

Life Cycle Analyses

MHARM N



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

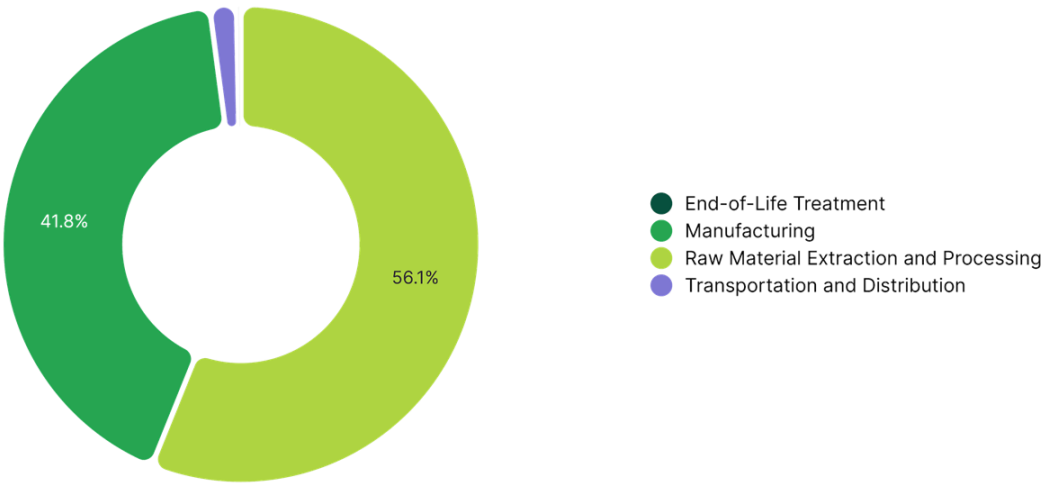
Num	Emission Factor	Source	Value	Unit
1	Aluminium, primary, ingot Ordinary transforming activity	ECOINVENT 3.10	7.605623188	kg
2	market for cast iron	ECOINVENT 3.10	1.93542914	kg
3	Acrylonitrile–butadiene–styrene copolymer Ordinary transforming activity	ECOINVENT 3.10	4.533718346	kg
4	Electricity Total (Scope 2 & 3) People's Republic of China	IEA 2023	0.7231	kWh
5	Freight Boat From CN to FR	WELOW EXPERTS 1.0	0.25227278	kg
6	Residues, MSWI, waste plastic, consumer electronics Ordinary transforming activity	ECOINVENT 3.10	0.3620299477	kg
7	Waste aluminium Ordinary transforming activity	ECOINVENT 3.10	0.02555404932	kg
8	Waste disposal Metal Average	UK GHG CONVERSION FACTOR 2024	0.0191	kg

02

Results

Monitor arm

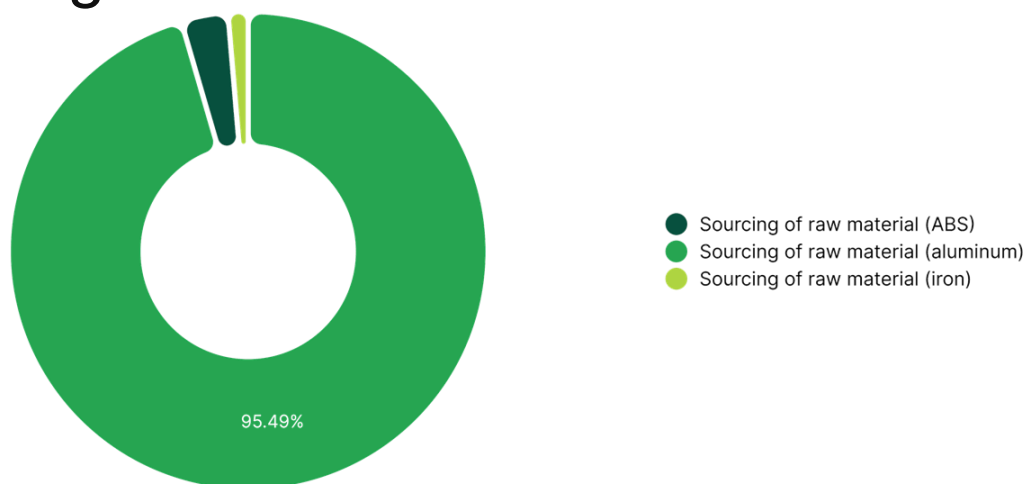
Climate Change



Step	Impact (kg CO ₂ eq)	Percentage (%)
Raw Material Extraction and Processing	29.57	56.11 %
Manufacturing	22.03	41.80 %
Transportation and Distribution	0.95	1.79 %
End-of-Life Treatment	0.16	0.30 %
TOTAL	52,7	100.00 %

Monitor arm

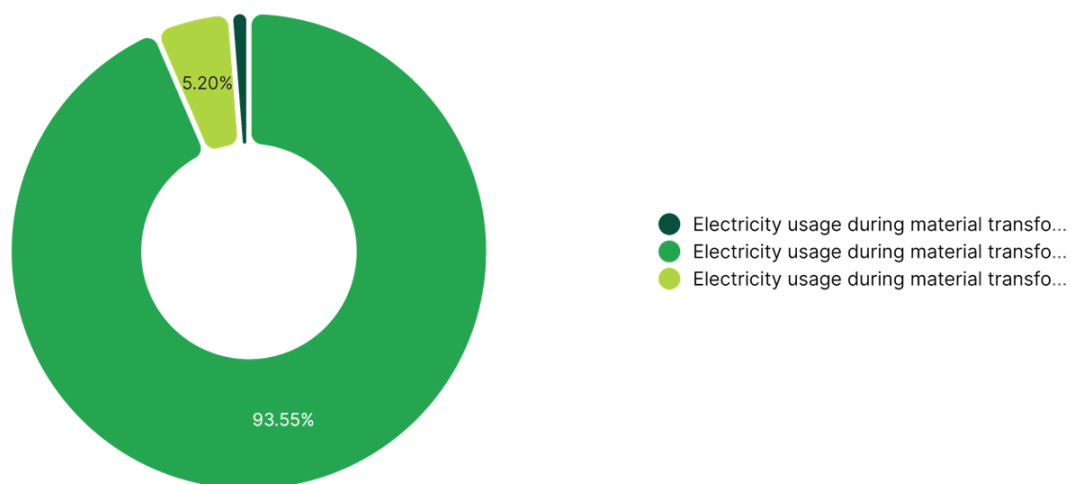
Climate Change - Raw Material Extraction and Processing



Activity	Emission Factor Num	Quantity	Impact (kg CO ₂ eq)	Percentage (%)
Sourcing of raw material (aluminum)	1	3.71	28.24	95.49 %
Sourcing of raw material (ABS)	3	0.21	0.94	3.16 %
Sourcing of raw material (iron)	2	0.21	0.4	1.35 %
TOTAL			29.57	100.00 %

Monitor arm

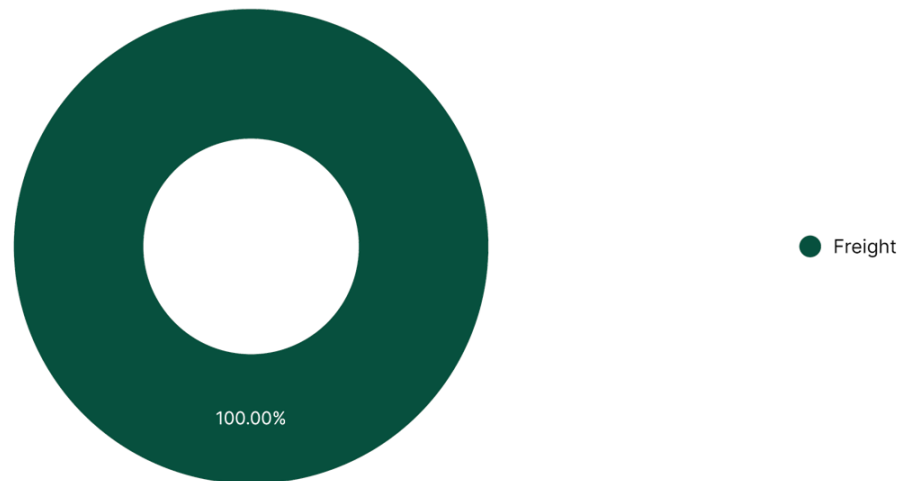
Climate Change - Manufacturing



Activity	Emission Factor Num	Quantity	Impact (kg CO ₂ eq)	Percentage (%)
Electricity usage during material transformation (aluminum)	4	28.5	20.61	93.55 %
Electricity usage during material transformation (iron)	4	1.58	1.14	5.20 %
Electricity usage during material transformation (ABS)	4	0.38	0.28	1.26 %
TOTAL			22.03	100.00 %

Monitor arm

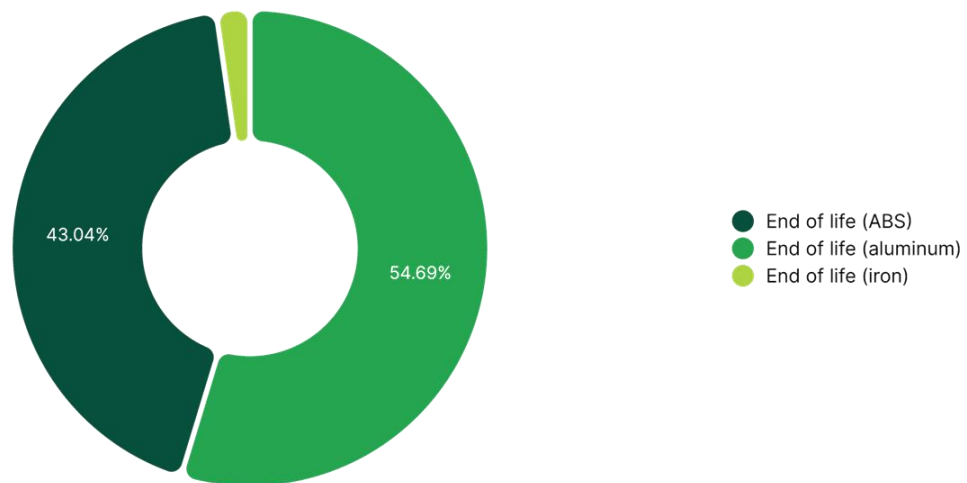
Climate Change - Transportation and Distribution



Activity	Emission Factor Num	Quantity	Impact (g CO ₂ eq)	Percentage (%)
Freight	5	3.75	946.02	100.00 %
TOTAL			946.02	100.00 %

Monitor arm

Climate Change - End-of-Life Treatment



Activity	Emission Factor Num	Quantity	Impact (g CO ₂ eq)	Percentage (%)
End of life (aluminum)	7	3.38	86.24	54.69 %
End of life (ABS)	6	0.19	67.88	43.04 %
End of life (iron)	8	0.19	3.58	2.27 %
TOTAL			157.71	100.00 %

