Environmental Profile

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

Ecochain v3.5.80

Product:	3015159 - X-Stream PP Bend 30° BK 600 S/S
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	1.14E+1	1.27E+0	4.28E-2	1.27E+1	5.66E-1	5.78E+1	2.66E-1	-3.15E+1	3.98E+1
GWP-f	kg CO2 eq	5.22E+1	1.27E+0	4.32E-2	5.35E+1	5.65E-1	1.66E+1	2.67E-1	-3.14E+1	3.95E+1
GWP-b	kg CO2 eq	-4.08E+1	7.69E-4	-4.56E-4	-4.08E+1	3.43E-4	4.12E+1	2.32E-4	-9.35E-2	2.68E-1
GWP-luluc	kg CO2 eq	3.36E-2	4.48E-4	4.41E-5	3.41E-2	2.00E-4	3.28E-3	4.60E-6	-2.48E-2	1.27E-2
ODP	kg CFC11 eq	2.21E-6	2.92E-7	2.44E-9	2.50E-6	1.30E-7	4.58E-7	6.69E-9	-1.87E-6	1.23E-6
AP	mol H+ eq	2.02E-1	7.21E-3	4.36E-4	2.10E-1	3.22E-3	1.90E-2	1.60E-4	-1.10E-1	1.22E-1
EP-fw	kg P eq	9.54E-4	1.04E-5	2.43E-6	9.67E-4	4.65E-6	9.51E-5	2.10E-7	-5.60E-4	5.07E-4
EP-m	kg N eq	3.78E-2	2.58E-3	4.58E-5	4.05E-2	1.15E-3	5.69E-3	1.03E-4	-2.30E-2	2.45E-2
EP-T	mol N eq	4.26E-1	2.84E-2	5.48E-4	4.55E-1	1.27E-2	6.28E-2	6.48E-4	-2.61E-1	2.70E-1
POCP	kg NMVOC eq	1.86E-1	8.13E-3	1.85E-4	1.94E-1	3.63E-3	1.96E-2	2.43E-4	-1.08E-1	1.09E-1
ADP-mm	kg Sb eq	7.53E-4	3.28E-5	5.81E-6	7.91E-4	1.46E-5	7.37E-5	1.62E-7	-2.75E-4	6.05E-4
ADP-f	MJ	1.69E+3	1.94E+1	4.01E-1	1.71E+3	8.68E+0	5.84E+1	4.89E-1	-9.14E+2	8.59E+2
WDP	m3 depriv.	3.20E+1	5.97E-2	1.54E-2	3.20E+1	2.66E-2	1.10E+0	2.71E-3	-1.63E+1	1.69E+1
PM	disease inc.	2.31E-6	1.14E-7	2.68E-9	2.43E-6	5.10E-8	3.07E-7	3.36E-9	-1.35E-6	1.44E-6
IR	kBq U-235 eq	1.23E+0	8.50E-2	3.01E-4	1.31E+0	3.79E-2	1.81E-1	2.26E-3	-6.65E-1	8.70E-1
ETP-fw	CTUe	4.33E+2	1.58E+1	3.57E+0	4.52E+2	7.05E+0	6.50E+1	4.09E-1	-2.67E+2	2.58E+2
HTP-c	CTUh	3.06E-8	5.62E-10	1.82E-10	3.13E-8	2.51E-10	8.27E-9	1.21E-11	-1.93E-8	2.05E-8
HTP-nc	CTUh	4.58E-7	1.88E-8	4.63E-9	4.81E-7	8.40E-9	9.75E-8	2.64E-10	-2.53E-7	3.35E-7
SQP	Pt	3.50E+3	1.66E+1	6.62E-1	3.52E+3	7.43E+0	4.65E+1	1.25E+0	-2.91E+3	6.63E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.74E+2	2.79E-1	7.10E+0	5.82E+2	1.25E-1	2.82E+0	1.88E-2	-4.43E+2	1.41E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.74E+2	2.79E-1	7.10E+0	5.82E+2	1.25E-1	2.82E+0	1.88E-2	-4.43E+2	1.41E+2
PENRE	MJ	1.81E+3	2.06E+1	4.27E-1	1.83E+3	9.22E+0	6.22E+1	5.18E-1	-9.84E+2	9.18E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.81E+3	2.06E+1	4.27E-1	1.83E+3	9.22E+0	6.22E+1	5.18E-1	-9.84E+2	9.18E+2
PET	MJ	2.38E+3	2.09E+1	7.53E+0	2.41E+3	9.34E+0	6.50E+1	5.37E-1	-1.43E+3	1.06E+3
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	5.11E-1	2.20E-3	4.31E-4	5.14E-1	9.82E-4	3.32E-2	6.01E-4	-2.64E-1	2.84E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	5.07E-4	4.97E-5	8.07E-11	5.56E-4	2.22E-5	9.74E-5	5.91E-7	-4.20E-4	2.56E-4
NHWD	kg	3.75E+0	1.20E+0	3.12E-4	4.95E+0	5.38E-1	2.89E+0	2.15E+0	-2.27E+0	8.27E+0
RWD	kg	1.27E-3	1.32E-4	3.24E-11	1.40E-3	5.90E-5	2.32E-4	3.19E-6	-6.72E-4	1.02E-3
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