Environmental Profile

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

Ecochain v3.5.64

Product:	3024133 - X-Stream PP Branch 45° BK 150
Unit:	1 Piece
Manufacturer:	Wavin Poland Buk
Address:	Dobieżyńska 43 64-320 Buk Poland
Contact:	https://www.wavin.com/en-en

The Wavin X-Stream system is a new generation of profiled pipe system with ring stiffness of SN 8, outside black and inside bright for drainage of foul water and storm water. The Wavin X-Stream structured wall polypropylene (PP) pipes systems incorporate a unique new design for fast, secure assembly.

LCA standard:	EN15804+A2 (2019)
Standard database:	Worldwide - Ecoinvent v 3.6 Cut-Off
Externally verified:	Yes
Issue date:	19-09-2022
End of validity:	19-09-2027
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 Poland Buk (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 Climate Change [kg CO2 eq]; **GWP-f** = EF Climate change - Fossil [kg CO2 eq]; **GWP-b** = EF Climate Change - Biogenic [kg CO2 eq]; **GWP-luluc** = EF 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	2.92E+0	7.80E-2	1.00E-1	3.10E+0	3.82E-2	1.11E+0	1.80E-2	-1.77E+0	2.49E+0
GWP-f	kg CO2 eq	2.90E+0	7.79E-2	9.45E-2	3.08E+0	3.82E-2	1.11E+0	1.80E-2	-1.77E+0	2.48E+0
GWP-b	kg CO2 eq	1.32E-2	3.60E-5	5.86E-3	1.91E-2	2.32E-5	-1.53E-3	1.56E-5	-6.31E-3	1.12E-2
GWP-luluc	kg CO2 eq	7.66E-4	2.85E-5	2.74E-5	8.22E-4	1.35E-5	2.14E-4	3.10E-7	-3.58E-4	6.93E-4
ODP	kg CFC11 eq	5.40E-8	1.72E-8	1.26E-8	8.38E-8	8.80E-9	2.79E-8	4.52E-10	-8.10E-8	3.99E-8
AP	mol H+ eq	1.04E-2	4.52E-4	3.19E-4	1.12E-2	2.18E-4	1.17E-3	1.08E-5	-5.00E-3	7.61E-3
EP-fw	kg P eq	4.28E-5	7.86E-7	1.49E-6	4.50E-5	3.14E-7	6.18E-6	1.42E-8	-2.03E-5	3.12E-5
EP-m	kg N eq	1.72E-3	1.59E-4	5.23E-5	1.93E-3	7.78E-5	3.40E-4	6.99E-6	-8.83E-4	1.47E-3
EP-T	mol N eq	1.95E-2	1.76E-3	5.65E-4	2.18E-2	8.58E-4	3.74E-3	4.38E-5	-9.76E-3	1.67E-2
POCP	kg NMVOC eq	8.93E-3	5.01E-4	1.89E-4	9.62E-3	2.45E-4	1.18E-3	1.64E-5	-4.48E-3	6.59E-3
ADP-mm	kg Sb eq	4.39E-5	1.97E-6	2.75E-6	4.86E-5	9.88E-7	4.64E-6	1.09E-8	-1.22E-5	4.21E-5
ADP-f	MJ	1.03E+2	1.18E+0	1.22E+0	1.05E+2	5.86E-1	3.72E+0	3.30E-2	-5.55E+1	5.42E+1
WDP	m3 depriv.	2.05E+0	4.20E-3	9.52E-3	2.06E+0	1.80E-3	7.29E-2	1.80E-4	-9.97E-1	1.14E+0
PM	disease inc.	9.09E-8	7.00E-9	2.46E-9	1.00E-7	3.45E-9	1.93E-8	2.27E-10	-4.16E-8	8.17E-8
IR	kBq U-235 eq	5.28E-2	4.92E-3	1.98E-3	5.97E-2	2.56E-3	1.12E-2	1.53E-4	-2.70E-2	4.66E-2
ETP-fw	CTUe	1.58E+1	1.05E+0	2.04E+0	1.89E+1	4.76E-1	4.19E+0	2.76E-2	-7.22E+0	1.64E+1
HTP-c	CTUh	6.78E-10	3.40E-11	1.01E-10	8.13E-10	1.69E-11	5.14E-10	8.16E-13	-3.07E-10	1.04E-9
HTP-nc	CTUh	1.89E-8	1.15E-9	2.38E-9	2.25E-8	5.68E-10	6.27E-9	1.78E-11	-8.80E-9	2.05E-8
SQP	Pt	3.66E+0	1.02E+0	4.04E-1	5.09E+0	5.02E-1	2.97E+0	8.46E-2	-1.55E+0	7.09E+0
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.48E+0	1.47E-2	3.22E+0	4.71E+0	8.41E-3	1.83E-1	1.27E-3	-7.15E-1	4.19E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.48E+0	1.47E-2	3.22E+0	4.71E+0	8.41E-3	1.83E-1	1.27E-3	-7.15E-1	4.19E+0
PENRE	MJ	1.11E+2	1.25E+0	1.32E+0	1.13E+2	6.22E-1	3.96E+0	3.50E-2	-5.99E+1	5.79E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.11E+2	1.25E+0	1.32E+0	1.13E+2	6.22E-1	3.96E+0	3.50E-2	-5.99E+1	5.79E+1
PET	MJ	1.12E+2	1.26E+0	4.54E+0	1.18E+2	6.31E-1	4.15E+0	3.63E-2	-6.06E+1	6.21E+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	3.09E-2	1.43E-4	2.74E-4	3.13E-2	6.63E-5	2.15E-3	4.06E-5	-1.47E-2	1.89E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.28E-5	2.98E-6	1.58E-6	1.73E-5	1.50E-6	6.05E-6	3.99E-8	-1.33E-5	1.17E-5
NHWD	kg	1.15E-1	7.45E-2	4.04E-3	1.93E-1	3.63E-2	1.83E-1	1.45E-1	-4.47E-2	5.13E-1
RWD	kg	4.57E-5	7.72E-6	2.90E-6	5.63E-5	3.99E-6	1.42E-5	2.15E-7	-2.42E-5	5.05E-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

Ecochain Technologies BV
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands
https://www.ecochain.com
+31 20 3035 777