Environmental Profile

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

Ecochain v3.5.80

Product:	3031611 - X-Stream PP Branch 45° BK 400x150
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	3.30E+0	7.88E-1	4.80E-2	4.14E+0	2.42E-1	2.70E+1	1.14E-1	-1.35E+1	1.80E+1
GWP-f	kg CO2 eq	2.30E+1	7.87E-1	4.84E-2	2.38E+1	2.42E-1	7.20E+0	1.14E-1	-1.35E+1	1.79E+1
GWP-b	kg CO2 eq	-1.97E+1	4.78E-4	-5.11E-4	-1.97E+1	1.47E-4	1.98E+1	9.92E-5	-3.97E-2	1.07E-1
GWP-luluc	kg CO2 eq	1.71E-2	2.78E-4	4.95E-5	1.75E-2	8.56E-5	1.41E-3	1.95E-6	-1.08E-2	8.17E-3
ODP	kg CFC11 eq	9.55E-7	1.81E-7	2.74E-9	1.14E-6	5.57E-8	1.99E-7	2.86E-9	-7.67E-7	6.31E-7
AP	mol H+ eq	9.20E-2	4.48E-3	4.89E-4	9.69E-2	1.38E-3	8.40E-3	6.82E-5	-4.80E-2	5.87E-2
EP-fw	kg P eq	4.43E-4	6.47E-6	2.73E-6	4.52E-4	1.99E-6	4.09E-5	8.92E-8	-2.39E-4	2.56E-4
EP-m	kg N eq	1.74E-2	1.60E-3	5.14E-5	1.90E-2	4.93E-4	2.55E-3	4.43E-5	-1.01E-2	1.20E-2
EP-T	mol N eq	1.98E-1	1.77E-2	6.14E-4	2.17E-1	5.43E-3	2.81E-2	2.77E-4	-1.16E-1	1.34E-1
POCP	kg NMVOC eq	8.36E-2	5.05E-3	2.08E-4	8.89E-2	1.55E-3	8.70E-3	1.04E-4	-4.71E-2	5.22E-2
ADP-mm	kg Sb eq	4.16E-4	2.04E-5	6.52E-6	4.43E-4	6.26E-6	3.18E-5	6.89E-8	-1.16E-4	3.65E-4
ADP-f	MJ	7.33E+2	1.21E+1	4.49E-1	7.45E+2	3.71E+0	2.52E+1	2.09E-1	-3.92E+2	3.82E+2
WDP	m3 depriv.	1.41E+1	3.71E-2	1.73E-2	1.42E+1	1.14E-2	4.72E-1	1.08E-3	-6.89E+0	7.76E+0
PM	disease inc.	1.13E-6	7.10E-8	3.01E-9	1.21E-6	2.18E-8	1.34E-7	1.44E-9	-5.93E-7	7.73E-7
IR	kBq U-235 eq	5.47E-1	5.28E-2	3.37E-4	6.00E-1	1.62E-2	7.85E-2	9.68E-4	-2.82E-1	4.13E-1
ETP-fw	CTUe	2.11E+2	9.81E+0	4.00E+0	2.24E+2	3.01E+0	2.81E+1	1.75E-1	-1.23E+2	1.33E+2
HTP-c	CTUh	1.49E-8	3.49E-10	2.04E-10	1.54E-8	1.07E-10	3.68E-9	5.12E-12	-8.27E-9	1.09E-8
HTP-nc	CTUh	2.26E-7	1.17E-8	5.19E-9	2.43E-7	3.59E-9	4.24E-8	1.13E-10	-1.11E-7	1.78E-7
SQP	Pt	1.71E+3	1.03E+1	7.42E-1	1.72E+3	3.18E+0	2.01E+1	5.36E-1	-1.27E+3	4.75E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.01E+2	1.73E-1	7.96E+0	3.09E+2	5.33E-2	1.21E+0	8.07E-3	-1.96E+2	1.14E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.01E+2	1.73E-1	7.96E+0	3.09E+2	5.33E-2	1.21E+0	8.07E-3	-1.96E+2	1.14E+2
PENRE	MJ	7.86E+2	1.28E+1	4.78E-1	8.00E+2	3.94E+0	2.68E+1	2.22E-1	-4.22E+2	4.08E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	7.86E+2	1.28E+1	4.78E-1	8.00E+2	3.94E+0	2.68E+1	2.22E-1	-4.22E+2	4.08E+2
PET	MJ	1.09E+3	1.30E+1	8.44E+0	1.11E+3	3.99E+0	2.81E+1	2.30E-1	-6.18E+2	5.23E+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	2.29E-1	1.37E-3	4.83E-4	2.31E-1	4.20E-4	1.46E-2	2.57E-4	-1.12E-1	1.34E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.46E-4	3.09E-5	9.05E-11	2.77E-4	9.49E-6	4.22E-5	2.52E-7	-1.80E-4	1.49E-4
NHWD	kg	1.83E+0	7.49E-1	3.49E-4	2.58E+0	2.30E-1	1.29E+0	9.20E-1	-9.73E-1	4.05E+0
RWD	kg	5.56E-4	8.21E-5	3.63E-11	6.38E-4	2.52E-5	1.01E-4	1.36E-6	-2.86E-4	4.79E-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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