Environmental Profile

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

Ecochain v3.5.80

Product:	3015145 - X-Stream PP Branch 45° BK 300x160PVC
Unit:	1 piece
Manufacturer:	Wavin - PL -Buk - Extra products

Wavin X-Stream is a new generation of double-walled pipes and □ttings made of polypropylene. The system is

LCA standard:	EN15804+A2 (2019)
Standard database:	Worldwide - Ecoinvent v 3.6 Cut-Off
Externally verified:	Yes
Issue date:	08-06-2023
End of validity:	08-06-2028
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 - PL -Buk - Extra products (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-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

Results

Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	3.38E+0	3.44E-1	4.28E-2	3.77E+0	1.74E-1	1.79E+1	8.21E-2	-9.74E+0	1.22E+1
GWP-f	kg CO2 eq	1.60E+1	3.43E-1	4.32E-2	1.64E+1	1.74E-1	5.13E+0	8.21E-2	-9.71E+0	1.21E+1
GWP-b	kg CO2 eq	-1.27E+1	2.09E-4	-4.56E-4	-1.27E+1	1.06E-4	1.28E+1	7.15E-5	-2.86E-2	7.45E-2
GWP-luluc	kg CO2 eq	1.04E-2	1.22E-4	4.41E-5	1.06E-2	6.16E-5	1.01E-3	1.40E-6	-7.67E-3	4.01E-3
ODP	kg CFC11 eq	6.65E-7	7.91E-8	2.44E-9	7.47E-7	4.01E-8	1.41E-7	2.06E-9	-5.49E-7	3.81E-7
AP	mol H+ eq	6.23E-2	1.96E-3	4.36E-4	6.47E-2	9.92E-4	5.87E-3	4.91E-5	-3.40E-2	3.76E-2
EP-fw	kg P eq	2.96E-4	2.83E-6	2.43E-6	3.01E-4	1.43E-6	2.93E-5	6.42E-8	-1.72E-4	1.61E-4
EP-m	kg N eq	1.17E-2	7.00E-4	4.58E-5	1.24E-2	3.55E-4	1.76E-3	3.20E-5	-7.09E-3	7.48E-3
EP-T	mol N eq	1.31E-1	7.71E-3	5.48E-4	1.40E-1	3.91E-3	1.94E-2	2.00E-4	-8.06E-2	8.25E-2
POCP	kg NMVOC eq	5.75E-2	2.20E-3	1.85E-4	5.99E-2	1.12E-3	6.03E-3	7.49E-5	-3.35E-2	3.36E-2
ADP-mm	kg Sb eq	2.49E-4	8.88E-6	5.81E-6	2.63E-4	4.51E-6	2.27E-5	4.96E-8	-8.41E-5	2.07E-4
ADP-f	MJ	5.21E+2	5.27E+0	4.01E-1	5.27E+2	2.67E+0	1.80E+1	1.50E-1	-2.82E+2	2.66E+2
WDP	m3 depriv.	9.86E+0	1.62E-2	1.54E-2	9.89E+0	8.21E-3	3.38E-1	7.72E-4	-4.97E+0	5.27E+0
PM	disease inc.	7.14E-7	3.10E-8	2.68E-9	7.48E-7	1.57E-8	9.47E-8	1.03E-9	-4.18E-7	4.41E-7
IR	kBq U-235 eq	3.79E-1	2.30E-2	3.01E-4	4.02E-1	1.17E-2	5.59E-2	6.97E-4	-2.04E-1	2.67E-1
ETP-fw	CTUe	1.35E+2	4.28E+0	3.57E+0	1.43E+2	2.17E+0	2.00E+1	1.26E-1	-8.20E+1	8.31E+1
HTP-c	CTUh	9.48E-9	1.52E-10	1.82E-10	9.82E-9	7.73E-11	2.52E-9	3.69E-12	-5.97E-9	6.44E-9
HTP-nc	CTUh	1.43E-7	5.10E-9	4.63E-9	1.53E-7	2.59E-9	3.00E-8	8.11E-11	-7.75E-8	1.08E-7
SQP	Pt	1.09E+3	4.51E+0	6.62E-1	1.09E+3	2.29E+0	1.43E+1	3.86E-1	-9.04E+2	2.06E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.84E+2	7.56E-2	7.10E+0	1.91E+2	3.84E-2	8.69E-1	5.82E-3	-1.38E+2	5.41E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.84E+2	7.56E-2	7.10E+0	1.91E+2	3.84E-2	8.69E-1	5.82E-3	-1.38E+2	5.41E+1
PENRE	MJ	5.59E+2	5.60E+0	4.27E-1	5.65E+2	2.84E+0	1.92E+1	1.60E-1	-3.04E+2	2.84E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.59E+2	5.60E+0	4.27E-1	5.65E+2	2.84E+0	1.92E+1	1.60E-1	-3.04E+2	2.84E+2
PET	MJ	7.43E+2	5.67E+0	7.53E+0	7.56E+2	2.88E+0	2.00E+1	1.65E-1	-4.42E+2	3.38E+2
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	1.58E-1	5.97E-4	4.31E-4	1.59E-1	3.03E-4	1.03E-2	1.85E-4	-8.11E-2	8.82E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.54E-4	1.35E-5	8.07E-11	1.68E-4	6.84E-6	3.00E-5	1.81E-7	-1.29E-4	7.55E-5
NHWD	kg	1.15E+0	3.27E-1	3.12E-4	1.48E+0	1.66E-1	8.91E-1	6.62E-1	-6.99E-1	2.50E+0
RWD	kg	3.90E-4	3.58E-5	3.24E-11	4.26E-4	1.82E-5	7.16E-5	9.82E-7	-2.06E-4	3.10E-4
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

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