Environmental Profile

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

Ecochain v3.5.80

Product:	3018184 - X-Stream PP Branch 45° BK 300
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	1.52E+1	6.79E-2	4.28E-2	1.54E+1	2.60E-1	1.53E+1	1.22E-1	-1.31E+1	1.80E+1
GWP-f	kg CO2 eq	2.28E+1	6.78E-2	4.32E-2	2.29E+1	2.59E-1	7.58E+0	1.22E-1	-1.30E+1	1.79E+1
GWP-b	kg CO2 eq	-7.59E+0	4.12E-5	-4.56E-4	-7.59E+0	1.57E-4	7.76E+0	1.07E-4	-4.22E-2	1.29E-1
GWP-luluc	kg CO2 eq	9.88E-3	2.40E-5	4.41E-5	9.95E-3	9.18E-5	1.48E-3	2.05E-6	-6.02E-3	5.50E-3
ODP	kg CFC11 eq	8.17E-7	1.56E-8	2.44E-9	8.35E-7	5.98E-8	1.98E-7	3.06E-9	-5.76E-7	5.20E-7
AP	mol H+ eq	8.57E-2	3.86E-4	4.36E-4	8.65E-2	1.48E-3	8.28E-3	7.30E-5	-4.06E-2	5.57E-2
EP-fw	kg P eq	3.71E-4	5.58E-7	2.43E-6	3.74E-4	2.13E-6	4.26E-5	9.46E-8	-1.82E-4	2.37E-4
EP-m	kg N eq	1.55E-2	1.38E-4	4.58E-5	1.57E-2	5.29E-4	2.43E-3	4.78E-5	-7.84E-3	1.08E-2
EP-T	mol N eq	1.76E-1	1.52E-3	5.48E-4	1.78E-1	5.82E-3	2.68E-2	2.97E-4	-8.80E-2	1.23E-1
POCP	kg NMVOC eq	7.57E-2	4.35E-4	1.85E-4	7.63E-2	1.66E-3	8.43E-3	1.11E-4	-3.84E-2	4.80E-2
ADP-mm	kg Sb eq	4.10E-4	1.75E-6	5.81E-6	4.17E-4	6.71E-6	3.24E-5	7.33E-8	-9.76E-5	3.59E-4
ADP-f	MJ	7.48E+2	1.04E+0	4.01E-1	7.49E+2	3.98E+0	2.59E+1	2.24E-1	-3.97E+2	3.82E+2
WDP	m3 depriv.	1.44E+1	3.19E-3	1.54E-2	1.44E+1	1.22E-2	4.99E-1	1.04E-3	-6.87E+0	8.05E+0
PM	disease inc.	8.64E-7	6.12E-9	2.68E-9	8.73E-7	2.34E-8	1.35E-7	1.54E-9	-4.22E-7	6.11E-7
IR	kBq U-235 eq	4.83E-1	4.55E-3	3.01E-4	4.88E-1	1.74E-2	7.90E-2	1.04E-3	-2.27E-1	3.59E-1
ETP-fw	CTUe	1.67E+2	8.45E-1	3.57E+0	1.72E+2	3.23E+0	2.90E+1	1.87E-1	-7.71E+1	1.27E+2
HTP-c	CTUh	9.63E-9	3.01E-11	1.82E-10	9.85E-9	1.15E-10	3.51E-9	5.40E-12	-4.80E-9	8.68E-9
HTP-nc	CTUh	1.88E-7	1.01E-9	4.63E-9	1.94E-7	3.85E-9	4.32E-8	1.20E-10	-8.01E-8	1.61E-7
SQP	Pt	6.87E+2	8.91E-1	6.62E-1	6.89E+2	3.41E+0	2.07E+1	5.74E-1	-5.55E+2	1.58E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.33E+2	1.49E-2	7.10E+0	1.40E+2	5.71E-2	1.27E+0	8.71E-3	-8.63E+1	5.54E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.33E+2	1.49E-2	7.10E+0	1.40E+2	5.71E-2	1.27E+0	8.71E-3	-8.63E+1	5.54E+1
PENRE	MJ	8.03E+2	1.11E+0	4.27E-1	8.04E+2	4.23E+0	2.76E+1	2.37E-1	-4.27E+2	4.09E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	8.03E+2	1.11E+0	4.27E-1	8.04E+2	4.23E+0	2.76E+1	2.37E-1	-4.27E+2	4.09E+2
PET	MJ	9.36E+2	1.12E+0	7.53E+0	9.44E+2	4.28E+0	2.88E+1	2.46E-1	-5.14E+2	4.64E+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	2.24E-1	1.18E-4	4.31E-4	2.25E-1	4.50E-4	1.49E-2	2.76E-4	-1.07E-1	1.33E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.90E-4	2.66E-6	8.07E-11	1.92E-4	1.02E-5	4.25E-5	2.69E-7	-1.30E-4	1.16E-4
NHWD	kg	1.74E+0	6.45E-2	3.12E-4	1.81E+0	2.47E-1	1.27E+0	9.86E-1	-5.95E-1	3.72E+0
RWD	kg	4.81E-4	7.08E-6	3.24E-11	4.88E-4	2.71E-5	1.01E-4	1.46E-6	-2.18E-4	3.99E-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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