

Life Cycle Analyses

POCSOU



Summary



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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

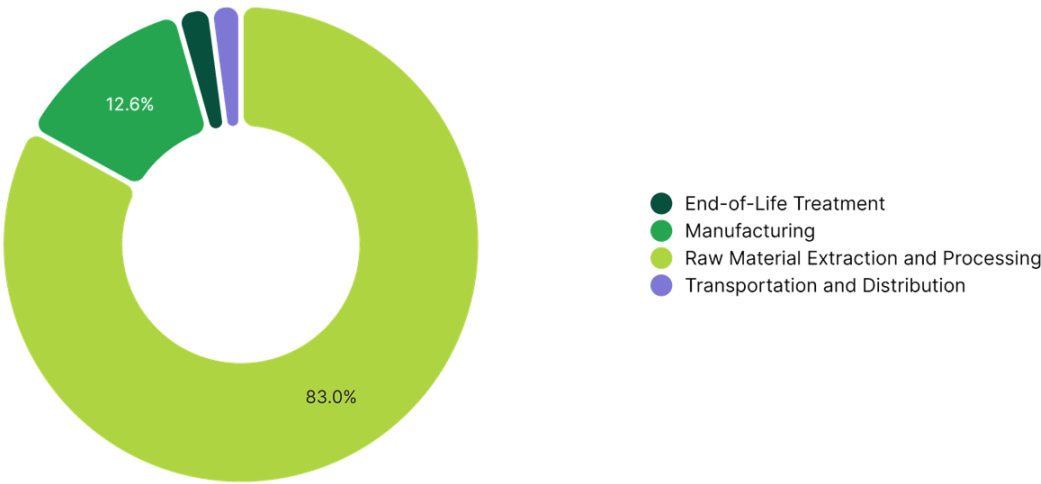
Nu m	Emission Factor	Source	Value	Unit
1	Polyvinylchloride, emulsion polymerised Ordinary transforming activity	ECOINVENT 3.10	2.63	kg
2	Polyester filament finished at plant 100% polyester	BASE EMPREINTE ADEME 3.0	10.03	kg
3	Polyurethane, rigid foam Ordinary transforming activity	ECOINVENT 3.10	4.60	kg
4	Nylon 6 Ordinary transforming activity	ECOINVENT 3.10	9.27	kg
5	Electricity Total (Scope 2 & 3) People's Republic of China	IEA 2023	0.72	kWh
6	Freight Boat From CN to FR	WELOW EXPERTS 1.0	0.25	kg
7	Waste polyvinylchloride product Ordinary transforming activity	ECOINVENT 3.10	1.21	kg
8	Waste polyethylene/polypropylene product Ordinary transforming activity	ECOINVENT 3.10	1.78	kg
9	Waste yarn and waste textile Ordinary transforming activity	ECOINVENT 3.10	0.00	kg

02

Results

Mailing bag

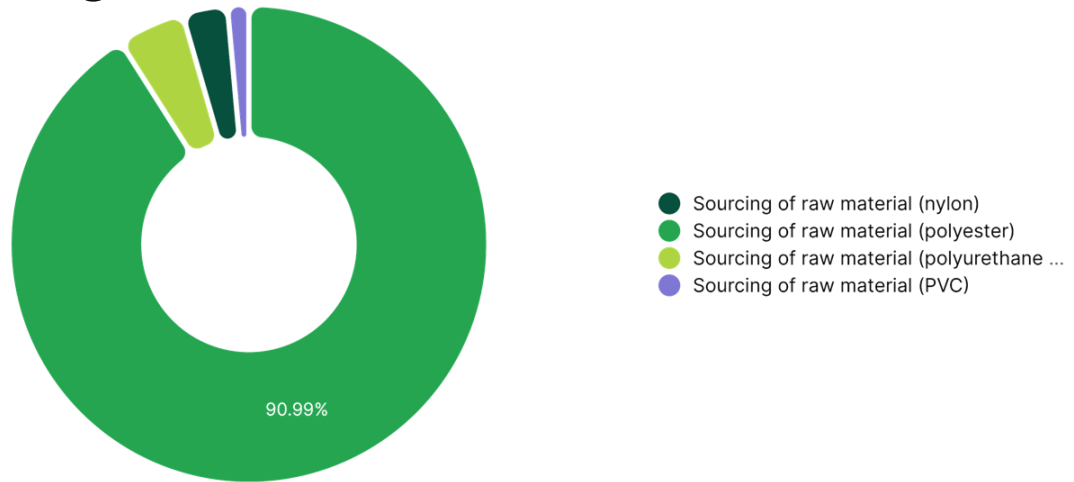
Climate Change



Step	Impact (kg CO ₂ eq)	Percentage (%)
Raw Material Extraction and Processing	1.61	83.01 %
Manufacturing	0.24	12.61 %
End-of-Life Treatment	0.04	2.30 %
Transportation and Distribution	0.04	2.08 %
TOTAL	1.94	100.00 %

Mailing bag

Climate Change - Raw Material Extraction and Processing



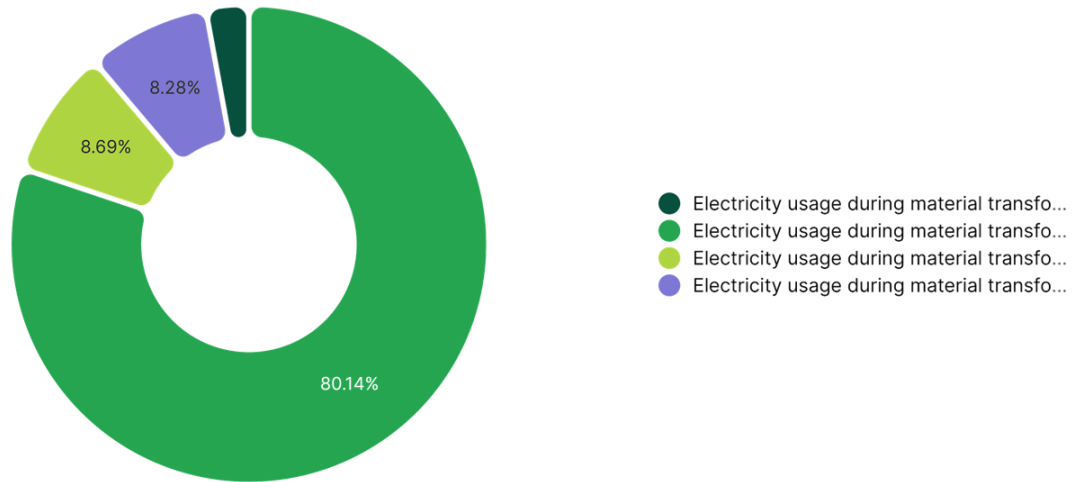
Activity	Emission Factor Num	Quantity	Unité	Impact (kg CO ₂ eq)	Percentage (%)
Sourcing of raw material (polyester)	2	0.15	kg	1.46	90.99 %
Sourcing of raw material (polyurethane foam)	3	0.02	kg	0.07	4.53 %
Sourcing of raw material (nylon)	4	$5.28 \cdot 10^{-3}$	kg	0.05	3.04 %
Sourcing of raw material (PVC)	1	$8.8 \cdot 10^{-3}$	kg	0.02	1.44 %

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TOTAL				1.61	100.00 %
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Mailing bag

Climate Change - Manufacturing



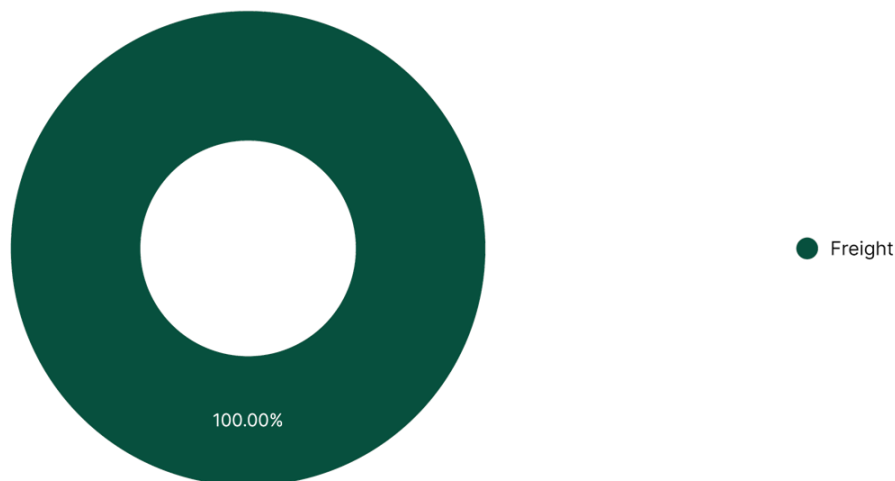
Activity	Emission Factor Num	Quantity	Unité	Impact (g CO ₂ eq)	Percentage (%)
Electricity usage during material transformation (polyester)	5	0.27	kWh	196.06	80.14 %
Electricity usage during material transformation (polyurethane foam)	5	0.03	kWh	21.26	8.69 %
Electricity usage during material transformation (PVC)	5	0.03	kWh	20.25	8.28 %
Electricity usage during material transformation (nylon)	5	$9.8 \cdot 10^{-3}$	kWh	7.09	2.90 %

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TOTAL				244.65	100.00 %
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Mailing bag

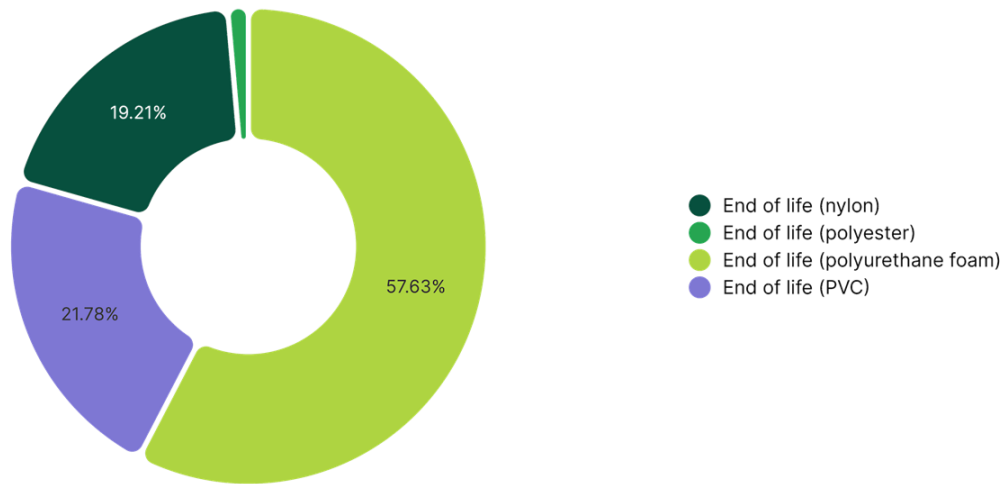
Climate Change - Transportation and Distribution



Activity	Emission Factor Num	Quantity	Unité	Impact (g CO ₂ eq)	Percentage (%)
Freight	6	0.16	kg	40.36	100.00 %
TOTAL				40.36	100.00 %

Mailing bag

Climate Change - End-of-Life Treatment



Activity	Emission Factor Num	Quantity	Unité	Impact (g CO ₂ eq)	Percentage (%)
End of life (polyurethane foam)	8	0.01	kg	25.68	57.63 %
End of life (PVC)	7	$8 \cdot 10^{-3}$	kg	9.71	21.78 %
End of life (nylon)	8	$4.8 \cdot 10^{-3}$	kg	8.56	19.21 %
End of life (polyester)	9	0.13	kg	0.62	1.39 %

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TOTAL				44.57	100.00 %
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