Environmental Profile

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

Ecochain v3.5.80

Product:	3043163 - X-Stream PP Branch 45° BK 200x150
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	4.06E+0	1.87E-1	4.28E-2	4.29E+0	5.41E-2	2.12E+0	2.55E-2	-2.57E+0	3.92E+0
GWP-f	kg CO2 eq	4.50E+0	1.86E-1	4.32E-2	4.73E+0	5.40E-2	1.66E+0	2.55E-2	-2.56E+0	3.90E+0
GWP-b	kg CO2 eq	-4.41E-1	1.13E-4	-4.56E-4	-4.42E-1	3.28E-5	4.65E-1	2.22E-5	-8.91E-3	1.47E-2
GWP-luluc	kg CO2 eq	1.93E-3	6.60E-5	4.41E-5	2.04E-3	1.91E-5	3.05E-4	4.35E-7	-5.69E-4	1.80E-3
ODP	kg CFC11 eq	1.33E-7	4.30E-8	2.44E-9	1.78E-7	1.25E-8	4.02E-8	6.39E-10	-1.14E-7	1.17E-7
AP	mol H+ eq	1.67E-2	1.06E-3	4.36E-4	1.82E-2	3.08E-4	1.72E-3	1.52E-5	-7.33E-3	1.29E-2
EP-fw	kg P eq	7.10E-5	1.53E-6	2.43E-6	7.50E-5	4.45E-7	8.82E-6	1.99E-8	-2.92E-5	5.50E-5
EP-m	kg N eq	2.82E-3	3.80E-4	4.58E-5	3.25E-3	1.10E-4	5.07E-4	9.91E-6	-1.32E-3	2.55E-3
EP-T	mol N eq	3.20E-2	4.19E-3	5.48E-4	3.67E-2	1.21E-3	5.59E-3	6.19E-5	-1.49E-2	2.87E-2
POCP	kg NMVOC eq	1.42E-2	1.20E-3	1.85E-4	1.56E-2	3.47E-4	1.75E-3	2.32E-5	-6.58E-3	1.11E-2
ADP-mm	kg Sb eq	7.01E-5	4.82E-6	5.81E-6	8.07E-5	1.40E-6	6.65E-6	1.54E-8	-1.72E-5	7.16E-5
ADP-f	MJ	1.54E+2	2.86E+0	4.01E-1	1.57E+2	8.30E-1	5.32E+0	4.67E-2	-7.98E+1	8.38E+1
WDP	m3 depriv.	3.03E+0	8.78E-3	1.54E-2	3.06E+0	2.55E-3	1.04E-1	2.40E-4	-1.40E+0	1.76E+0
PM	disease inc.	1.67E-7	1.68E-8	2.68E-9	1.87E-7	4.88E-9	2.79E-8	3.21E-10	-6.27E-8	1.57E-7
IR	kBq U-235 eq	9.21E-2	1.25E-2	3.01E-4	1.05E-1	3.63E-3	1.61E-2	2.16E-4	-3.85E-2	8.63E-2
ETP-fw	CTUe	3.19E+1	2.32E+0	3.57E+0	3.78E+1	6.74E-1	6.02E+0	3.91E-2	-1.21E+1	3.25E+1
HTP-c	CTUh	1.48E-9	8.27E-11	1.82E-10	1.75E-9	2.40E-11	7.63E-10	1.14E-12	-4.61E-10	2.08E-9
HTP-nc	CTUh	3.70E-8	2.77E-9	4.63E-9	4.44E-8	8.03E-10	9.08E-9	2.52E-11	-1.31E-8	4.12E-8
SQP	Pt	4.96E+1	2.45E+0	6.62E-1	5.27E+1	7.10E-1	4.25E+0	1.20E-1	-1.13E+1	4.65E+1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.04E+1	4.11E-2	7.10E+0	2.75E+1	1.19E-2	2.62E-1	1.80E-3	-2.83E+0	2.50E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.04E+1	4.11E-2	7.10E+0	2.75E+1	1.19E-2	2.62E-1	1.80E-3	-2.83E+0	2.50E+1
PENRE	MJ	1.65E+2	3.04E+0	4.27E-1	1.69E+2	8.81E-1	5.67E+0	4.95E-2	-8.60E+1	8.95E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.65E+2	3.04E+0	4.27E-1	1.69E+2	8.81E-1	5.67E+0	4.95E-2	-8.60E+1	8.95E+1
PET	MJ	1.86E+2	3.08E+0	7.53E+0	1.96E+2	8.93E-1	5.93E+0	5.13E-2	-8.89E+1	1.14E+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	4.69E-2	3.24E-4	4.31E-4	4.77E-2	9.39E-5	3.12E-3	5.75E-5	-2.08E-2	3.01E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.49E-5	7.32E-6	8.07E-11	3.22E-5	2.12E-6	8.71E-6	5.63E-8	-2.00E-5	2.32E-5
NHWD	kg	2.01E-1	1.77E-1	3.12E-4	3.78E-1	5.14E-2	2.72E-1	2.06E-1	-6.67E-2	8.40E-1
RWD	kg	8.80E-5	1.95E-5	3.24E-11	1.07E-4	5.64E-6	2.04E-5	3.05E-7	-3.49E-5	9.89E-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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