Environmental Profile

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

Ecochain v3.5.80

Product:	3023745 - X-Stream PP Branch 45° BK 100
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	9.26E-1	1.98E-3	1.45E-4	9.28E-1	1.23E-2	1.09E+0	6.25E-3	-6.77E-1	1.36E+0
GWP-f	kg CO2 eq	1.37E+0	1.98E-3	1.46E-4	1.37E+0	1.23E-2	6.08E-1	6.25E-3	-7.36E-1	1.26E+0
GWP-b	kg CO2 eq	-4.46E-1	1.20E-6	-1.54E-6	-4.46E-1	7.46E-6	4.79E-1	5.58E-6	5.91E-2	9.18E-2
GWP-luluc	kg CO2 eq	1.31E-3	7.00E-7	1.49E-7	1.31E-3	4.35E-6	6.80E-5	1.09E-7	-8.07E-4	5.77E-4
ODP	kg CFC11 eq	1.07E-7	4.56E-10	8.26E-12	1.08E-7	2.83E-9	1.05E-8	1.59E-10	-4.82E-8	7.32E-8
AP	mol H+ eq	6.00E-3	1.13E-5	1.47E-6	6.01E-3	7.00E-5	4.46E-4	3.82E-6	-2.32E-3	4.20E-3
EP-fw	kg P eq	3.43E-5	1.63E-8	8.24E-9	3.43E-5	1.01E-7	2.02E-6	5.01E-9	-1.53E-5	2.11E-5
EP-m	kg N eq	1.09E-3	4.03E-6	1.55E-7	1.09E-3	2.51E-5	1.38E-4	3.35E-6	-4.78E-4	7.78E-4
EP-T	mol N eq	1.20E-2	4.44E-5	1.85E-6	1.20E-2	2.76E-4	1.52E-3	1.55E-5	-5.42E-3	8.43E-3
POCP	kg NMVOC eq	5.00E-3	1.27E-5	6.28E-7	5.01E-3	7.89E-5	4.63E-4	5.77E-6	-2.15E-3	3.41E-3
ADP-mm	kg Sb eq	1.14E-4	5.12E-8	1.97E-8	1.14E-4	3.18E-7	1.65E-6	3.83E-9	-8.18E-6	1.08E-4
ADP-f	MJ	4.18E+1	3.04E-2	1.36E-3	4.18E+1	1.89E-1	1.25E+0	1.16E-2	-2.00E+1	2.33E+1
WDP	m3 depriv.	8.43E-1	9.32E-5	5.22E-5	8.43E-1	5.79E-4	2.52E-2	5.89E-5	-4.14E-1	4.55E-1
PM	disease inc.	6.59E-8	1.79E-10	9.08E-12	6.61E-8	1.11E-9	6.77E-9	7.98E-11	-2.78E-8	4.62E-8
IR	kBq U-235 eq	4.80E-2	1.33E-4	1.02E-6	4.81E-2	8.25E-4	3.93E-3	5.43E-5	-1.62E-2	3.67E-2
ETP-fw	CTUe	2.50E+1	2.47E-2	1.21E-2	2.50E+1	1.53E-1	1.83E+0	1.24E-2	-9.66E+0	1.74E+1
HTP-c	CTUh	8.43E-10	8.77E-13	6.17E-13	8.44E-10	5.45E-12	1.74E-10	2.89E-13	-3.00E-10	7.24E-10
HTP-nc	CTUh	1.69E-8	2.94E-11	1.57E-11	1.69E-8	1.83E-10	2.23E-9	6.92E-12	-4.22E-9	1.51E-8
SQP	Pt	4.34E+1	2.60E-2	2.24E-3	4.34E+1	1.61E-1	9.70E-1	2.98E-2	-4.42E+1	3.77E-1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.27E+1	4.36E-4	2.40E-2	1.27E+1	2.71E-3	5.97E-2	4.65E-4	-7.17E+0	5.59E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.27E+1	4.36E-4	2.40E-2	1.27E+1	2.71E-3	5.97E-2	4.65E-4	-7.17E+0	5.59E+0
PENRE	MJ	4.48E+1	3.22E-2	1.44E-3	4.48E+1	2.00E-1	1.33E+0	1.23E-2	-2.16E+1	2.48E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.48E+1	3.22E-2	1.44E-3	4.48E+1	2.00E-1	1.33E+0	1.23E-2	-2.16E+1	2.48E+1
PET	MJ	5.75E+1	3.27E-2	2.55E-2	5.75E+1	2.03E-1	1.39E+0	1.28E-2	-2.87E+1	3.04E+1
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	1.58E-2	3.44E-6	1.46E-6	1.58E-2	2.14E-5	9.96E-4	1.44E-5	-7.65E-3	9.21E-3

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.40E-5	7.76E-8	2.73E-13	1.40E-5	4.83E-7	2.30E-6	1.40E-8	-1.03E-5	6.55E-6
NHWD	kg	1.00E-1	1.88E-3	1.05E-6	1.02E-1	1.17E-2	6.66E-2	5.11E-2	-3.83E-2	1.94E-1
RWD	kg	5.53E-5	2.06E-7	1.10E-13	5.55E-5	1.28E-6	5.06E-6	7.61E-8	-1.63E-5	4.57E-5
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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