Environmental Profile

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

Ecochain v3.5.80

Product:	3043191 - X-Stream PP Plug/EndCup 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

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Results

Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.19E-1	5.02E-4	1.45E-4	1.19E-1	2.40E-3	2.45E-1	1.13E-3	-1.33E-1	2.35E-1
GWP-f	kg CO2 eq	2.66E-1	5.02E-4	1.46E-4	2.67E-1	2.40E-3	8.58E-2	1.13E-3	-1.53E-1	2.03E-1
GWP-b	kg CO2 eq	-1.48E-1	3.05E-7	-1.54E-6	-1.48E-1	1.45E-6	1.59E-1	9.83E-7	1.97E-2	3.11E-2
GWP-luluc	kg CO2 eq	3.31E-4	1.78E-7	1.49E-7	3.32E-4	8.48E-7	1.47E-5	1.92E-8	-2.51E-4	9.66E-5
ODP	kg CFC11 eq	1.24E-8	1.16E-10	8.26E-12	1.26E-8	5.52E-10	2.32E-9	2.83E-11	-9.55E-9	5.92E-9
AP	mol H+ eq	1.11E-3	2.86E-6	1.47E-6	1.12E-3	1.36E-5	9.51E-5	6.75E-7	-5.66E-4	6.62E-4
EP-fw	kg P eq	6.84E-6	4.13E-9	8.24E-9	6.85E-6	1.97E-8	4.35E-7	8.81E-10	-4.24E-6	3.07E-6
EP-m	kg N eq	2.21E-4	1.02E-6	1.55E-7	2.23E-4	4.88E-6	2.95E-5	4.40E-7	-1.20E-4	1.38E-4
EP-T	mol N eq	2.40E-3	1.13E-5	1.85E-6	2.42E-3	5.38E-5	3.24E-4	2.74E-6	-1.36E-3	1.43E-3
POCP	kg NMVOC eq	9.53E-4	3.22E-6	6.28E-7	9.57E-4	1.54E-5	1.00E-4	1.03E-6	-5.23E-4	5.51E-4
ADP-mm	kg Sb eq	4.20E-6	1.30E-8	1.97E-8	4.23E-6	6.20E-8	3.70E-7	6.81E-10	-1.25E-6	3.42E-6
ADP-f	MJ	7.97E+0	7.70E-3	1.36E-3	7.98E+0	3.68E-2	2.73E-1	2.07E-3	-4.20E+0	4.10E+0
WDP	m3 depriv.	1.59E-1	2.36E-5	5.22E-5	1.59E-1	1.13E-4	4.88E-3	1.04E-5	-1.01E-1	6.35E-2
PM	disease inc.	1.25E-8	4.53E-11	9.08E-12	1.26E-8	2.16E-10	1.51E-9	1.42E-11	-7.56E-9	6.77E-9
IR	kBq U-235 eq	6.60E-3	3.37E-5	1.02E-6	6.64E-3	1.61E-4	8.79E-4	9.59E-6	-4.05E-3	3.64E-3
ETP-fw	CTUe	5.52E+0	6.25E-3	1.21E-2	5.54E+0	2.99E-2	3.29E-1	1.73E-3	-2.83E+0	3.06E+0
HTP-c	CTUh	1.89E-10	2.23E-13	6.17E-13	1.90E-10	1.06E-12	3.94E-11	5.05E-14	-8.59E-11	1.44E-10
HTP-nc	CTUh	3.37E-9	7.46E-12	1.57E-11	3.39E-9	3.56E-11	4.68E-10	1.11E-12	-1.11E-9	2.79E-9
SQP	Pt	1.37E+1	6.59E-3	2.24E-3	1.37E+1	3.15E-2	2.13E-1	5.31E-3	-1.46E+1	-5.54E-1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.35E+0	1.11E-4	2.40E-2	3.37E+0	5.28E-4	1.28E-2	8.01E-5	-2.34E+0	1.04E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.35E+0	1.11E-4	2.40E-2	3.37E+0	5.28E-4	1.28E-2	8.01E-5	-2.34E+0	1.04E+0
PENRE	MJ	8.56E+0	8.18E-3	1.44E-3	8.57E+0	3.90E-2	2.91E-1	2.19E-3	-4.52E+0	4.38E+0
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	8.56E+0	8.18E-3	1.44E-3	8.57E+0	3.90E-2	2.91E-1	2.19E-3	-4.52E+0	4.38E+0
PET	MJ	1.19E+1	8.29E-3	2.55E-2	1.19E+1	3.96E-2	3.03E-1	2.27E-3	-6.86E+0	5.42E+0
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	2.85E-3	8.72E-7	1.46E-6	2.85E-3	4.16E-6	1.53E-4	2.55E-6	-1.96E-3	1.06E-3

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.70E-6	1.97E-8	2.73E-13	2.72E-6	9.40E-8	4.83E-7	2.49E-9	-2.29E-6	1.01E-6
NHWD	kg	2.11E-2	4.77E-4	1.05E-6	2.16E-2	2.28E-3	1.39E-2	9.11E-3	-1.08E-2	3.62E-2
RWD	kg	6.63E-6	5.24E-8	1.10E-13	6.69E-6	2.50E-7	1.14E-6	1.35E-8	-4.03E-6	4.06E-6
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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