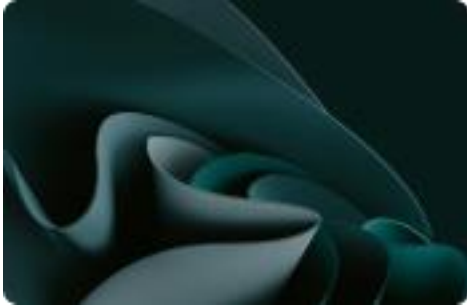


Life Cycle Analyses

LANG250



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). Therefore, the functional unit shall be clearly defined and measurable.

Impact Indicator

The impact is measured through the "IPCC 2021 GWP100" 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.

Life Cycle Analyses

Cradle to grave

Emission Factor Inventory

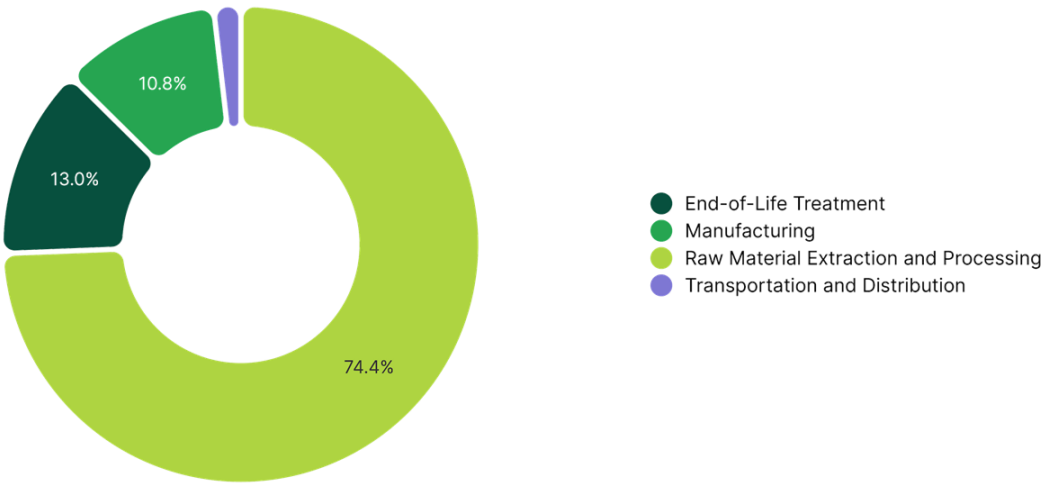
Num	Emission Factor	Source	Value	Unit
1	Nylon 6 Ordinary transforming activity	ECOINVENT 3.10	9.27	kg
2	Electricity Total (Scope 2 & 3) People's Republic of China	IEA 2023	0.72	kWh
3	Freight Boat From CN to FR	WELOW EXPERTS 1.0	0.25	kg
4	Waste polyethylene/polypropylene product Ordinary transforming activity	ECOINVENT 3.10	1.78	kg

02

Results

Security seals

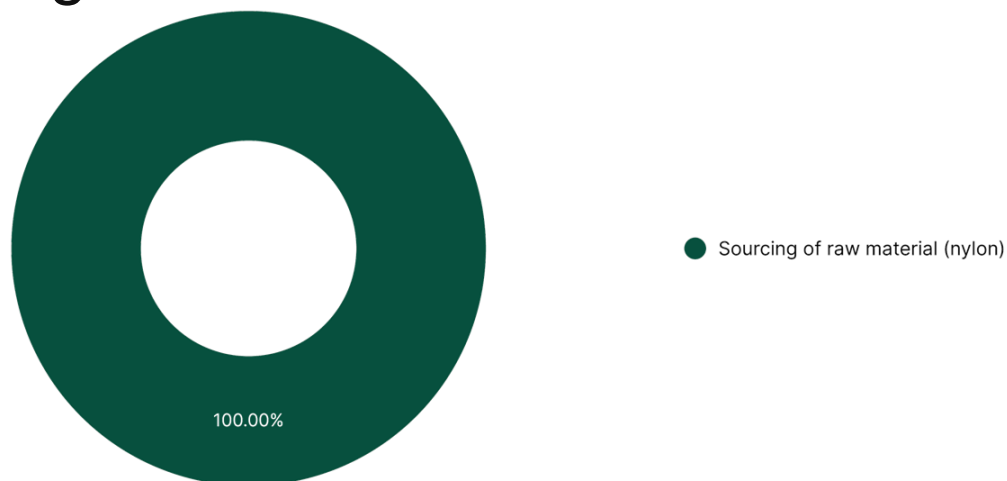
Climate Change



Step	Impact (g CO ₂ eq)	Percentage (%)
Raw Material Extraction and Processing	408.07	74.39 %
End-of-Life Treatment	71.34	13.01 %
Manufacturing	59.05	10.77 %
Transportation and Distribution	10.09	1.84 %
TOTAL	548.55	100.00 %

Security seals

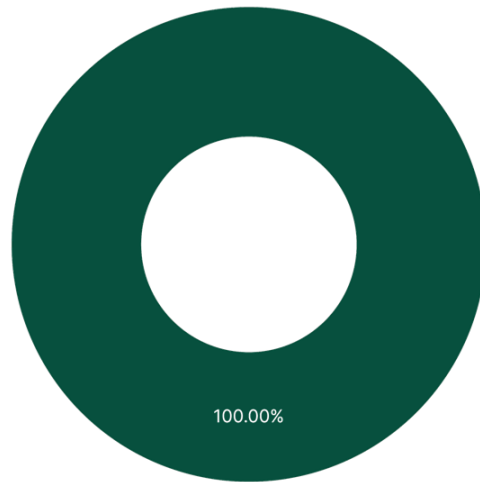
Climate Change - Raw Material Extraction and Processing



Activity	Emission Factor Num	Quantity	Unité	Impact (g CO ₂ eq)	Percentage (%)
Sourcing of raw material (nylon)	1	0.04	kg	408.07	100.00 %
TOTAL				408.07	100.00 %

Security seals

Climate Change - Manufacturing

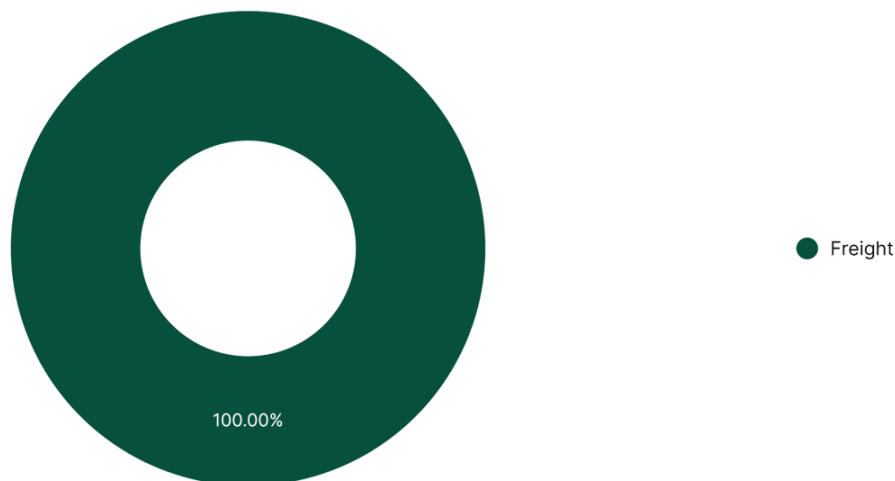


- Electricity usage during material transfo...

Activity	Emission Factor Num	Quantity	Unité	Impact (g CO ₂ eq)	Percentage (%)
Electricity usage during material transformation (nylon)	2	0.08	kWh	59.05	100.00 %
TOTAL				59.05	100.00 %

Security seals

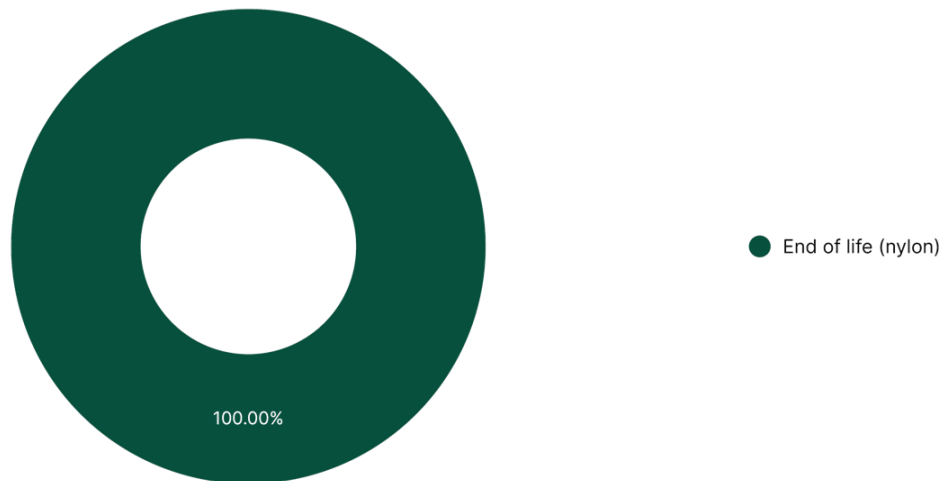
Climate Change - Transportation and Distribution



Activity	Emission Factor Num	Quantity	Unité	Impact (g CO ₂ eq)	Percentage (%)
Freight	3	0.04	kg	10.09	100.00 %
TOTAL				10.09	100.00 %

Security seals

Climate Change - End-of-Life Treatment



Activity	Emission Factor Num	Quantity	Unité	Impact (g CO ₂ eq)	Percentage (%)
End of life (nylon)	4	0.04	kg	71.34	100.00 %
TOTAL				71.34	100.00 %

