Environmental Profile

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

Ecochain v3.5.80

Product:	3010938 - X-Stream PP Bend 45° BK 400 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	2.86E+0	3.98E-1	4.28E-2	3.30E+0	2.01E-1	2.19E+1	9.47E-2	-1.14E+1	1.41E+1
GWP-f	kg CO2 eq	1.87E+1	3.98E-1	4.32E-2	1.91E+1	2.01E-1	5.92E+0	9.47E-2	-1.13E+1	1.40E+1
GWP-b	kg CO2 eq	-1.58E+1	2.41E-4	-4.56E-4	-1.58E+1	1.22E-4	1.60E+1	8.24E-5	-3.32E-2	8.96E-2
GWP-luluc	kg CO2 eq	1.26E-2	1.41E-4	4.41E-5	1.28E-2	7.11E-5	1.17E-3	1.63E-6	-9.45E-3	4.61E-3
ODP	kg CFC11 eq	7.86E-7	9.16E-8	2.44E-9	8.80E-7	4.63E-8	1.64E-7	2.38E-9	-6.80E-7	4.13E-7
AP	mol H+ eq	7.30E-2	2.27E-3	4.36E-4	7.57E-2	1.15E-3	6.83E-3	5.68E-5	-4.04E-2	4.33E-2
EP-fw	kg P eq	3.48E-4	3.27E-6	2.43E-6	3.54E-4	1.65E-6	3.39E-5	7.46E-8	-2.07E-4	1.83E-4
EP-m	kg N eq	1.38E-2	8.10E-4	4.58E-5	1.46E-2	4.10E-4	2.04E-3	3.69E-5	-8.48E-3	8.64E-3
EP-T	mol N eq	1.55E-1	8.93E-3	5.48E-4	1.65E-1	4.52E-3	2.26E-2	2.30E-4	-9.65E-2	9.55E-2
POCP	kg NMVOC eq	6.75E-2	2.55E-3	1.85E-4	7.03E-2	1.29E-3	7.02E-3	8.65E-5	-3.99E-2	3.88E-2
ADP-mm	kg Sb eq	2.72E-4	1.03E-5	5.81E-6	2.88E-4	5.20E-6	2.63E-5	5.74E-8	-1.01E-4	2.19E-4
ADP-f	MJ	6.02E+2	6.10E+0	4.01E-1	6.09E+2	3.09E+0	2.09E+1	1.74E-1	-3.28E+2	3.05E+2
WDP	m3 depriv.	1.14E+1	1.87E-2	1.54E-2	1.15E+1	9.47E-3	3.91E-1	9.44E-4	-5.83E+0	6.04E+0
PM	disease inc.	8.47E-7	3.59E-8	2.68E-9	8.86E-7	1.81E-8	1.10E-7	1.19E-9	-5.05E-7	5.11E-7
IR	kBq U-235 eq	4.43E-1	2.67E-2	3.01E-4	4.70E-1	1.35E-2	6.50E-2	8.04E-4	-2.44E-1	3.05E-1
ETP-fw	CTUe	1.57E+2	4.96E+0	3.57E+0	1.66E+2	2.51E+0	2.32E+1	1.46E-1	-9.99E+1	9.16E+1
HTP-c	CTUh	1.15E-8	1.76E-10	1.82E-10	1.18E-8	8.92E-11	2.95E-9	4.29E-12	-7.34E-9	7.55E-9
HTP-nc	CTUh	1.66E-7	5.91E-9	4.63E-9	1.76E-7	2.99E-9	3.48E-8	9.39E-11	-9.34E-8	1.21E-7
SQP	Pt	1.36E+3	5.22E+0	6.62E-1	1.36E+3	2.64E+0	1.66E+1	4.45E-1	-1.13E+3	2.53E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.18E+2	8.76E-2	7.10E+0	2.25E+2	4.43E-2	1.01E+0	6.69E-3	-1.72E+2	5.46E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.18E+2	8.76E-2	7.10E+0	2.25E+2	4.43E-2	1.01E+0	6.69E-3	-1.72E+2	5.46E+1
PENRE	MJ	6.46E+2	6.48E+0	4.27E-1	6.53E+2	3.28E+0	2.22E+1	1.84E-1	-3.53E+2	3.26E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	6.46E+2	6.48E+0	4.27E-1	6.53E+2	3.28E+0	2.22E+1	1.84E-1	-3.53E+2	3.26E+2
PET	MJ	8.64E+2	6.57E+0	7.53E+0	8.78E+2	3.32E+0	2.32E+1	1.91E-1	-5.25E+2	3.81E+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	1.84E-1	6.91E-4	4.31E-4	1.85E-1	3.49E-4	1.19E-2	2.14E-4	-9.53E-2	1.02E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.88E-4	1.56E-5	8.07E-11	2.04E-4	7.89E-6	3.49E-5	2.10E-7	-1.57E-4	8.99E-5
NHWD	kg	1.40E+0	3.78E-1	3.12E-4	1.78E+0	1.91E-1	1.03E+0	7.65E-1	-8.57E-1	2.92E+0
RWD	kg	4.55E-4	4.15E-5	3.24E-11	4.97E-4	2.10E-5	8.33E-5	1.13E-6	-2.49E-4	3.53E-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

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