

# Environmental Profile

This LCA is calculated according to: ISO 14044, ISO 14040 and EN 15804

Ecochain v3.5.64



Product: 3018662 - PE Long Bend 90° 32  
 Unit: 1 piece  
 Manufacturer: Wavin - IT - SM Maddalena

LCA standard: EN15804+A2 (2019)  
 Standard database: Worldwide - Ecoinvent v 3.6 Cut-Off  
 Externally verified: Yes  
 Issue date: 24-11-2022  
 End of validity: 24-11-2027  
 Verifier: Martijn van Hövell - SGS Search



This LCA was evaluated according to EN15804+A2. It was concluded that the LCA complies with this standard.

The LCA background information and project dossier have been registered in the online Ecochain application in the account Wavin - IT - SM Maddalena (2020). (☑ = module declared, MND = module not declared).

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
☑	☑	☑	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	☑	☑	☑	☑

## Product stage

A1 Raw material supply A2 Transport A3 Manufacturing

## Construction process stage

A4 Transport gate to site  
 A5 Assembly / Construction installation process

## Use stage

B1 Use B2 Maintenance B3 Repair B4 Replacement B5 Refurbishment  
 B6 Operational energy use B7 Operational water use

## End-of-Life stage

C1 De-construction demolition C2 Transport C3 Waste processing  
 C4 Disposal

## Benefits and loads beyond the system boundaries

D Reuse- Recovery- Recycling- potential

## Environmental impacts and parameters

**GWP-total** = EF Climate Change [kg CO2 eq]; **GWP-f** = EF Climate change - Fossil [kg CO2 eq]; **GWP-b** = EF Climate Change - Biogenic [kg CO2 eq]; **GWP-luluc** = EF Climate Change - Land use and LU change [kg CO2 eq]; **ODP** = EF Ozone depletion [kg CFC11 eq]; **AP** = EF Acidification [mol H+ eq]; **EP-fw** = EF Eutrophication, freshwater [kg P eq]; **EP-m** = EF Eutrophication, marine [kg N eq]; **EP-T** = EF Eutrophication, terrestrial [mol N eq]; **POCP** = EF Photochemical ozone formation [kg NMVOC eq]; **ADP-mm** = EF Resource use, minerals and metals [kg Sb eq]; **ADP-f** = EF Resource use, fossils [MJ]; **WDP** = EF Water use [m3 depriv.]; **PM** = EF Particulate matter [disease inc.]; **IR** = EF Ionising radiation [kBq U-235 eq]; **ETP-fw** = EF Ecotoxicity, freshwater [CTUe]; **HTP-c** = EF Human toxicity, cancer [CTUh]; **HTP-nc** = EF Human toxicity, non-cancer [CTUh]; **SQP** = EF Land use [Pt]; **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials [MJ]; **PERM** = Use of renewable primary energy resources used as raw materials [MJ]; **PERT** = Total use of renewable primary energy resources [MJ]; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials [MJ]; **PENRM** = Use of non-renewable primary energy resources used as raw materials [MJ]; **PENRT** = Total use of non-renewable primary energy resources [MJ]; **PET** = Total energy [MJ]; **SM** = Use of secondary material [kg]; **RSF** = Use of renewable secondary fuels [MJ]; **NRSF** = Use of non-renewable secondary fuels [MJ]; **FW** = Use of net fresh water [m3]; **HWD** = Hazardous waste disposed [kg]; **NHWD** = Non-hazardous waste disposed [kg]; **RWD** = Radioactive waste disposed [kg]; **CRU** = Components for re-use [kg]; **MFR** = Materials for recycling [kg]; **MER** = Materials for energy recovery [kg]; **EE** = Exported energy [MJ]; **EET** = Exported energy thermic [MJ]; **EEE** = Exported energy electric [MJ]

## Statement of Confidentiality

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# Results

Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	7.25E-2	1.02E-2	6.00E-3	8.87E-2	1.05E-3	5.13E-2	5.83E-4	-5.27E-2	8.89E-2
GWP-f	kg CO2 eq	8.67E-2	1.02E-2	5.14E-3	1.02E-1	1.05E-3	3.47E-2	5.84E-4	-5.69E-2	8.16E-2
GWP-b	kg CO2 eq	-1.43E-2	5.79E-6	4.34E-4	-1.38E-2	6.39E-7	1.66E-2	4.38E-7	4.16E-3	6.92E-3
GWP-luluc	kg CO2 eq	5.66E-5	3.75E-6	4.34E-4	4.94E-4	3.73E-7	6.07E-6	8.37E-9	-4.93E-5	4.51E-4
ODP	kg CFC11 eq	5.22E-9	2.34E-9	5.15E-10	8.07E-9	2.43E-10	8.46E-10	1.24E-11	-3.07E-9	6.10E-9
AP	mol H+ eq	3.40E-4	7.17E-5	2.07E-5	4.32E-4	6.00E-6	3.50E-5	2.97E-7	-1.79E-4	2.94E-4
EP-fw	kg P eq	1.72E-6	8.19E-8	7.98E-8	1.88E-6	8.66E-9	1.76E-7	3.86E-10	-1.12E-6	9.43E-7
EP-m	kg N eq	6.20E-5	2.39E-5	3.50E-6	8.94E-5	2.15E-6	1.04E-5	2.10E-7	-3.49E-5	6.73E-5
EP-T	mol N eq	6.88E-4	2.63E-4	3.93E-5	9.91E-4	2.36E-5	1.15E-4	1.21E-6	-3.93E-4	7.38E-4
POCP	kg NMVOC eq	3.01E-4	7.41E-5	1.22E-5	3.88E-4	6.76E-6	3.60E-5	4.73E-7	-1.67E-4	2.64E-4
ADP-mm	kg Sb eq	1.18E-6	2.55E-7	1.25E-7	1.56E-6	2.72E-8	1.39E-7	2.98E-10	-4.02E-7	1.33E-6
ADP-f	MJ	2.95E+0	1.56E-1	6.76E-2	3.17E+0	1.62E-2	1.08E-1	9.09E-4	-1.65E+0	1.64E+0
WDP	m3 depriv.	6.35E-2	4.66E-4	2.39E-2	8.79E-2	4.96E-5	2.05E-3	4.16E-6	-3.74E-2	5.25E-2
PM	disease inc.	3.54E-9	8.92E-10	2.07E-10	4.64E-9	9.50E-11	5.72E-10	6.24E-12	-1.83E-9	3.49E-9
IR	kBq U-235 eq	2.77E-3	6.79E-4	6.31E-5	3.51E-3	7.06E-5	3.32E-4	4.24E-6	-1.32E-3	2.60E-3
ETP-fw	CTUe	1.13E+0	1.25E-1	1.07E-1	1.36E+0	1.31E-2	1.25E-1	8.01E-4	-6.15E-1	8.84E-1
HTP-c	CTUh	3.15E-11	4.57E-12	5.69E-12	4.18E-11	4.67E-13	1.46E-11	2.21E-14	-1.87E-11	3.82E-11
HTP-nc	CTUh	6.33E-10	1.48E-10	1.18E-10	8.98E-10	1.56E-11	1.83E-10	5.09E-13	-3.74E-10	7.24E-10
SQP	Pt	1.53E+0	1.28E-1	1.23E-2	1.67E+0	1.38E-2	8.51E-2	2.33E-3	-1.86E+0	-8.91E-2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.61E-1	2.18E-3	2.34E-1	4.97E-1	2.32E-4	5.22E-3	3.60E-5	-3.19E-1	1.83E-1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.61E-1	2.18E-3	2.34E-1	4.97E-1	2.32E-4	5.22E-3	3.60E-5	-3.19E-1	1.83E-1
PENRE	MJ	3.16E+0	1.65E-1	7.37E-2	3.40E+0	1.72E-2	1.15E-1	9.64E-4	-1.78E+0	1.75E+0
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.16E+0	1.65E-1	7.37E-2	3.40E+0	1.72E-2	1.15E-1	9.64E-4	-1.78E+0	1.75E+0
PET	MJ	3.42E+0	1.67E-1	3.08E-1	3.90E+0	1.74E-2	1.20E-1	1.00E-3	-2.10E+0	1.94E+0
SM	kg	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m3	1.01E-3	1.72E-5	5.68E-4	1.59E-3	1.83E-6	6.14E-5	1.12E-6	-6.48E-4	1.01E-3

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	6.24E-7	3.87E-7	6.57E-8	1.08E-6	4.13E-8	1.81E-7	1.09E-9	-5.97E-7	7.03E-7
NHWD	kg	4.62E-3	9.26E-3	6.40E-4	1.45E-2	1.00E-3	5.27E-3	4.00E-3	-2.20E-3	2.26E-2
RWD	kg	3.03E-6	1.06E-6	7.01E-8	4.16E-6	1.10E-7	4.25E-7	5.94E-9	-1.25E-6	3.44E-6
CRU	kg	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0
EE	MJ	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0



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