

**greenly**

2025-09-17

Lyreco LCA

# Life Cycle Assessment

*The methodology in this report is based on ISO 14040*

13008389 (sold in FR)

# Summary



**01** | Methodology



**02** | Results

# 01

## Methodology

# Environmental Impact Assessment

|  |  |
|--|--|
| <b>Functional unit</b>                       | <p>The functional unit is a quantified performance of a product system for use as a reference unit. One of the primary purposes of a functional unit is to provide a reference to which the input and output data are normalized (in a mathematical sense).</p> <p>The functional unit of this analysis is "24 set(s) of bound pages of paper for the purpose of writing".</p>   |
| <b>Impact Indicator</b>                      | <p>The impact is measured through the "IPCC 2013 GWP 100a" method.</p>   |
| <b>Electricity impact calculation method</b> | <p>Following guidelines from the GHG Protocol, the impact of electricity is calculated using the location-based approach. This means that the emission factors used represent the average annual carbon intensity of the power grid in the country the processes take place in.</p>  |
| <b>Hypothesis</b>                            | <p>The Product's material composition is supplemented by secondary information, if necessary, as shown in the list below.</p> <ul style="list-style-type: none"> <li>- paper: paper 99%</li> <li>- binding: adhesive 1%</li> </ul> <p>Manufacturing Processes and associated loss percentages are assumed based on materials in the product.</p> <p>The electricity is based on the average in the country of manufacturing.</p> <p>Transportation is based on the common routes between the country of manufacturing and the country of sale.</p> <p>No replacements during the lifetime, therefore there are no emissions corresponding to the usage phase.</p> <p>The End of Life is based on the average waste management process of the materials in the product.</p> |

# Environmental Impact Assessment

## System Boundaries

The scope of this research includes the complete lifecycle of a notebook from raw material extraction to disposal options for each material, which is the cradle-to-grave perspective.

## Exclusions

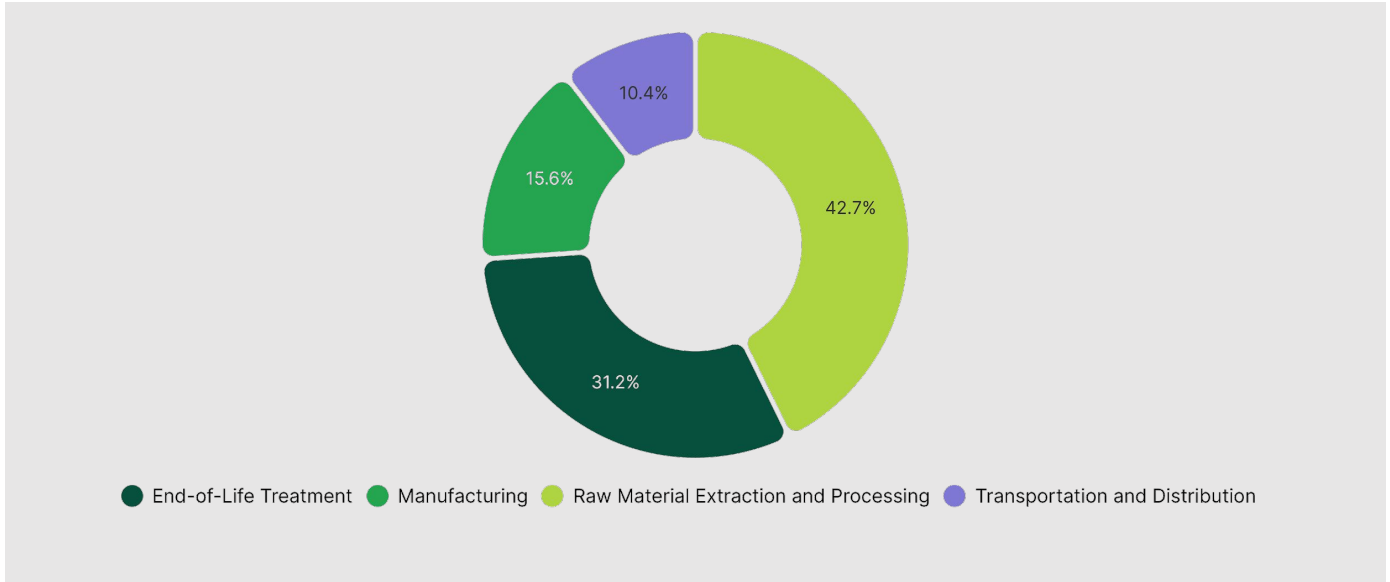
The impact of secondary packaging and writing utensils are excluded from this assessment.

# 02

## Results

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# Climate Change



| Step                                   | Impact (kg CO <sub>2</sub> eq) | Percentage (%)  |
|--|--------------------------------|-----------------|
| Raw Material Extraction and Processing | 0.88                           | 42.71 %         |
| End-of-Life Treatment                  | 0.64                           | 31.23 %         |
| Manufacturing                          | 0.32                           | 15.62 %         |
| Transportation and Distribution        | 0.21                           | 10.44 %         |
| <b>TOTAL</b>                           | <b>2.05</b>                    | <b>100.00 %</b> |

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# Climate Change - Raw Material Extraction and Processing



● Sourcing of raw material (adhesive) ● Sourcing of raw material (bleached kraft paper)

| Activity  | Emission Factor Num | Quantity | Impact (g CO <sub>2</sub> eq) | Percentage (%) |
|---|---------------------|----------|-------------------------------|----------------|
| Sourcing of raw material (bleached kraft paper) | 2                   | 1.63     | 811.28                        | 92.50 %        |
| Sourcing of raw material (adhesive)             | 1                   | 0.01     | 65.78                         | 7.50 %         |

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|       |  |  |        |          |
|-------|--|--|--------|----------|
| TOTAL |  |  | 877.06 | 100.00 % |
|-------|--|--|--------|----------|

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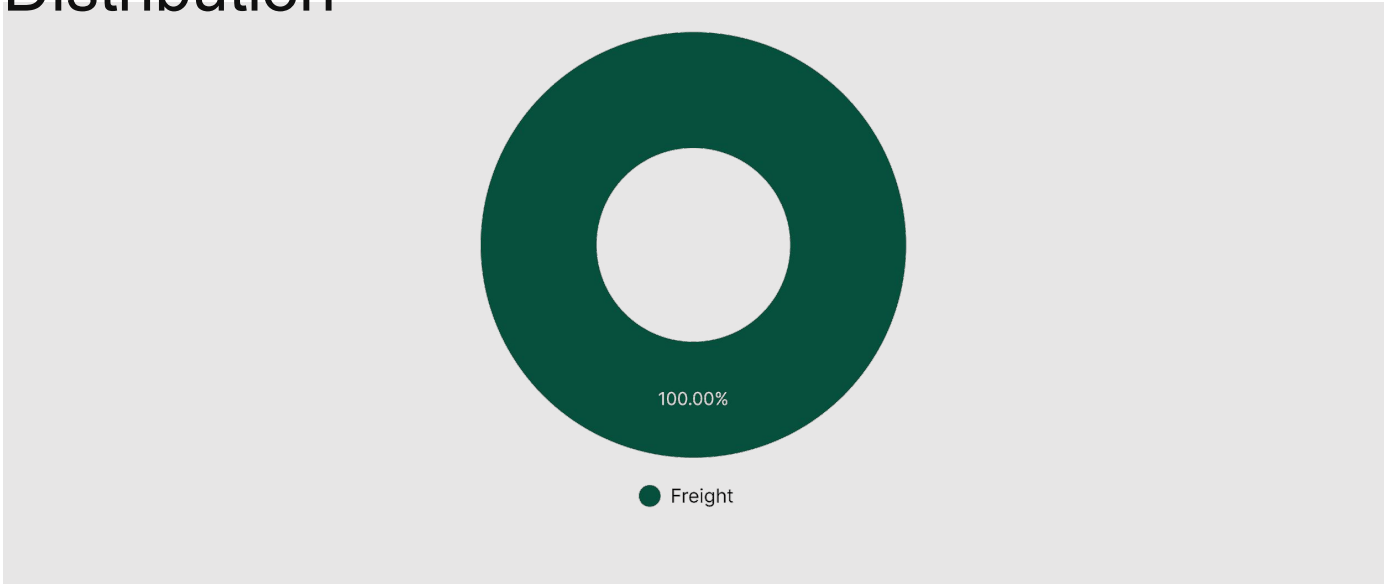
# Climate Change - Manufacturing



| Activity  | Emission Factor Num | Quantity | Impact (g CO <sub>2</sub> eq) | Percentage (%) |
|---|---------------------|----------|-------------------------------|----------------|
| Electricity usage during material transformation (bleached kraft paper) | 4                   | 0.58     | 254.76                        | 79.44 %        |
| Natural gas usage during material transformation (bleached kraft paper) | 3                   | 0.31     | 56.05                         | 17.48 %        |
| Electricity usage during material transformation (adhesive)             | 4                   | 0.02     | 9.9                           | 3.09 %         |
| TOTAL   |                     |          | 320.71                        | 100.00 %       |

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# Climate Change - Transportation and Distribution



| Activity | Emission Factor Num | Quantity | Impact (g CO <sub>2</sub> eq) | Percentage (%) |
|----------|---------------------|----------|-------------------------------|----------------|
| Freight  | 5                   | 1.1      | 214.38                        | 100.00 %       |
|          |                     |          |                               |                |
|          |                     |          |                               |                |
|          |                     |          |                               |                |
|          |                     |          |                               |                |
| TOTAL    |                     |          | 214.38                        | 100.00 %       |

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# Climate Change - End-of-Life Treatment



| Activity                           | Emission Factor Num | Quantity | Impact (g CO <sub>2</sub> eq) | Percentage (%) |
|------------------------------------|---------------------|----------|-------------------------------|----------------|
| End of life (bleached kraft paper) | 7                   | 1.09     | 626.32                        | 97.68 %        |
| End of life (adhesive)             | 6                   | 0.01     | 14.85                         | 2.32 %         |
| TOTAL                              |                     |          | 641.17                        | 100.00 %       |

# Contact us

Alexis Normand CEO

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