Environmental Profile

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

Ecochain v3.5.80

Product:	3071016 - X-Stream PP Bend 30° BK 250 S/S Nor
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	3.81E+0	1.33E-1	1.65E-2	3.96E+0	6.24E-2	7.58E+0	2.94E-2	-3.97E+0	7.67E+0
GWP-f	kg CO2 eq	8.01E+0	1.33E-1	1.66E-2	8.16E+0	6.24E-2	3.17E+0	2.94E-2	-4.39E+0	7.03E+0
GWP-b	kg CO2 eq	-4.20E+0	8.07E-5	-1.76E-4	-4.20E+0	3.79E-5	4.41E+0	2.56E-5	4.30E-1	6.37E-1
GWP-luluc	kg CO2 eq	6.99E-3	4.71E-5	1.70E-5	7.06E-3	2.21E-5	3.82E-4	5.07E-7	-5.65E-3	1.81E-3
ODP	kg CFC11 eq	3.30E-7	3.06E-8	9.41E-10	3.61E-7	1.44E-8	5.95E-8	7.38E-10	-3.06E-7	1.30E-7
AP	mol H+ eq	3.24E-2	7.57E-4	1.68E-4	3.33E-2	3.55E-4	2.52E-3	1.76E-5	-1.46E-2	2.16E-2
EP-fw	kg P eq	1.70E-4	1.09E-6	9.38E-7	1.73E-4	5.13E-7	1.12E-5	2.31E-8	-9.87E-5	8.55E-5
EP-m	kg N eq	6.22E-3	2.71E-4	1.77E-5	6.51E-3	1.27E-4	7.94E-4	1.15E-5	-3.11E-3	4.33E-3
EP-T	mol N eq	6.85E-2	2.99E-3	2.11E-4	7.17E-2	1.40E-3	8.75E-3	7.15E-5	-3.54E-2	4.65E-2
POCP	kg NMVOC eq	2.79E-2	8.54E-4	7.14E-5	2.89E-2	4.00E-4	2.68E-3	2.68E-5	-1.36E-2	1.83E-2
ADP-mm	kg Sb eq	1.08E-4	3.44E-6	2.24E-6	1.13E-4	1.61E-6	9.32E-6	1.78E-8	-3.27E-5	9.15E-5
ADP-f	MJ	2.34E+2	2.04E+0	1.54E-1	2.36E+2	9.57E-1	7.07E+0	5.39E-2	-1.17E+2	1.28E+2
WDP	m3 depriv.	4.98E+0	6.26E-3	5.94E-3	4.99E+0	2.94E-3	1.28E-1	2.94E-4	-2.47E+0	2.65E+0
PM	disease inc.	3.54E-7	1.20E-8	1.03E-9	3.67E-7	5.63E-9	3.92E-8	3.70E-10	-1.87E-7	2.26E-7
IR	kBq U-235 eq	1.85E-1	8.92E-3	1.16E-4	1.94E-1	4.18E-3	2.26E-2	2.49E-4	-1.02E-1	1.19E-1
ETP-fw	CTUe	1.25E+2	1.66E+0	1.38E+0	1.28E+2	7.77E-1	8.74E+0	4.53E-2	-6.26E+1	7.49E+1
HTP-c	CTUh	4.13E-9	5.90E-11	7.02E-11	4.26E-9	2.77E-11	1.15E-9	1.33E-12	-2.29E-9	3.14E-9
HTP-nc	CTUh	7.42E-8	1.98E-9	1.78E-9	7.80E-8	9.27E-10	1.29E-8	2.92E-11	-3.66E-8	5.53E-8
SQP	Pt	3.85E+2	1.75E+0	2.55E-1	3.87E+2	8.19E-1	5.55E+0	1.38E-1	-3.72E+2	2.14E+1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	7.75E+1	2.93E-2	2.74E+0	8.03E+1	1.37E-2	3.31E-1	2.07E-3	-5.91E+1	2.15E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	7.75E+1	2.93E-2	2.74E+0	8.03E+1	1.37E-2	3.31E-1	2.07E-3	-5.91E+1	2.15E+1
PENRE	MJ	2.51E+2	2.17E+0	1.64E-1	2.54E+2	1.02E+0	7.53E+0	5.72E-2	-1.26E+2	1.36E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.51E+2	2.17E+0	1.64E-1	2.54E+2	1.02E+0	7.53E+0	5.72E-2	-1.26E+2	1.36E+2
PET	MJ	3.29E+2	2.20E+0	2.90E+0	3.34E+2	1.03E+0	7.86E+0	5.92E-2	-1.85E+2	1.58E+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	9.27E-2	2.31E-4	1.66E-4	9.31E-2	1.08E-4	4.12E-3	6.63E-5	-4.65E-2	5.09E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	6.82E-5	5.22E-6	3.11E-11	7.35E-5	2.45E-6	1.26E-5	6.51E-8	-6.36E-5	2.49E-5
NHWD	kg	5.66E-1	1.27E-1	1.20E-4	6.92E-1	5.93E-2	4.03E-1	2.37E-1	-2.74E-1	1.12E+0
RWD	kg	1.83E-4	1.39E-5	1.25E-11	1.97E-4	6.51E-6	2.93E-5	3.51E-7	-1.02E-4	1.31E-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