Environmental Profile

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

Ecochain v3.5.80

Product:	3041484 - X-Stream PP End Cap BK 600
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	6.61E+0	3.36E-1	2.14E-2	6.97E+0	2.84E-1	2.77E+1	1.34E-1	-1.57E+1	1.94E+1
GWP-f	kg CO2 eq	2.57E+1	3.36E-1	2.16E-2	2.61E+1	2.84E-1	8.35E+0	1.34E-1	-1.56E+1	1.92E+1
GWP-b	kg CO2 eq	-1.91E+1	2.04E-4	-2.28E-4	-1.91E+1	1.72E-4	1.93E+1	1.16E-4	-4.66E-2	1.25E-1
GWP-luluc	kg CO2 eq	1.59E-2	1.19E-4	2.21E-5	1.61E-2	1.00E-4	1.64E-3	2.28E-6	-1.18E-2	6.06E-3
ODP	kg CFC11 eq	9.76E-7	7.74E-8	1.22E-9	1.05E-6	6.54E-8	2.28E-7	3.36E-9	-8.61E-7	4.91E-7
AP	mol H+ eq	9.81E-2	1.91E-3	2.18E-4	1.00E-1	1.62E-3	9.51E-3	8.00E-5	-5.41E-2	5.73E-2
EP-fw	kg P eq	4.61E-4	2.77E-6	1.22E-6	4.65E-4	2.34E-6	4.76E-5	1.04E-7	-2.70E-4	2.45E-4
EP-m	kg N eq	1.84E-2	6.85E-4	2.29E-5	1.91E-2	5.79E-4	2.84E-3	5.21E-5	-1.12E-2	1.14E-2
EP-T	mol N eq	2.06E-1	7.55E-3	2.74E-4	2.14E-1	6.38E-3	3.13E-2	3.25E-4	-1.27E-1	1.25E-1
POCP	kg NMVOC eq	9.09E-2	2.16E-3	9.27E-5	9.32E-2	1.82E-3	9.76E-3	1.22E-4	-5.31E-2	5.18E-2
ADP-mm	kg Sb eq	3.23E-4	8.69E-6	2.90E-6	3.35E-4	7.34E-6	3.68E-5	8.07E-8	-1.33E-4	2.46E-4
ADP-f	MJ	8.42E+2	5.16E+0	2.00E-1	8.48E+2	4.36E+0	2.92E+1	2.45E-1	-4.57E+2	4.24E+2
WDP	m3 depriv.	1.60E+1	1.58E-2	7.71E-3	1.60E+1	1.34E-2	5.51E-1	1.25E-3	-8.02E+0	8.58E+0
PM	disease inc.	1.10E-6	3.03E-8	1.34E-9	1.14E-6	2.56E-8	1.54E-7	1.68E-9	-6.55E-7	6.63E-7
IR	kBq U-235 eq	5.82E-1	2.25E-2	1.50E-4	6.05E-1	1.90E-2	9.06E-2	1.14E-3	-3.21E-1	3.94E-1
ETP-fw	CTUe	2.00E+2	4.19E+0	1.78E+0	2.06E+2	3.54E+0	3.25E+1	2.05E-1	-1.27E+2	1.14E+2
HTP-c	CTUh	1.40E-8	1.49E-10	9.11E-11	1.43E-8	1.26E-10	4.07E-9	6.00E-12	-9.17E-9	9.31E-9
HTP-nc	CTUh	2.14E-7	4.99E-9	2.31E-9	2.21E-7	4.22E-9	4.86E-8	1.32E-10	-1.22E-7	1.53E-7
SQP	Pt	1.64E+3	4.41E+0	3.31E-1	1.65E+3	3.73E+0	2.33E+1	6.29E-1	-1.37E+3	3.07E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.62E+2	7.40E-2	3.55E+0	2.66E+2	6.25E-2	1.41E+0	9.48E-3	-2.08E+2	5.91E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.62E+2	7.40E-2	3.55E+0	2.66E+2	6.25E-2	1.41E+0	9.48E-3	-2.08E+2	5.91E+1
PENRE	MJ	9.04E+2	5.48E+0	2.13E-1	9.09E+2	4.63E+0	3.11E+1	2.60E-1	-4.92E+2	4.53E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	9.04E+2	5.48E+0	2.13E-1	9.09E+2	4.63E+0	3.11E+1	2.60E-1	-4.92E+2	4.53E+2
PET	MJ	1.17E+3	5.55E+0	3.76E+0	1.18E+3	4.69E+0	3.25E+1	2.69E-1	-7.00E+2	5.12E+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	2.53E-1	5.84E-4	2.16E-4	2.54E-1	4.93E-4	1.66E-2	3.02E-4	-1.30E-1	1.41E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.34E-4	1.32E-5	4.03E-11	2.47E-4	1.11E-5	4.86E-5	2.95E-7	-2.02E-4	1.05E-4
NHWD	kg	1.73E+0	3.20E-1	1.56E-4	2.05E+0	2.70E-1	1.44E+0	1.08E+0	-1.08E+0	3.77E+0
RWD	kg	5.86E-4	3.51E-5	1.62E-11	6.21E-4	2.96E-5	1.16E-4	1.60E-6	-3.24E-4	4.44E-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

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