Disclaimer

EY carbon footprint analysis follows a life-cycle approach based on ISO Standard 14040 and on Amorim & Irmãos, SA data and business assumptions. These results are not third-party verified.
Agenda

1. About the study
   - Cradle-to-gate GHG emissions
   - Purchase of goods
   - Energy consumption
   - Air and Water Emissions
   - Final product
   - Distribution
   - Use
   - End-of-life, reuse or recycling

2. Carbon footprint
   - Cradle-to-gate Carbon footprint
   - Cork oak carbon sequestration
   - Cradle-to-gate GHG emissions

3. Carbon balance
   - Scenario analysis with carbon sequestration at the forest stage
1

About the study
About the study

The **main purpose** is to quantify the potential environmental impacts of the Natural cork stopper produced by Amorim & Irmãos, SA (average dimensions 45mm x 24 mm; average weight: 3.8g; average composition: 99.7% cork, 0.3% customization products) produced by Amorim Cork, through a life cycle approach.

**Guidelines**: The study was based on ISO 14040/44 series of standards, complemented with the guidelines from the International Reference Life Cycle Data System (ILCD) Handbook - General guide for Life Cycle Assessment - Detailed guidance

**Approach**: *cradle-to-gate* (from raw material extraction to the finished product at the factory gate)

**Functional unit**: 1000 stoppers

**Modelling software and database**: SimaPro 9 with ecoinvent 3.5 database

**Method**: Midpoint characterization factors recommended by the International Reference Life Cycle Data System (ILCD).

**Data collection procedure**

- Carbon stored in the final product is included
- Additional scenario analysis of the potential carbon sequestration at the forest stage

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Natural cork stopper production data

Amorim & Irmãos, SA activity (local data), for the year 2018, using questionnaires

General data (raw materials production, energy, transport and waste management)

Ecoinvent 3.5. database, compiled in 2018
Carbon footprint
Carbon footprint: results

Natural cork stopper carbon footprint:
► Cradle to gate: -5,7 kg CO$_{2}$eq /1000 stoppers
► Cradle to gate with expedition to UK: -4,3 kg CO$_{2}$eq /1000 stoppers
Carbon footprint: results

Emissions: 1,6 kg CO$_2$eq / 1000 stoppers

47% emissions associated with processes occurring in the natural cork stopper production stage

- Higher energy consumption (indirect impacts of electricity production)
- Raw materials transport
Carbon balance
Carbon balance: results

Scenario analysis with carbon sequestration in the cork oak montado

For the average stopper when considering carbon sequestration in the cork oak* montado:

There is a forest storage up to:

- 311 kg CO₂/1000 stoppers

Therefore, the carbon balance reaches up to

- 309 kg CO₂/1000 stoppers

*scenario analysis based on well-managed cork oak montado

- 73 t CO₂/t cork

Maximum ecosystem CO₂ uptake registered (14.7 tCO₂/ha) (Costa-e-Silva et al., 2015).

The PEFCR for the wine sector states that carbon stored at cork oak trees shall be included in the analysis as additional environmental information, if carbon storage goes beyond 100 years, which is the case for cork.
Carbon balance reaches up to:

-309 kg CO$_{2eq}$/1000 stoppers

considering maximum ecosystem CO2 uptake registered in a well managed cork oak montado -73 t CO$_2$/t cork
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