Environmental Profile

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

Ecochain v3.5.80

Product:	3024126 - X-Stream PP Bend 90° BK 150 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	-6.59E-1	5.59E-2	2.56E-2	-5.78E-1	-1.30E-2	-2.87E-1	-6.16E-3	5.53E-1	-3.32E-1
GWP-f	kg CO2 eq	-6.63E-1	5.59E-2	2.59E-2	-5.81E-1	-1.30E-2	-2.88E-1	-6.16E-3	5.51E-1	-3.38E-1
GWP-b	kg CO2 eq	3.73E-3	3.39E-5	-2.73E-4	3.49E-3	-7.91E-6	5.25E-4	-5.41E-6	1.97E-3	5.97E-3
GWP-luluc	kg CO2 eq	-5.38E-5	1.98E-5	2.64E-5	-7.55E-6	-4.61E-6	-7.24E-5	-9.57E-8	9.83E-5	1.36E-5
ODP	kg CFC11 eq	3.07E-8	1.29E-8	1.46E-9	4.51E-8	-3.00E-9	-9.25E-9	-1.54E-10	-2.49E-11	3.26E-8
AP	mol H+ eq	-1.84E-3	3.18E-4	2.61E-4	-1.26E-3	-7.42E-5	-3.85E-4	-3.62E-6	1.62E-3	-1.00E-4
EP-fw	kg P eq	-5.55E-6	4.60E-7	1.46E-6	-3.63E-6	-1.07E-7	-2.08E-6	-4.51E-9	5.63E-6	-2.03E-7
EP-m	kg N eq	-3.26E-4	1.14E-4	2.75E-5	-1.85E-4	-2.66E-5	-1.10E-4	-2.39E-6	2.81E-4	-4.23E-5
EP-T	mol N eq	-3.33E-3	1.25E-3	3.28E-4	-1.75E-3	-2.93E-4	-1.21E-3	-1.48E-5	3.13E-3	-1.43E-4
POCP	kg NMVOC eq	-2.08E-3	3.59E-4	1.11E-4	-1.61E-3	-8.37E-5	-3.86E-4	-5.57E-6	1.49E-3	-5.94E-4
ADP-mm	kg Sb eq	1.19E-5	1.45E-6	3.48E-6	1.68E-5	-3.37E-7	-1.56E-6	-3.58E-9	3.49E-6	1.84E-5
ADP-f	MJ	-3.07E+1	8.58E-1	2.40E-1	-2.96E+1	-2.00E-1	-1.25E+0	-1.12E-2	1.84E+1	-1.26E+1
WDP	m3 depriv.	-5.96E-1	2.63E-3	9.23E-3	-5.84E-1	-6.14E-4	-2.46E-2	-2.62E-5	2.95E-1	-3.15E-1
PM	disease inc.	-1.48E-8	5.04E-9	1.61E-9	-8.11E-9	-1.18E-9	-6.43E-9	-7.68E-11	1.41E-8	-1.73E-9
IR	kBq U-235 eq	-6.18E-3	3.75E-3	1.80E-4	-2.26E-3	-8.74E-4	-3.75E-3	-5.23E-5	7.41E-3	4.76E-4
ETP-fw	CTUe	3.45E+0	6.96E-1	2.14E+0	6.28E+0	-1.62E-1	-1.39E+0	-9.18E-3	1.92E+0	6.65E+0
HTP-c	CTUh	1.57E-10	2.48E-11	1.09E-10	2.91E-10	-5.78E-12	-1.44E-10	-2.50E-13	8.39E-11	2.25E-10
HTP-nc	CTUh	2.23E-9	8.30E-10	2.77E-9	5.83E-9	-1.94E-10	-1.98E-9	-5.84E-12	2.31E-9	5.95E-9
SQP	Pt	1.17E+0	7.34E-1	3.96E-1	2.30E+0	-1.71E-1	-9.98E-1	-2.88E-2	4.24E-1	1.52E+0
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	7.92E+0	1.23E-2	4.25E+0	1.22E+1	-2.87E-3	-6.19E-2	-4.49E-4	2.10E-1	1.23E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	7.92E+0	1.23E-2	4.25E+0	1.22E+1	-2.87E-3	-6.19E-2	-4.49E-4	2.10E-1	1.23E+1
PENRE	MJ	-3.29E+1	9.10E-1	2.56E-1	-3.17E+1	-2.12E-1	-1.33E+0	-1.19E-2	1.99E+1	-1.35E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	-3.29E+1	9.10E-1	2.56E-1	-3.17E+1	-2.12E-1	-1.33E+0	-1.19E-2	1.99E+1	-1.35E+1
PET	MJ	-2.50E+1	9.23E-1	4.51E+0	-1.96E+1	-2.15E-1	-1.39E+0	-1.23E-2	2.01E+1	-1.13E+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	-7.39E-3	9.70E-5	2.58E-4	-7.03E-3	-2.26E-5	-7.12E-4	-1.39E-5	4.63E-3	-3.15E-3

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.81E-6	2.19E-6	4.83E-11	5.01E-6	-5.11E-7	-1.99E-6	-1.32E-8	2.85E-6	5.34E-6
NHWD	kg	6.42E-3	5.31E-2	1.87E-4	5.98E-2	-1.24E-2	-5.73E-2	-4.95E-2	1.24E-2	-4.71E-2
RWD	kg	5.11E-8	5.83E-6	1.94E-11	5.88E-6	-1.36E-6	-4.75E-6	-7.34E-8	6.58E-6	6.28E-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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