Global GreenTag
International EPD Program

EPD™

Environmental Product Declaration

In accordance with ISO 14025 and EN15804+A2

Porta Products Pty Limited

CUSTOMwood

Raw MDF

Standard MDF

Moisture Resistant MDF

Company Address: 2 Wella Way Somersby NSW 2250
Issue Date:10th July 2025 **Valid To:**10th July 2030
Registration Number:BOR:CW01:2025:EP
Document Version: 1.0

Global GreenTag International

Contents

About Porta

Porta is one of Australia' s leading suppliers of timber and panel products for residential and commercial construction. With deep industry expertise, we understand the critical relationship between timber and panel materials in every project — which is why we're committed to offering a comprehensive, curated product range from a single, trusted supplier.

We proudly support the home improvement, building, trade, and commercial sectors, delivering quality, consistency, and innovation at every step. Our focus is on providing solutions that meet current demands and anticipate future trends — enabling our customers to build in the future with confidence.

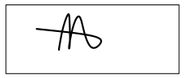
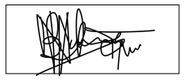
Porta's brand is built on passion, reliability, and purpose. We're driven by progress — not just in our products, but in how we support our people, customers, and the industries we've served for over 100 years. Our reputation for reliability is earned through consistent excellence and delivering on our promises without compromise. Our curated range of timber and panel products is intentionally selected for quality, performance, and versatility. Porta's products are sustainably sourced, precision-manufactured, and trusted by trades nationwide. Proudly Australian, we're deeply invested in local manufacturing, people, and innovation. We're grounded in tradition and committed to shaping a stronger, smarter future for the building and construction industry.

What is an Environmental Product Declaration (EPD)?

An Environmental Product Declaration (EPD) is a standardised document that transparently reports the environmental impact of a product or service throughout its life cycle. Based on a Life Cycle Assessment (LCA), it provides detailed, third-party verified data about resource use, emissions, and other environmental effects from raw material extraction to disposal. EPDs adhere to international standards, such as ISO 14025, ensuring credibility and comparability across products within the same category179.

EPDs are primarily used to communicate environmental performance in business-to-business contexts, but they can also help environmentally conscious consumers make informed choices. While voluntary in most cases, EPDs are increasingly recognised as essential for regulatory compliance, sustainability reporting, and green building certifications. They do not certify whether a product is environmentally superior but serve as a transparency tool for companies aiming to demonstrate their commitment to sustainability.

1. General Information

Product Category Rules (PCR)	**CEN standard EN 15804+A2 2019 serves as core Product Category Rules (PCR)**			
Verification Statement	Independent verification of the declaration and data, according to ISO 14025:2010 ☐ Internal ☒ External Independent external verification of the declaration and data, mandatory for business-to-consumer communication according to ISO 14025:2010			
Third Party Verifier	**Signature**	**Name**	**Details**	**Logo**
		Stephen Forson	ViridisPride Ltd 124 City Road, EC1V 2NX +447440202960 www.viridispride.com	Viridis Pride
LCA and EPD Producer		Eren Yaman ERKE Sustainable Building Design and Consultancy Ltd.	Kısıklı Mah. Hanımseti Sok. No:5 Üsküdar/İstanbul/Türkiye info@erketasarim.com www.erketasarim.com	ERKE 'Delivering Sustainable Buildings'
Program Operator		Dr. Nana Bortsie-Aryee	Global GreenTag International Pty Ltd Level 38, 71 Eagle Street, Brisbane 4000 Australia epd@globalgreentag.com www.globalgreentag.com	Global GreenTag International
EPD Owner		Jim Snelson Porta Products Pty Limited	2 Wella Way Somersby NSW 2250 coccomplianceteam@borgs.com.au https://www.porta.com.au/	porta
Communication	This EPD can be used for business-to-consumer (B2C) communication.			
Comparability	EPD of construction products may not be comparable if they do not comply with EN 15804			
Geographical Area	The geographical scope of this EPD is Australia.			
Life Cycle Assessment (LCA)-method Cut-off Classification	EN 15804 + A2 Method based on the EF 3.1 reference package			
Characterisation Factors Version	EF Reference Package 3.1			
Electricity mix	Consumption Mix			

2. Product Information – Product Specific EPD

Figure 1: Product Image

EPD Data Type	**This EPD is based on product specific information.**	
Product Name	CUSTOMwood, Raw Medium Density Fibreboard, MDF, Medium Density Fibreboard Standard (STD), Medium Density Fibreboard Moisiture Resistant (MR)	
Product Description	CUSTOMwood is one of the most versatile & easy to use Medium Density Fibreboards available in Australia today. CUSTOMwood sheets are ideal for a number of interior applications in the cabinet making, shop fitting, furniture & building industries. CUSTOMwood Raw MDF & LDF cuts, drills and routes cleanly without splintering or chipping. It is also free of any knots and grain, making finishing easier and less time-consuming. The pre-sanded surface makes it the ideal substrate for the application of natural timber veneers, vinyl, paper & heat transfer foils.	
Product Application	Manufactured from managed and renewable plantation pine, CUSTOMwood Raw MDF is a versatile panel for interior use in furniture & joinery applications, particularly in cupboards, wardrobes & storage applications. The excellent surface smoothness makes it ideal for further processing such as high gloss paint.	
Production Site	2 Lowes Mount Rd, Oberon New South Wales 2787, Australia.	
Description of Manufacturing Processes	Including 13 steps: debarking, chipping, screening, drying, refining, blending, drying, matforming, pressing, curing, cooling, trimming and sanding. Detailed see Figure 3.	
Product Performance and Standard Compliance	**Standard**	**Result**
	AS 1530.3	Ignitability index 12-14 Spread of flame index 5-7 Heat evolved index 4-6 Smoke developed index 3-5
	ASTM D5116-2017 VOC Emissions/ Indoor Air Quality	<0.5mg/m²/Hr
	AS 5637.1-2015	Group 3
	Updated technical information can be found at https://www.polytec.com.au/technical/#safety-data-sheets	
Candidate List of Substances of Very High Concern for Authorisation	Product does not contain substances on the “Candidate List of Substances of Very High Concern for authorisation” (2) that require registration.	
Materials	**Material**	**Function**
	Wood & Urban Wood Residue (recycled)	Structure
	MUF resin	Adhesive
	Wax	Water Resistance
	MDF	Packaging

3. LCA Description and Rules

EPD Type	**Cradle to gate with options (A1 to A3, C1-C4, and D)** **See Figure 2: Modules Included**
Declared Unit	The declared unit is the production of a 1m³ Medium Density Fiberboard (For MDF-MR, 1m³=1114.5846 kg. For MDF-STD, 1m³= 1085.9738 kg). If including packaging, the weight of MDF-MR is 1136 kg, and for MDF-STD, it is 1106 kg.
Reference Service Life (RSL)	No reference service life relevant as product can be used for multiple applications with varying service life.
Application of Cut-Off Criteria	According to PCR, the definition of cut-off criteria allows some data from the inventory to be disregarded when such data is considered irrelevant for the purposes of the study and would only represent an unnecessary burden in collecting data, without significantly altering the end result. Except for the exclusions listed in the PCR, no other specific cut-off criteria is applied.
Allocations	Allocation of waste In this study, production waste in A3 which sent to landfill centre, are allocated by weight. For reuse, recycling, and recovery allocation, the Cut-off allocation approach is adopted in the case of any recycled content, which is assumed to enter the system burden-free. Only environmental impacts from the point of recovery and forward (e.g., collection, sorting, processing, etc.) are considered.
Data Collection Period	1/07/2022 - 30/06/2023
Applied Software	SimaPro 9.5.0.0
Applied Background Database	Ecoinvent 3.9.1
Data Quality Assessment	See Figure 4 Data quality requirement and assessment
Applied Energy Datasets	Australian National Greenhouse Accounts Factors, 2023
Applied Electricity Mix Carbon Footprint	0.68 kgCO2eq/KWh in Oberon, New South Wales

Table 1: Product specification of MDF-STD

Property	Unit	Nominal Thickness Range (mm) ≤5	>8 to 12	>12 to 22	>22 to 33	>33
Bending Strength (MoR)	MPa	51	47	40	36	27
Modulus of Elasticity (MoE)	MPa	3961	3511	3216	2961	2624
Internal Bond Strength (IB)	MPa	1.1	1.0	0.9	0.9	0.7

Table 2: Product specification of MDF-MR

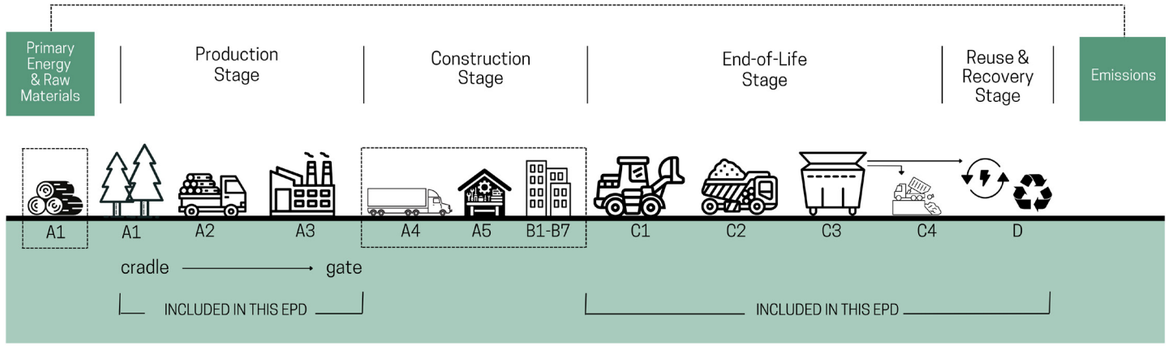
Property	Unit	Nominal Thickness Range (mm) ≤5	>8 to 12	>12 to 22	>22 to 33
Bending Strength (MoR)	MPa	51	47	40	36
Modulus of Elasticity (MoE)	MPa	3961	3511	3216	2961
Internal Bond Strength (IB)	MPa	1.1	1.0	0.9	0.9
Thickness Swelling	%	23.9	10.3	5.7	7.2
Wet Bending Strength Method A	MPa	11.7	10.5	8.1	7.3

Figure 2: Modules Included

Information	Construction Works Life Cycle Information																Supplementary Information
Stages	Product			Construction Process		Use							End-of-Life				Benefits and Loads Beyond the System Boundary
Module Codes	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Module Names	Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction and Demolition	Transport	Waste Processing	Disposal	Reuse Recovery and Potential
Modules Declared	✓	✓	✓	ND	ND	ND	ND	ND	ND	ND	ND	ND	✓	✓	✓	✓	✓
Geography	AU	AU	AU										AU	AU	AU	AU	AU
Data	Based on Primary Information			Scenario													Scenario

✓ = Module Included ND = Module Not declared

Figure 3: System Process Flow Chart & Boundaries



This is a 'cradle-to-gate' type EPD with modules C1-C4 and module D added. This means that the production (modules A1-A3), end-of-life (C1-C4) and reuse, recovery and/or recycling potentials (D) are modelled in this EPD. The construction process (modules A4-A5) and use stages (B1-B7) are not modelled.

Figure 4: Data Quality Requirement and Assessment

Quality Requirement	Specific requirement	Data quality applied in this LCA	Result Met /Not Met
Time-related coverage (age of data and the minimum length of time over which data should be collected)	Generic datasets should be within ten years	Ecoinvent 3.9.1, <10 years	Met
	Newly collected LCI data were current or up to 5 years old and based on a 1-year average	1/07/2022 - 30/06/2023 production inventory	Met
Geographical coverage (the geographical area from which data for unit processes should be collected to satisfy the goal of the study):	Geographic coverage shall reflect the operational reality of the different life cycle stages;	All raw material data was collected from the manufacturer in Oberon NSW; Production data was collected and provided by Porta Products Pty Ltd.	Met
		Distribution, Use, and EoL are based on their respective geographical regions. The specific applied scenarios are supplied by Porta Products Pty Ltd, which is deemed to be representative.	Met
		Transportation and energy use data referring to Ecoinvent data with geographical coverage corresponding to the location.	Met
Technology Coverage	Specific technology or technology mix	For the most part, data are representative of the actual technologies used for processing, transportation, and manufacturing operations. Representative fabrication datasets, specific to the type of material, are used to represent the actual processes, as appropriate.	Met
Precision	Measure of the variability of the data values for each data expressed	Data collected for operations were typically averaged for one or more years over multiple operations, which is expected to reduce the variability of results.	Met
Completeness	95% percentage of flow is measured or estimated	All of the unit processes within the scope of the life cycle were included, with less than a 1% cut-off	Met
Representativeness	Qualitative assessment of the degree to which the data set reflects the actual population of interest, i.e., geographical coverage, period, and technology coverage	See geographical coverage, period, and technology coverage requirement above. These requirements are met.	Met
Consistency	Qualitative assessment of Whether the study methodology is applied uniformly to the various components of the analysis	The study methodology is applied uniformly to the different parts of the analysis.	Met
Reproducibility	Qualitative assessment of the extent to which information about the methodology and data values would allow an independent practitioner to reproduce the results reported in the study	Based on the description of data and assumptions used, this assessment would be reproducible by other practitioners. All assumptions, models, and data sources are documents.	Met
Sources of the data	The foreground data should be from the primary producer	Data representing energy use at factories represent an annual average and are considered of high quality due to the length of time over which these data are collected. For secondary LCI datasets, Ecoinvent v3.9.1 are used.	Met
Uncertainty of the information	Data, models, and assumptions should be verified	All the primary data and assumptions were confirmed with Porta Products Pty Ltd, and models were built following ISO 14040/44 and PCR requirements.	Met

Figure 5: Dataset Resource and Assessment

Component	Material Description	Material Dataset	Data Source	Publication Date of Data Source
Resin	Resin	Melamine urea formaldehyde adhesive {GLO}| melamine urea formaldehyde adhesive production | Cut-off, U	EI 3.9.1	2023
Wax	Wax	Paraffin {RoW}| paraffin production | Cut-off, U	EI 3.9.1	2023
Fibre	Fibre	Sawlog and veneer log, parana pine, measured as solid wood under bark {RoW}| softwood forestry, parana pine, sustainable forest management | Cut-off, U	EI 3.9.1	2023
Energy				
Water	Water	Tap water {RoW}| market for tap water | Cut-off, U	EI 3.9.1	2023
Deionised Water	Deionised Water	Water, deionised {RoW}| market for water, deionised | Cut-off, U	EI 3.9.1	2023
Electricity	Electricity	Emission factors from consumption of purchased or acquired electricity: Location based approach	Australian National Greenhouse Accounts Factors	2023
Natural Gas	Natural Gas	Emission factors for the consumption of natural gas	Australian National Greenhouse Accounts Factors	2023
Transport				
Raw Material Transport	Truck	Transport, freight, lorry >32 metric ton, EURO5 {RoW}| market for transport, freight, lorry >32 metric ton, EURO5 | Cut-off, U	EI 3.9.1	2023
Raw Material Transport	Ship	Transport, freight, sea, container ship {GLO}| market for transport, freight, sea, container ship | Cut-off, U	EI 3.9.1	2023
Waste Transport	Truck	Transport, freight, lorry >32 metric ton, EURO5 {RoW}| market for transport, freight, lorry >32 metric ton, EURO5 | Cut-off, U	EI 3.9.1	2023
Waste Treatment				
Wood Waste	Landfill	Waste wood, untreated {RoW}| treatment of waste wood, untreated, sanitary landfill | Cut-off, U	EI 3.9.1	2023
Wood Waste	Incineration	Waste wood, untreated {RoW}| treatment of waste wood, untreated, municipal incineration | Cut-off, U	EI 3.9.1	2023
Other Waste	Landfill	Inert waste {RoW}| treatment of inert waste, sanitary landfill | Cut-off, U	EI 3.9.1	2023
Wood Waste Processing	Sorting And Shredding	Wood chips, from post-consumer wood, measured as dry mass {RoW}| treatment of waste wood, post-consumer, sorting and shredding | Cut-off, U	EI 3.9.1	2023
Module D				
Load	Waste Wood	Waste wood, post-consumer {RoW}| market for waste wood, post-consumer | Cut-off, U	EI 3.9.1	2023
Benefit	Waste Wood Recycling	Residual wood, dry {RoW}| market for residual wood, dry | Cut-off, U	EI 3.9.1	2023
Benefit	Waste Wood Incineration	Heat, district or industrial, natural gas {RoW}| heat and power co-generation, natural gas, combined cycle power plant, 400MW electrical | Cut-off, U	EI 3.9.1	2023

4. Scenarios and Additional Technical Information

The results have been calculated based on the below information.

Module	Scenario and Additional Technical Information
A1-A3	In A3, after manufacturing, the inert waste is sent to landfill centre.
C1	For the Demolition stage (C1), 0.323 MJ electricity use per kg of material was assumed (Gervasio et al., 2018).
C2	A distance of 50 km is assumed to transport the construction waste to the disposal site (C2).
C3	Waste processing of materials flows intended for reuse, recycling and energy recovery are included in C3.
C4	For the C4 disposal stage, a scenario-based approach is adopted with the assumption that all waste wood is directed towards 100% recycling, 100% energy recovery, or 100% landfill disposal. Other types of waste are sent to the landfill center.
D	In this study, the benefits are calculated from EoL stage. The recycling benefit can be calculated according to the following formula in EN15804+A2: $e_{module\ D1} = \sum_i (M_{MR\ out}\|_i - M_{MR\ in}\|_i) \cdot \left(E_{MR\ after\ EoW\ out}\|_i - E_{VMSub\ out}\|_i \cdot \frac{Q_{R\ out}}{Q_{Sub}}\Big\|_i \right)$ $M_{MR\ in}$=0, $M_{MR\ out}$= recycling rate*wood waste weight. $E_{MR\ after\ EoW\ out}$ use ecoinvent dataset "Waste wood, post-consumer {RoW}| market for waste wood, post-consumer | Cut-off, U, " $E_{VM\ Sub\ out}$ use ecoinvent dataset "Residual wood, dry {RoW}| market for residual wood, dry | Cut-off, U" for modelling. QRout/ Qsub = 1 in this study. The incineration benefit can be calculated according to the following formula in EN15804+A2: $e_{module\ D3} = -M_{INC\ out} \cdot \left(LHV \cdot X_{INC\ heat} \cdot E_{SE\ heat} + LHV \cdot X_{INC\ elec} \cdot E_{SE\ elec} \right)$ In this study, $M_{INC\ out}$ = incineration rate*wood waste weight, LHV = 34.11 MJ/kg, $X_{INC\ heat}$ = 0.6, $E_{SE\ heat}$ use Ecoinvent dataset "Heat, district or industrial, natural gas {RoW}| heat and power co-generation, natural gas, combined cycle power plant, 400MW electrical | Cut-off, U" for modelling. $X_{INC\ elec}$=0, $E_{SE\ elec}$ = 0.

5. LCA Results – Definitions and Disclaimers

All results have been calculated and displayed as per EN15804. Units Methods and Anonyms are defined below. Results are reported in scientific notation.

Figure 6: Core Indicators

Impact Category	Indicator	Acronym	Unit
Climate change – total	Global Warming Potential total	GWP-total	kg CO_2 eq.
Climate change - fossil	Global Warming Potential fossil fuels	GWP-fossil	kg CO_2 eq.
Climate change - biogenic	Global Warming Potential biogenic	GWP-biogenic	kg CO_2 eq.
Climate change - land use and land use change	Global Warming Potential land use and land use change	GWP-luluc	kg CO_2 eq.
Ozone Depletion	Depletion potential of the stratospheric ozone layer	ODP	kg CFC 11 eq.
Acidification	Acidification potential, Accumulated Exceedance	AP	mol H^+ eq.
Eutrophication aquatic freshwater	Eutrophication potential, fraction of nutrients reaching freshwater end compartment	EP-freshwater	kg PO_4 eq.
Eutrophication aquatic marine	Eutrophication potential, fraction of nutrients reaching freshwater end compartment	EP-marine	kg N eq.
Eutrophication terrestrial	Eutrophication potential, Accumulated Exceedance	EP-terrestrial	mol N eq.
Photochemical ozone formation	Formation potential of tropospheric ozone	POCP	kg NMVOC eq.
Depletion of abiotic resources – minerals and metals[2]	Abiotic depletion potential for non-fossil resources	ADP-minerals&metals	kg Sb eq.
Depletion of abiotic resources - fossil fuels[2]	Abiotic depletion potential for fossil resources	ADP-fossil	MJ, net calorific value
Water use[2]	Water (user) deprivation potential, deprivation- weighted water consumption	WDP	m^3 world eq. deprived

Disclaimer 2: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Figure 7: Additional Indicators

Impact Category	Indicator	Acronym	Unit
Particulate matter emissions	Potential incidence of disease due to PM emissions	PM	Disease incidence
Ionising radiation, human health[1]	Potential Human exposure efficiency relative to U235	IRP	kBq U235 eq.
Ecotoxicity (freshwater)[2]	Potential Comparative Toxic Unit for ecosystems	ETP-fw	CTUe
Human toxicity, cancer effects[2]	Potential Comparative Toxic Unit for humans	HTP-c	CTUh
Human toxicity, non-cancer effects[2]	Potential Comparative Toxic Unit for humans	HTP-nc	CTUh
Land use related impacts / soil quality[2]	Potential Soil quality index	SQP	dimensionless

Disclaimer 1: This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Disclaimer 2: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Figure 8: Resource Use, Waste and Output Flow Parameters

Impact Category	Acronym	Unit
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ, net calorific value
Use of renewable primary energy resources used as raw materials	PERM	MJ, net calorific value
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PERT	MJ, net calorific value
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ, net calorific value
Use of non-renewable primary energy resources used as raw materials	PENRM	MJ, net calorific value
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PENRT	MJ, net calorific value
Use of secondary material	SM	kg
Use of renewable secondary fuels	RSF	MJ, net calorific value
Use of non-renewable secondary fuels	NRSF	MJ, net calorific value
Net use of fresh water	FW	m^3
Hazardous waste disposed	HWD	kg
Non-hazardous waste disposed	NHWD	kg
Radioactive waste disposed	RWD	kg
Components for re-use	CRU	kg
Materials for recycling	MFR	kg
Materials for energy recovery	MER	kg
Exported energy	EE	MJ per energy carrier

6. LCA Results

Declaimer 1: The result of ADP-minerals&metals and ADP-fossil shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

Declaimer 2: Estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

Declaimer 3: For C3 waste processing and C4 disposal stage, a scenario-based approach is adopted with the assumption that all waste wood is directed towards 100% recycling, 100% energy recovery, or 100% landfill disposal. Other types of waste are sent to the landfill center.

Figure 9: Core Indicator Results for 1m³ MDF -MR

Indicator Acronym	Unit	Raw Material Supply, Transport, Manufacturing	Deconstruction and Demolition	Transport	Waste Processing-landfill	Waste processing-incineration/recycling	Disposal-landfill	Disposal-incineration	Disposal-recycling	Reuse Recovery and Potential-incineration	Reuse Recovery and Potential-recycling
		A1-A3 Total	C1	C2	C3	C3	C4	C4	C4	D	D
GWP-total	**kg CO_2 eq.**	-3.95E+02	9.70E+01	5.88E+00	0.00E+00	4.70E+01	1.20E+01	1.20E+03	1.19E+03	-6.11E+02	-8.05E+01
GWP-fossil	**kg CO_2 eq.**	7.88E+02	9.70E+01	5.88E+00	0.00E+00	4.69E+01	1.33E+01	1.64E+01	1.58E+00	-6.11E+02	-7.87E+01
GWP-biogenic	**kg CO_2 eq.**	-1.18E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E+03	1.18E+03	1.18E+03	0.00E+00	0.00E+00
GWP-luluc	**kg CO_2 eq.**	1.02E+00	1.14E-02	2.89E-03	0.00E+00	1.41E-01	1.00E-02	5.14E-03	1.15E-03	-5.85E-02	-1.82E+00
ODP	**kg CFC 11 eq.**	1.33E-05	5.61E-07	9.20E-08	0.00E+00	6.73E-07	3.10E-07	2.97E-07	3.72E-08	-1.98E-05	-1.16E-06
AP	**mol H^+ eq.**	5.21E+00	4.54E-01	2.12E-02	0.00E+00	2.52E-01	9.49E-02	1.70E-01	1.12E-02	-5.75E-01	-6.20E-01
EP-freshwater	**kg PO_4 eq.**	5.95E-01	1.56E-01	4.78E-04	0.00E+00	1.00E-02	2.73E-03	7.07E-03	4.13E-04	-1.03E-02	-2.34E-02
EP-marine	**kg N eq.**	1.49E+00	1.06E-01	7.07E-03	0.00E+00	8.49E-02	3.74E-01	8.86E-02	4.21E-03	-1.93E-01	-2.11E-01
EP-terrestrial	**mol N eq.**	1.60E+01	8.39E-01	7.50E-02	0.00E+00	8.96E-01	3.77E-01	8.56E-01	4.50E-02	-2.09E+00	-2.29E+00
POCP	**kg NMVOC eq.**	5.00E+00	2.31E-01	3.02E-02	0.00E+00	2.88E-01	1.50E-01	2.21E-01	1.52E-02	-1.30E+00	-7.46E-01
ADP-minerals&metals[2]	**kg Sb eq.**	3.73E-03	6.39E-05	1.59E-05	0.00E+00	1.21E-04	2.76E-05	2.89E-05	3.20E-06	-2.01E-04	-1.32E-04
ADP-fossil[2]	**MJ, net calorific value**	1.24E+04	1.01E+03	8.56E+01	0.00E+00	6.53E+02	2.86E+02	1.61E+02	3.42E+01	-9.72E+03	-1.04E+03
WDP	**m^3 world eq. deprived**	5.60E+02	6.29E+00	4.36E-01	0.00E+00	3.22E+00	1.20E+01	-9.99E+00	1.45E+00	-2.63E+01	-5.08E+01

Figure 10: Core Indicator Results for 1m³ MDF-STD

Indicator Acronym	Unit	Raw Material Supply, Transport, Manufacturing	Deconstruction and Demolition	Transport	Waste Processing-landfill	Waste processing-incineration/recycling	Disposal-landfill	Disposal-incineration	Disposal-recycling	Reuse Recovery and Potential-incineration	Reuse Recovery and Potential-recycling
		A1-A3	C1	C2	C3	C3	C4	C4	C4	D	D
GWP-total	**kg CO_2 eq.**	-4.75E+02	9.45E+01	5.73E+00	0.00E+00	4.70E+01	1.20E+03	1.20E+03	1.19E+03	-6.11E+02	-8.05E+01
GWP-fossil	**kg CO_2 eq.**	7.08E+02	9.45E+01	5.73E+00	0.00E+00	4.69E+01	1.30E+01	1.61E+01	1.24E+00	-6.11E+02	-7.87E+01
GWP-biogenic	**kg CO_2 eq.**	-1.18E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E+03	1.18E+03	1.18E+03	0.00E+00	0.00E+00
GWP-luluc	**kg CO_2 eq.**	9.86E-01	1.11E-02	2.82E-03	0.00E+00	1.41E-01	9.76E-03	4.89E-03	9.09E-04	-5.85E-02	-1.82E+00
ODP	**kg CFC 11 eq.**	1.16E-05	5.47E-07	8.97E-08	0.00E+00	6.73E-07	3.02E-07	2.89E-07	2.93E-08	-1.98E-05	-1.16E-06
AP	**mol H^+ eq.**	4.78E+00	4.42E-01	2.07E-02	0.00E+00	2.52E-01	9.25E-02	1.67E-01	8.85E-03	-5.75E-01	-6.20E-01
EP-freshwater	**kg PO_4 eq.**	5.74E-01	1.52E-01	4.66E-04	0.00E+00	1.00E-02	2.64E-03	6.98E-03	3.25E-04	-1.03E-02	-2.34E-02
EP-marine	**kg N eq.**	1.42E+00	1.03E-01	6.89E-03	0.00E+00	8.49E-02	3.73E-01	8.77E-02	3.31E-03	-1.93E-01	-2.11E-01
EP-terrestrial	**mol N eq.**	1.51E+01	8.18E-01	7.30E-02	0.00E+00	8.96E-01	3.67E-01	8.46E-01	3.54E-02	-2.09E+00	-2.29E+00
POCP	**kg NMVOC eq.**	4.71E+00	2.25E-01	2.94E-02	0.00E+00	2.88E-01	1.47E-01	2.18E-01	1.20E-02	-1.30E+00	-7.46E-01
ADP-minerals&metals²	**kg Sb eq.**	2.98E-03	6.22E-05	1.55E-05	0.00E+00	1.21E-04	2.69E-05	2.82E-05	2.52E-06	-2.01E-04	-1.32E-04
ADP-fossil²	**MJ, net calorific value**	1.11E+04	9.83E+02	8.34E+01	0.00E+00	6.53E+02	2.78E+02	1.54E+02	2.69E+01	-9.72E+03	-1.04E+03
WDP	**m³ world eq. deprived**	4.44E+02	6.13E+00	4.25E-01	0.00E+00	3.22E+00	1.17E+01	-1.03E+01	1.14E+00	-2.63E+01	-5.08E+01

Figure 11: Additional Indicator Results for MDF-MR

Indicator Acronym	Unit	Raw Material Supply, Transport, Manufacturing	Deconstruction and Demolition	Transport	Waste Processing-landfill	Waste processing-incineration/recycling	Disposal-landfill	Disposal-incineration	Disposal-recycling	Reuse Recovery and Potential-incineration	Reuse Recovery and Potential-recycling
		A1-A3	C1	C2	C3	C3	C4	C4	C4	D	D
PM	**Disease incidence**	9.06E-05	7.25E-07	5.91E-07	0.00E+00	4.16E-06	2.04E-06	1.97E-06	2.46E-07	-2.39E-06	-1.74E-05
IRP¹	**kBq U235 eq.**	9.66E+00	1.74E-01	7.86E-02	0.00E+00	3.04E+00	3.93E-01	1.96E-01	4.36E-02	-1.62E+00	-6.37E+00
ETP-fw²	**CTUe**	3.45E+03	2.47E+02	4.61E+01	0.00E+00	3.80E+02	1.73E+02	1.27E+02	1.50E+01	-4.31E+02	-2.82E+02
HTP-c²	**CTUh**	6.85E-07	1.77E-08	2.54E-09	0.00E+00	3.21E-08	7.72E-09	4.18E-08	9.00E-10	-7.43E-08	-2.52E-07
HTP-nc²	**CTUh**	7.20E-06	8.39E-07	6.23E-08	0.00E+00	5.00E-07	2.11E-07	1.95E-06	9.94E-09	-8.33E-07	-5.09E-07
SQP²	**dimensionless**	2.37E+05	6.82E+01	8.66E+01	0.00E+00	4.25E+02	6.47E+02	1.14E+02	7.80E+01	-1.53E+02	-6.04E+04

Figure 12: Additional Indicator Results for MDF-STD

Indicator Acronym	Unit	Raw Material Supply, Transport, Manufacturing	Deconstruction and Demolition	Transport	Waste Processing-landfill	Waste processing-incineration/recycling	Disposal-landfill	Disposal-incineration	Disposal-recycling	Reuse Recovery and Potential-incineration	Reuse Recovery and Potential-recycling
		A1-A3	C1	C2	C3	C3	C4	C4	C4	D	D
PM	**Disease incidence**	8.48E-05	7.06E-07	5.76E-07	0.00E+00	4.16E-06	1.99E-06	1.92E-06	1.93E-07	-2.39E-06	-1.74E-05
IRP¹	**kBq U235 eq.**	7.96E+00	1.70E-01	7.66E-02	0.00E+00	3.04E+00	3.84E-01	1.87E-01	3.44E-02	-1.62E+00	-6.37E+00
ETP-fw²	**CTUe**	3.15E+03	2.41E+02	4.49E+01	0.00E+00	3.80E+02	1.70E+02	1.24E+02	1.18E+01	-4.31E+02	-2.82E+02
HTP-c²	**CTUh**	5.65E-07	1.72E-08	2.48E-09	0.00E+00	3.21E-08	7.53E-09	4.17E-08	7.08E-10	-7.43E-08	-2.52E-07
HTP-nc²	**CTUh**	6.32E-06	8.18E-07	6.07E-08	0.00E+00	5.00E-07	2.09E-07	1.95E-06	7.83E-09	-8.33E-07	-5.09E-07
SQP²	**dimensionless**	2.37E+05	6.64E+01	8.44E+01	0.00E+00	4.25E+02	6.30E+02	9.77E+01	6.14E+01	-1.53E+02	-6.04E+04

Figure 13: Biogenic Carbon Content of MDF-MR at Factory Gate

Biogenic carbon content	Unit (1 m³ MDF-MR)
Biogenic carbon content in product	290 kg C
Biogenic carbon content in accompanying packaging	290 kg C

NOTE: 1 kg biogenic carbon is equivalent to 44/12 kg of CO_2

Figure 14: Biogenic Carbon Content of MDF-STD at Factory Gate

Biogenic carbon content	Unit (1 m³ MDF-MR)
Biogenic carbon content in product	290 kg C
Biogenic carbon content in accompanying packaging	290 kg C

NOTE: 1 kg biogenic carbon is equivalent to 44/12 kg of CO_2

Figure 15: Resource Use, Waste and Output Flow for MDF-MR

Resource Acronym	Unit	Raw Material Supply, Transport, Manufacturing	Deconstruction and Demolition	Transport	Waste Processing-landfill	Waste processing-incineration/recycling	Disposal-landfill	Disposal-incineration	Disposal-recycling	Reuse Recovery and Potential-incineration	Reuse Recovery and Potential-recycling
		A1-A3	C1	C2	C3	C3	C4	C4	C4	D	D
PERE	**MJ, net calorific value**	2.67E+04	7.04E+01	1.08E+00	0.00E+00	3.40E+01	5.23E+00	3.78E+00	5.85E-01	-2.29E+01	-9.36E+03
PERM	**MJ, net calorific value**	7.91E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	**MJ, net calorific value**	3.46E+04	7.04E+01	1.08E+00	0.00E+00	3.40E+01	5.23E+00	3.78E+00	5.85E-01	-2.29E+01	-9.36E+03
PENRE	**MJ, net calorific value**	1.02E+04	1.01E+03	8.56E+01	0.00E+00	6.53E+02	2.86E+02	1.61E+02	3.42E+01	-9.72E+03	-1.04E+03
PENRM	**MJ, net calorific value**	2.13E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	**MJ, net calorific value**	1.24E+04	1.01E+03	8.56E+01	0.00E+00	6.53E+02	2.86E+02	1.61E+02	3.42E+01	-9.72E+03	-1.04E+03
SM	**kg**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	**MJ, net calorific value**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	**MJ, net calorific value**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	**m³**	1.37E+01	1.87E-01	1.34E-02	0.00E+00	1.80E-01	2.93E-01	-1.81E-01	3.52E-02	-1.22E+00	-2.31E+00
HWD	**kg**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	**kg**	6.78E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.11E+03	1.34E+02	1.34E+02	0.00E+00	0.00E+00
RWD	**kg**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CRU	**kg**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	**kg**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.80E+02	0.00E+00	0.00E+00
MER	**kg**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.80E+02	0.00E+00	0.00E+00	0.00E+00
EE	**MJ per energy carrier**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Figure 16: Resource Use, Waste and Output Flow for MDF-STD

Resource Acronym	Unit	Raw Material Supply, Transport, Manufacturing	Deconstruction and Demolition	Transport	Waste Processing-landfill	Waste processing-incineration/recycling	Disposal-landfill	Disposal-incineration	Disposal-recycling	Reuse Recovery and Potential-incineration	Reuse Recovery and Potential-recycling
		A1-A3	C1	C2	C3	C3	C4	C4	C4	D	D
PERE	**MJ, net calorific value**	2.67E+04	6.86E+01	1.06E+00	0.00E+00	3.40E+01	5.11E+00	3.65E+00	4.60E-01	-2.29E+01	-9.36E+03
PERM	**MJ, net calorific value**	7.92E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	**MJ, net calorific value**	3.46E+04	6.86E+01	1.06E+00	0.00E+00	3.40E+01	5.11E+00	3.65E+00	4.60E-01	-2.29E+01	-9.36E+03
PENRE	**MJ, net calorific value**	9.38E+03	9.83E+02	8.34E+01	0.00E+00	6.53E+02	2.78E+02	1.54E+02	2.69E+01	-9.72E+03	-1.04E+03
PENRM	**MJ, net calorific value**	1.70E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	**MJ, net calorific value**	1.11E+04	9.83E+02	8.34E+01	0.00E+00	6.53E+02	2.78E+02	1.54E+02	2.69E+01	-9.72E+03	-1.04E+03
SM	**kg**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	**MJ, net calorific value**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	**MJ, net calorific value**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	**m³**	1.09E+01	1.82E-01	1.31E-02	0.00E+00	1.80E-01	2.86E-01	-1.88E-01	2.77E-02	-1.22E+00	-2.31E+00
HWD	**kg**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	**kg**	6.78E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.08E+03	1.06E+02	1.06E+02	0.00E+00	0.00E+00
RWD	**kg**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CRU	**kg**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	**kg**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.80E+02	0.00E+00	0.00E+00
MER	**kg**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.80E+02	0.00E+00	0.00E+00	0.00E+00
EE	**MJ per energy carrier**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

7. Interpretation

The following interpretation includes a summary of the LCA results relative to a declared unit of 1m³ of MDF. The contribution results of the process and main life cycle stages are demonstrated in Figure 17-22. For the MDF product, it can be concluded that, the production stage is the dominant source of the environmental impacts among various life cycle stages.

Figure 17: Life cycle impact contribution analysis for MDF-MR-landfill

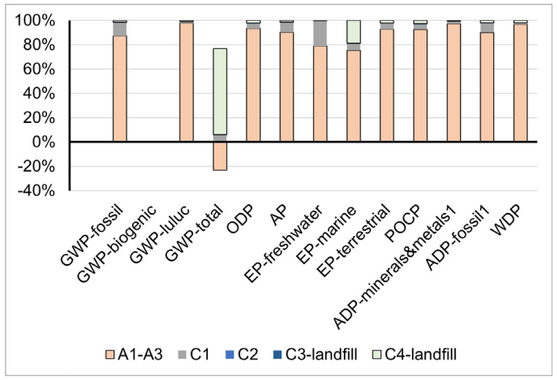


Figure 18: Life cycle impact contribution analysis for MDF-MR-incineration

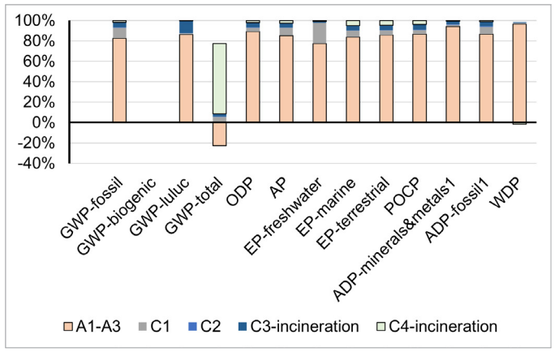


Figure 19: Life cycle impact contribution analysis for MDF-MR-recycling

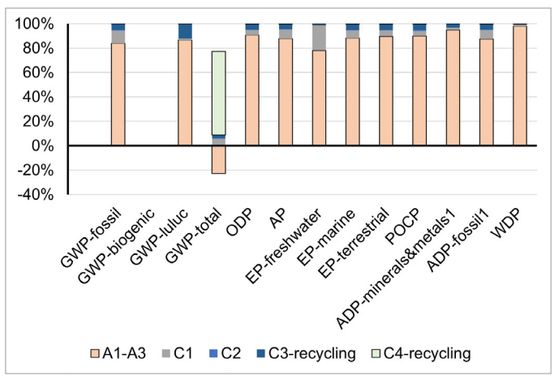


Figure 20: Life cycle impact contribution analysis for MDF-STD-landfill

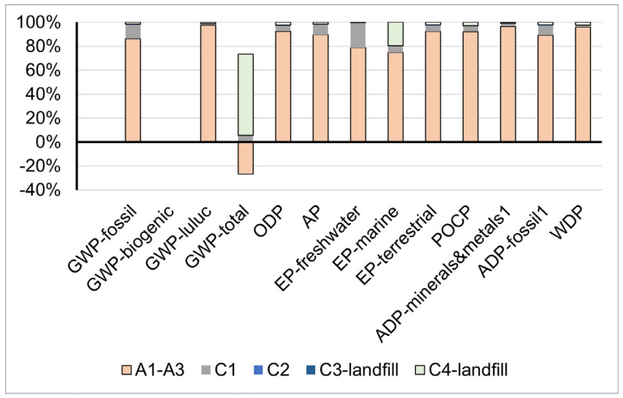


Figure 21: Life cycle impact contribution analysis for MDF-STD-incineration

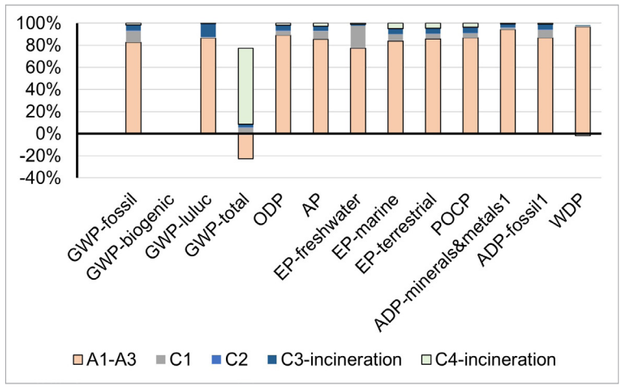
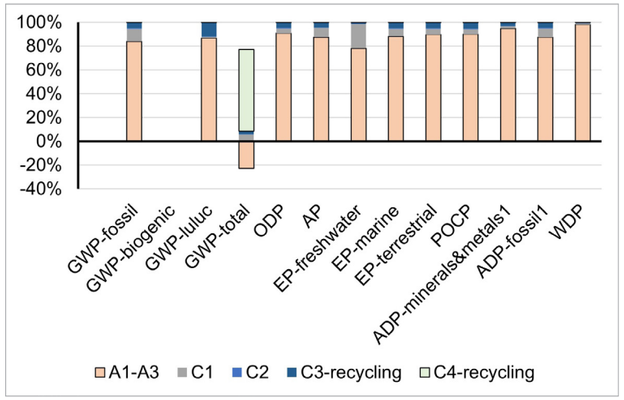


Figure 22: Life cycle impact contribution analysis for MDF-STD-recycling



8. Bibliography

1. EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

2. ECHA. Inclusion of substances of very high concern in the Candidate List. ECHA. [Online] 07 02 2024b. https://echa.europa.eu/documents/10162/653a0781-6b4b-d085-5393-edc530459a4f.

3. Global GreenTag International Pty Ltd. General Program Instructions. Brisbane : s.n., 2023. Version 2.2.

4. ISO 14040 (2006): Environmental Management - Life Cycle Assessment - Principles and Framework

5. ISO 14044 (2006): Environmental Management - Life Cycle Assessment - Requirements and Guidelines

6. ISO 14025:2006, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

7. Product Environmental Footprint Category Rules (PEFCRs) Annex II Part C

8. Ecoinvent, 2023. Swiss Centre for Life Cycle Assessment, version 3.9.1 (www.ecoinvent.ch).

9. PRé Consultants, 2021. Software SimaPro version 9.5.0.0 (www.pre.nl).

10. Wang T, Li K, Liu D, Yang Y, Wu D. Estimating the Carbon Emission of Construction Waste Recycling Using Grey Model and Life Cycle Assessment: A Case Study of Shanghai. Int J Environ Res Public Health. 2022 Jul 12;19(14):8507.
Online at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9323168/

11. Gervasio et al., 2018 /Model for Life Cycle Assessment of buildings LCA, JRC Technical Reports, 2018.

12. LCA report for MDF MR&STD, version 2.0.

13. Australian National Greenhouse Accounts Factors, 2023