



2025-09-17

Lyreco LCA

# Life Cycle Assessment

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

14138831 (sold in WI)

# Summary



## 01 | Methodology



## 02 | Results

# 01

## Methodology

# Environmental Impact Assessment

## Functional unit

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).  
The functional unit of this analysis is "5 set(s) of bound pages of paper for the purpose of writing".

## Impact Indicator

The impact is measured through the "IPCC 2013 GWP 100a" method.

## Electricity impact calculation method

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.

## Hypothesis

# 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.

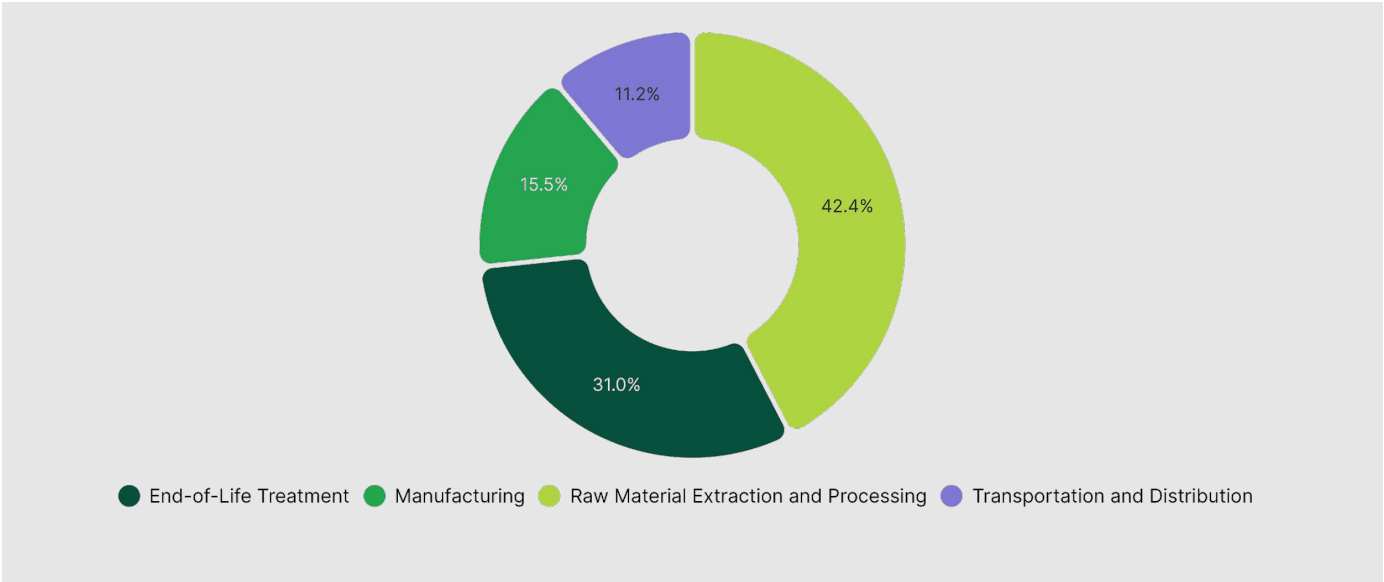
## Exclusions

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

# 02

## Results

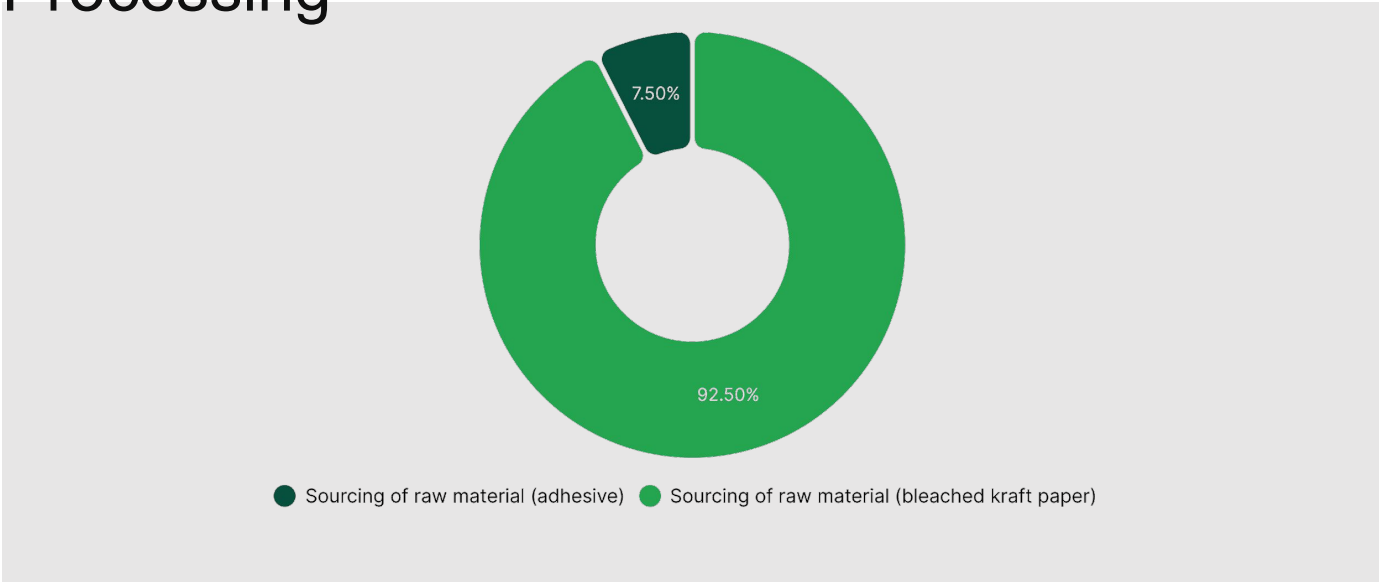
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 Climate Change



| Step                                   | Impact<br>(g CO <sub>2</sub> eq) | Percentage<br>(%) |
|----------------------------------------|----------------------------------|-------------------|
| Raw Material Extraction and Processing | 176.88                           | 42.37 %           |
| End-of-Life Treatment                  | 129.31                           | 30.98 %           |
| Manufacturing                          | 64.68                            | 15.49 %           |
| Transportation and Distribution        | 46.57                            | 11.16 %           |
|                                        |                                  |                   |
| TOTAL                                  | 417.44                           | 100.00 %          |

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# Climate Change - Raw Material Extraction and Processing



| Activity                                        | Emission Factor Num | Quantity                | Impact (g CO <sub>2</sub> eq) | Percentage (%) |
|-------------------------------------------------|---------------------|-------------------------|-------------------------------|----------------|
| Sourcing of raw material (bleached kraft paper) | 1                   | 0.33                    | 163.61                        | 92.50 %        |
| Sourcing of raw material (adhesive)             | 2                   | 2.43 · 10 <sup>-3</sup> | 13.27                         | 7.50 %         |

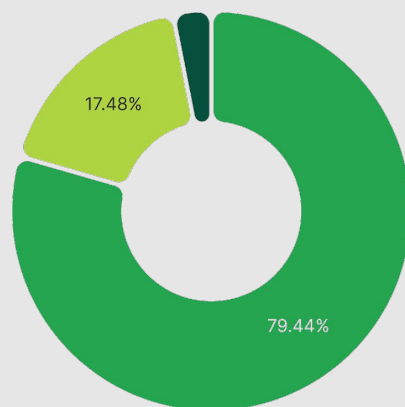
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|-------|--|--|--------|----------|
| TOTAL |  |  | 176.88 | 100.00 % |
|-------|--|--|--------|----------|

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# Climate Change - Manufacturing



- Electricity usage during material transformation (adhesive)
- Electricity usage during material transformation (bleached kraft paper)

| Activity                                                                | Emission Factor Num | Quantity             | Impact (g CO <sub>2</sub> eq) | Percentage (%) |
|-------------------------------------------------------------------------|---------------------|----------------------|-------------------------------|----------------|
| Electricity usage during material transformation (bleached kraft paper) | 3                   | 0.12                 | 51.38                         | 79.44 %        |
| Natural gas usage during material transformation (bleached kraft paper) | 4                   | 0.06                 | 11.3                          | 17.48 %        |
| Electricity usage during material transformation (adhesive)             | 3                   | $4.51 \cdot 10^{-3}$ | 2                             | 3.09 %         |
|                                                                         |                     |                      |                               |                |
|                                                                         |                     |                      |                               |                |
|                                                                         |                     |                      |                               |                |
| TOTAL                                                                   |                     |                      | 64.68                         | 100.00 %       |

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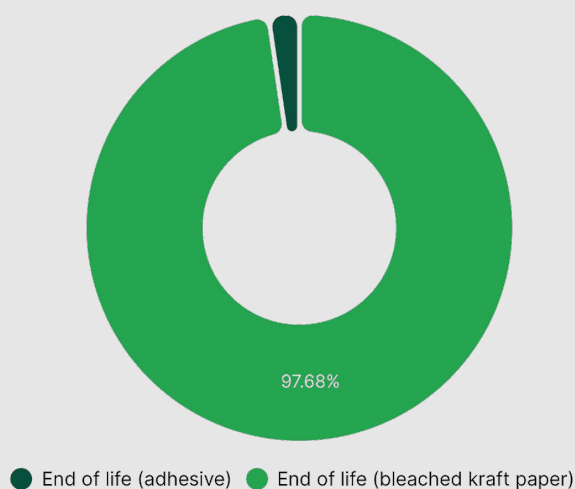
# Climate Change - Transportation and Distribution



| Activity | Emission Factor Num | Quantity | Impact<br>(g CO <sub>2</sub> eq) | Percentage (%) |
|----------|---------------------|----------|----------------------------------|----------------|
| Freight  | 5                   | 0.22     | 46.57                            | 100.00 %       |
|          |                     |          |                                  |                |
|          |                     |          |                                  |                |
|          |                     |          |                                  |                |
| TOTAL    |                     |          | 46.57                            | 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) | 6                   | 0.22                 | 126.31                        | 97.68 %        |
| End of life (adhesive)             | 7                   | $2.21 \cdot 10^{-3}$ | 2.99                          | 2.32 %         |

|       |        |          |
|-------|--------|----------|
| TOTAL | 129.31 | 100.00 % |
|-------|--------|----------|

# Contact us

Alexis Normand CEO

[www.greenly.earth](http://www.greenly.earth)