Environmental Profile

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

Ecochain v4.3.1

Product:	3050938 - PPr Elbow 90°WT 32
Unit:	1 piece
Manufacturer:	Wavin - TR - Adana
Location:	Güzelevler Mahallesi
Address:	Girne Bulvarı 294 01321 Adana Turkey

LCA standard:	EN15804+A2 (2019)
Standard database:	Worldwide - Ecoinvent v 3.6 Cut-Off
Externally verified:	Yes
Issue date:	04-10-2022
End of validity:	04-10-2027
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 - TR - Adana (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 EN15804+A2 Climate Change [kg CO2 eq]; **GWP-f** = EF Climate change - Fossil [kg CO2 eq]; **GWP-b** = EF EN15804+A2 Climate Change - Biogenic [kg CO2 eq]; **GWP-luluc** = EF EN15804+A2 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-f** = EF Resource use, fossils [MJ]; **ADP-mm** = EF Resource use, minerals and metals [kg Sb eq]; **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

Results

Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.11E-1	7.45E-3	2.65E-3	1.21E-1	2.37E-3	9.72E-2	1.12E-3	-6.07E-2	1.61E-1
GWP-f	kg CO2 eq	1.11E-1	7.45E-3	2.56E-3	1.21E-1	2.37E-3	9.34E-2	1.12E-3	-6.49E-2	1.53E-1
GWP-b	kg CO2 eq	-1.51E-4	-1.10E-6	8.95E-5	-6.23E-5	1.44E-6	3.76E-3	9.66E-7	4.21E-3	7.91E-3
GWP-luluc	kg CO2 eq	2.07E-4	4.64E-6	1.56E-6	2.14E-4	8.38E-7	1.37E-5	1.98E-8	-4.17E-5	1.87E-4
ODP	kg CFC11 eq	3.40E-9	1.53E-9	2.05E-10	5.13E-9	5.46E-10	1.91E-9	2.81E-11	-3.11E-9	4.50E-9
AP	mol H+ eq	5.06E-4	2.01E-4	1.63E-5	7.23E-4	1.35E-5	8.07E-5	6.73E-7	-1.81E-4	6.37E-4
EP-fw	kg P eq	2.29E-6	3.90E-8	2.05E-7	2.53E-6	1.95E-8	3.99E-7	8.97E-10	-1.00E-6	1.95E-6
EP-m	kg N eq	7.87E-5	5.03E-5	5.68E-6	1.35E-4	4.83E-6	2.43E-5	4.29E-7	-3.39E-5	1.30E-4
EP-T	mol N eq	8.47E-4	5.59E-4	3.85E-5	1.44E-3	5.32E-5	2.67E-4	2.72E-6	-3.78E-4	1.39E-3
POCP	kg NMVOC eq	3.66E-4	1.46E-4	1.26E-5	5.24E-4	1.52E-5	8.36E-5	1.02E-6	-1.60E-4	4.64E-4
ADP-f	MJ	3.65E+0	9.87E-2	2.54E-2	3.77E+0	3.64E-2	2.44E-1	2.05E-3	-1.91E+0	2.15E+0
ADP-mm	kg Sb eq	1.40E-6	8.29E-8	2.03E-7	1.68E-6	6.13E-8	3.12E-7	6.85E-10	-3.98E-7	1.66E-6
WDP	m3 depriv.	7.95E-2	1.91E-4	5.29E-3	8.50E-2	1.12E-4	4.66E-3	1.32E-5	-3.69E-2	5.29E-2
PM	disease inc.	3.97E-9	3.19E-10	2.24E-10	4.51E-9	2.14E-10	1.30E-9	1.41E-11	-1.73E-9	4.31E-9
IR	kBq U-235 eq	2.50E-3	4.21E-4	7.64E-5	3.00E-3	1.59E-4	7.48E-4	9.46E-6	-1.12E-3	2.80E-3
ETP-fw	CTUe	1.35E+0	6.92E-2	1.38E-1	1.56E+0	2.95E-2	2.85E-1	1.72E-3	-5.59E-1	1.32E+0
HTP-c	CTUh	4.29E-11	4.02E-12	8.38E-12	5.53E-11	1.05E-12	3.73E-11	5.23E-14	-1.23E-11	8.15E-11
HTP-nc	CTUh	9.02E-10	6.15E-11	1.48E-10	1.11E-9	3.52E-11	4.32E-10	1.12E-12	-3.55E-10	1.22E-9
SQP	Pt	4.05E-1	2.97E-2	3.40E-2	4.69E-1	3.11E-2	1.93E-1	5.25E-3	-8.41E-1	-1.43E-1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.08E-1	7.77E-4	4.62E-1	5.71E-1	5.22E-4	1.18E-2	7.78E-5	-1.65E-1	4.19E-1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.08E-1	7.77E-4	4.62E-1	5.71E-1	5.22E-4	1.18E-2	7.78E-5	-1.65E-1	4.19E-1
PENRE	MJ	3.91E+0	1.05E-1	2.70E-2	4.04E+0	3.86E-2	2.59E-1	2.18E-3	-2.06E+0	2.29E+0
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.91E+0	1.05E-1	2.70E-2	4.04E+0	3.86E-2	2.59E-1	2.18E-3	-2.06E+0	2.29E+0
PET	MJ	4.02E+0	1.06E-1	4.90E-1	4.62E+0	3.91E-2	2.71E-1	2.25E-3	-2.22E+0	2.71E+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	1.37E-3	6.67E-6	1.27E-4	1.51E-3	4.12E-6	1.42E-4	2.52E-6	-6.25E-4	1.03E-3

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.42E-6	1.29E-7	1.64E-7	1.71E-6	9.30E-8	4.12E-7	2.50E-9	-6.02E-7	1.62E-6
NHWD	kg	9.37E-3	1.60E-3	3.04E-3	1.40E-2	2.25E-3	1.29E-2	9.01E-3	-1.74E-3	3.64E-2
RWD	kg	2.31E-6	6.77E-7	9.35E-8	3.08E-6	2.47E-7	9.56E-7	1.34E-8	-1.04E-6	3.26E-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	1.11E-1	1.11E-1	0	0	0	0	1.11E-1
EET	MJ	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0

Ecochain Technologies BV
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands
https://www.ecochain.com
+31 20 3035 777