

Life Cycle Analyses

PMTRIA2 N



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

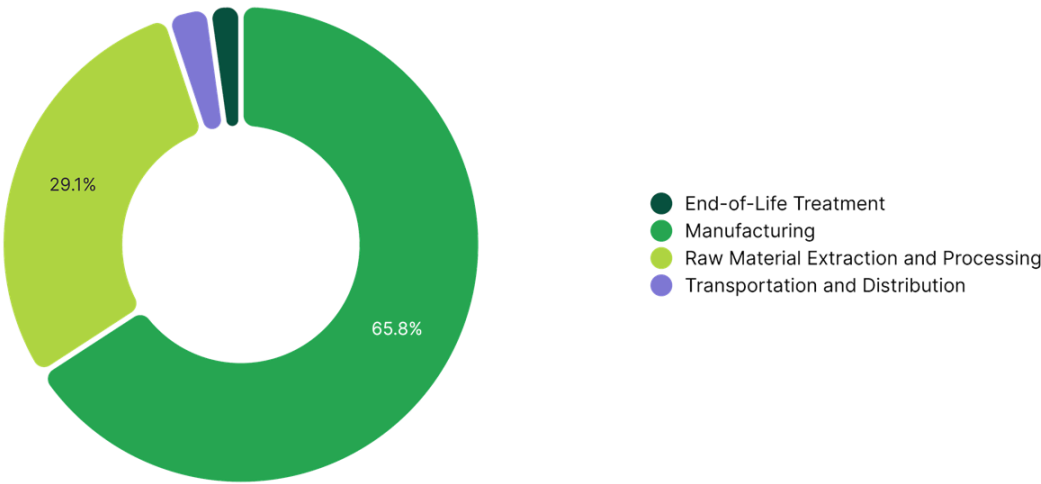
| Num | Emission Factor | Source | Value | Unit |
|-----|---|-------------------|---------------|------|
| 1 | Polypropylene, granulate Market activity | ECOINVENT 3.10 | 3.516196993 | kg |
| 2 | Steel, low-alloyed Ordinary transforming activity | ECOINVENT 3.10 | 2.203301567 | kg |
| 3 | Electricity Total (Scope 2 & 3) People's Republic of China | IEA 2023 | 0.7231 | kWh |
| 4 | Freight Boat From CN to FR | WELOW EXPERTS 1.0 | 0.25227278 | kg |
| 5 | Waste reinforcement steel Ordinary transforming activity Waste | ECOINVENT 3.10 | 0.06273427595 | kg |
| 6 | polyethylene/polypropylene product Ordinary transforming activity | ECOINVENT 3.10 | 1.783532575 | kg |

02

Results

Umbrella stand

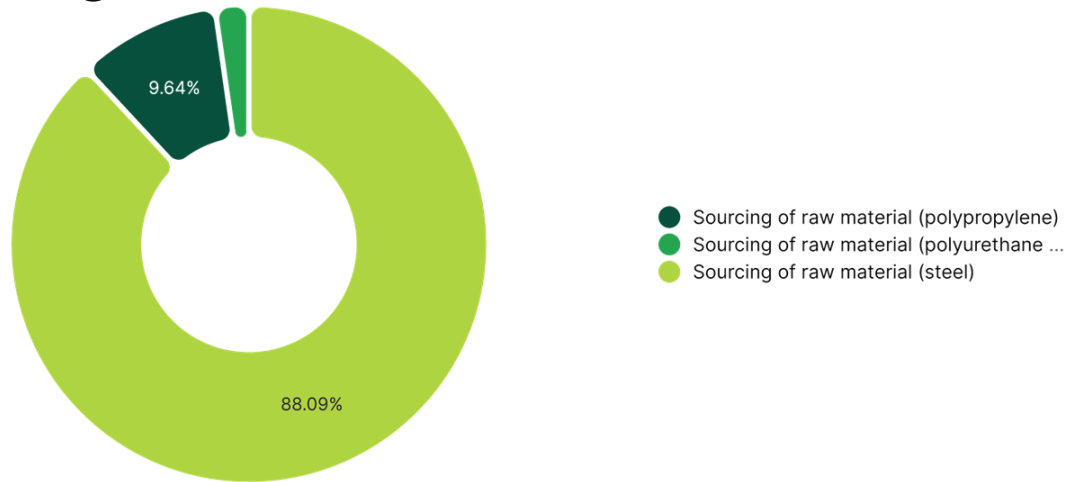
Climate Change



| Step | Impact (kg CO ₂ eq) | Percentage (%) |
|--|--------------------------------|----------------|
| Manufacturing | 20.02 | 62.74 % |
| Raw Material Extraction and Processing | 9.77 | 30.61 % |
| End-of-Life Treatment | 1.19 | 3.72 % |
| Transportation and Distribution | 0.93 | 2.92 % |
| | | |
| TOTAL | 31,91 | 100.00 % |

Umbrella stand

Climate Change - Raw Material Extraction and Processing



| Activity | Emission Factor Num | Quantity | Impact (kg CO ₂ eq) | Percentage (%) |
|--|---------------------|----------|--------------------------------|----------------|
| Sourcing of raw material (steel) | 2 | 3.46 | 7.62 | 78.03 % |
| Sourcing of raw material (polypropylene) | 1 | 0.61 | 2.15 | 21.97 % |

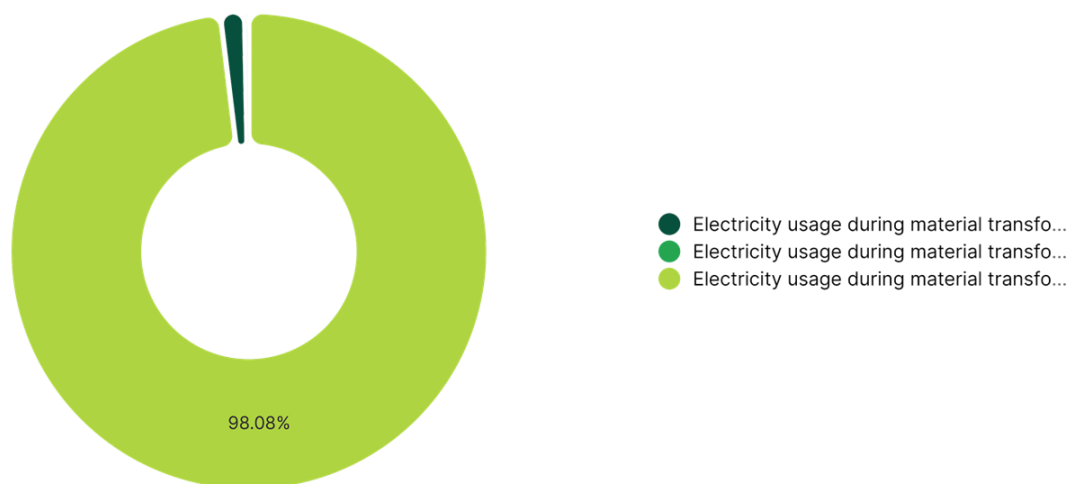
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|-------|--|--|------|----------|
| TOTAL | | | 9.77 | 100.00 % |
|-------|--|--|------|----------|

Umbrella stand

Climate Change - Manufacturing



| Activity | Emission Factor Num | Quantity | Impact (kg CO ₂ eq) | Percentage (%) |
|--|---------------------------|----------|-----------------------------------|-------------------|
| Electricity usage during material transformation (steel) | 3 | 26.56 | 19.2 | 95.91 % |
| Electricity usage during material transformation (polypropylene) | 3 | 1.13 | 0.82 | 4.09 % |

| | | |
|-------|-------|----------|
| TOTAL | 20.02 | 100.00 % |
|-------|-------|----------|

Umbrella stand

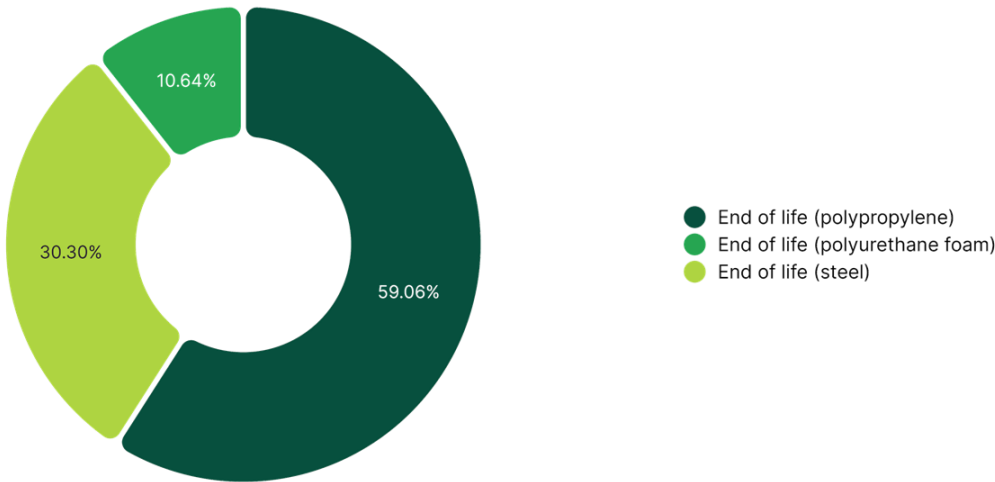
Climate Change - Transportation and Distribution



| Activity | Emission Factor Num | Quantity | Impact (g CO ₂ eq) | Percentage (%) |
|----------|---------------------|----------|-------------------------------|----------------|
| Freight | 4 | 3.7 | 933.41 | 100.00 % |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| TOTAL | | | 933.41 | 100.00 % |

Umbrella stand

Climate Change - End-of-Life Treatment



| Activity | Emission Factor Num | Quantity | Impact (kg CO ₂ eq) | Percentage (%) |
|-----------------------------|---------------------|----------|--------------------------------|----------------|
| End of life (polypropylene) | 6 | 0.56 | 0.99 | 83.38 % |
| End of life (steel) | 5 | 3.15 | 0.2 | 16.62 % |
| | | | | |
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| | | | | |
| TOTAL | | | 1.19 | 100.00 % |

