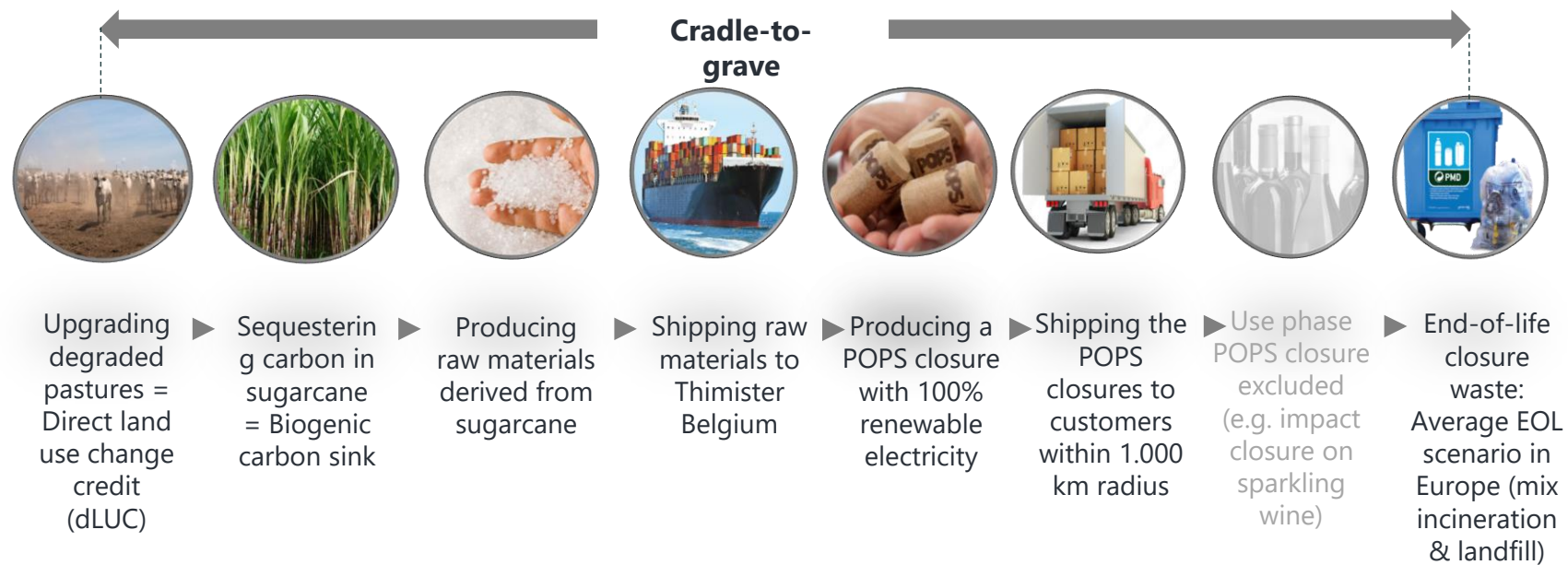
Method

- **CO2 emissions & removals:** Proof of direct land use change (dLUC) credits when going in Brazil from degraded pastures to sugarcane plantations and proof of sustainable sugarcane agriculture. Proof of additionality of creating a carbon sink by sugarcane conversion to materials vs conversion to biofuel in Brazil. Proof of avoided emissions when converting biogenic waste into feedstocks for polymer materials. Proof of additionality of consumed renewable power during raw material and closure productions
- **Software & data collection:** The **RangeLCA software**, developed by RDC Environment was used. The inventory database used is Ecoinvent v3.9.1, published end of 2022. The system model used is “allocation, cut-off by classification”. In addition to ecoinvent, road transport is modelled using the COPERT 5 tool. Raw materials Life Cycle Inventory (LCI) files from suppliers were used when available. The results were given in ILCD EF 3.0 format in an XML dataset archive which has been imported into the RDC-Environment software. The results were directly expressed in PEF categories and with Climate Change including the biogenic CO2 (emissions and removals).



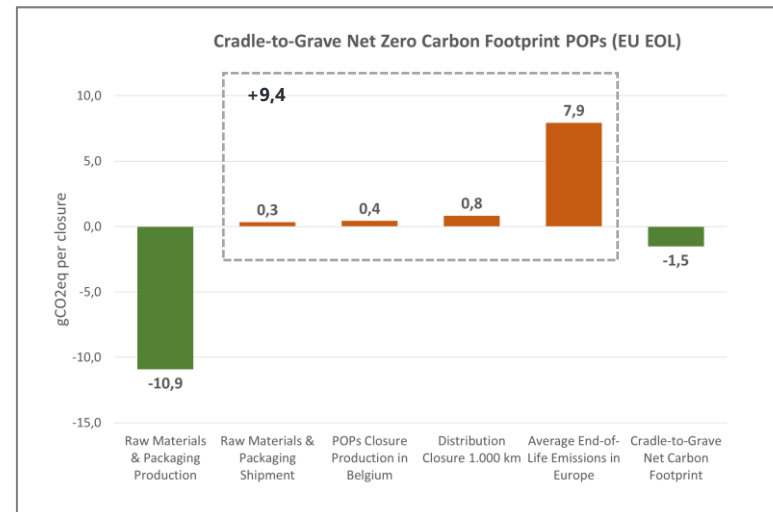
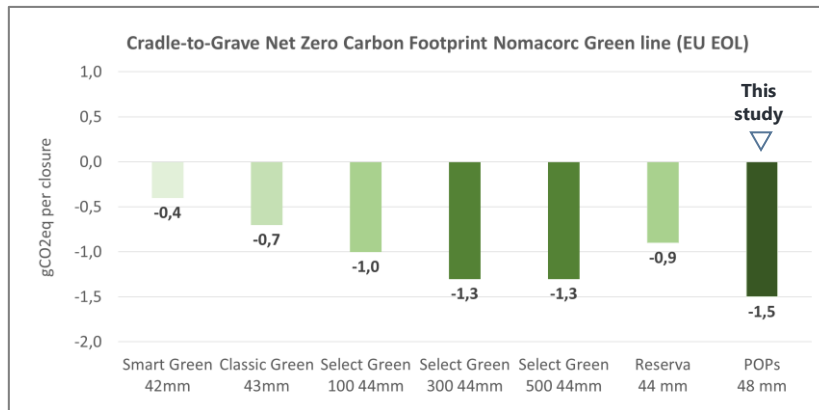
Scope

- **Functional unit:** One Nomacorc POPS sparkling wine closure (28,5 x 48,0 mm) to seal a glass bottle of sparkling wine & allowing the requested conservation period
- **Objective:** To evaluate the carbon footprint throughout the entire life cycle (raw material and packaging production, closure manufacturing, distribution and end-of-life phases = **cradle-to-grave**) of the formulation of the POPS sparkling wine closure manufactured in Thimister (Belgium). Closure distribution is to customers in Europe at 1.000 km (e.g. Veneto, Italy). Use phase (bottling, bottle storage and logistics) is excluded. Closure will have an average European end-of-life waste treatment (mix of incineration with energy recovery & landfill)



Results

- Each closure from the **Nomacorc Green Line** has its distinct carbon footprint value. All the analyzed closures from this product line have actually a **Cradle-to-Grave, Net Negative Carbon Footprint** ranging from -0.4 g CO₂eq for Smart Green closure to -1.5 g CO₂eq for a POPS sparkling wine closure (this study)
- **A net negative value of -1,5 g CO₂eq per POPS sparkling wine closure** is obtained because the -10,9 g CO₂eq raw material & packaging production **carbon removals** (which include the raw materials biogenic carbon sequestrations avoided emissions, and the dLUC credit), **offset the carbon emissions** of +9,4 g CO₂eq of logistics, closure manufacturing and the average European end-of-life waste disposal



Conclusions



- **Vinventions commissioned RDC Environment** to conduct a comprehensive cradle-to-grave carbon footprint study on Nomacorc POPS as latest addition to the Nomacorc Green Line closures, **and contracted South Pole for the 3rd-party review & certification**
- The new study for our Nomacorc POPS sparkling wine closure is **in compliance with the ISO standards 14040/14044 and 14067:2018** as requested by the most recent French environmental legislation on anti-greenwashing behaviors, and the **review is in accordance with ISO 14071**
- The **cradle-to-grave analysis** includes raw material production, logistics of materials and closures, manufacturing of closures, an average EU EOL waste handling, but it excludes the use phase of the closure
- Each closure from the **Nomacorc Green Line** has its distinct carbon footprint value. All the analyzed closures from this product line have actually **a Cradle-to-Grave, Net Negative Carbon Footprint** ranging from -0.4 g CO₂eq for Smart Green closure to -1.5 g CO₂eq for POPS sparkling wine closure (this study)
- The carbon footprint analysis demonstrates that **Nomacorc** Smart Green, Classic Green, Select Green 100, 300 & 500, Reserva, and **latest addition POPS sparkling wine closures stand out as currently the only (sparkling) wine closures** on the market **with a Net Zero Carbon Footprint** in a cradle-to-grave analysis having an average EU EOL waste handling scenario

References

- ISO 14067:2018 Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification; ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework; ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines; ISO/TS 14071:2014 Environmental management — Life cycle assessment — Critical review processes and reviewer competencies: Additional requirements and guidelines to ISO 14044:2006
- Decree No. 2022-539 of April 13, 2022 (French legislation) on carbon offsetting and carbon neutrality claims in advertising (<https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000045570611>) as part of Article 12 of the law n° 2021-1104 of August 22, 2021, fighting against climate change and reinforcing resilience to its effects
- Database ecoinvent v3.9.1, published end of 2022 with system model “Allocation, cut-off by classification”. COPERT 5 (Computer Program to Calculate Emissions from Road Transport, 2020): software tool used world-wide to calculate air pollutant and greenhouse gas emissions from road transport (<https://www.emisia.com/utilities/copert/>). The development of COPERT (reference database for Europe for modelling road transport air emission) is coordinated by the European Environment Agency (EEA)
- Joint Research Center (JRC) technical report - European Commission - Product Environmental Footprint (PEF) method, Zampori L, Pant R 2019 (EF package 3.0, 2019) + European Commission, PEF methodology “Annex_C_V2.1_May2020”
- “Life Cycle Assessment on Green HDPE and Fossil HDPE - April 2017” performed by “ACV Brasil” consulting company in compliance with ISO 10040:2006 and ISO14044:2006 ; reviewed in compliance with ISO 14071 by Dr. Andreas Detzel, ifeu, Heidelberg, Germany (chair), by Mirjam Busch, ifeu, Heidelberg, Germany and by Professor Ramani Narayan, Michigan State University, United States of America)

Thank you



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