Environmental Profile

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

Ecochain v3.5.80

Product:	3015157 - X-Stream PP Bend 30° BK 400 S/S
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	2.35E-1	3.98E-1	4.28E-2	6.76E-1	1.66E-1	2.09E+1	7.81E-2	-9.75E+0	1.20E+1
GWP-f	kg CO2 eq	1.61E+1	3.98E-1	4.32E-2	1.65E+1	1.66E-1	4.90E+0	7.81E-2	-9.71E+0	1.19E+1
GWP-b	kg CO2 eq	-1.58E+1	2.41E-4	-4.56E-4	-1.58E+1	1.01E-4	1.60E+1	6.79E-5	-2.75E-2	8.99E-2
GWP-luluc	kg CO2 eq	1.20E-2	1.41E-4	4.41E-5	1.22E-2	5.87E-5	9.72E-4	1.35E-6	-9.13E-3	4.05E-3
ODP	kg CFC11 eq	7.52E-7	9.16E-8	2.44E-9	8.46E-7	3.82E-8	1.39E-7	1.96E-9	-6.19E-7	4.06E-7
AP	mol H+ eq	6.37E-2	2.27E-3	4.36E-4	6.64E-2	9.44E-4	5.75E-3	4.69E-5	-3.58E-2	3.74E-2
EP-fw	kg P eq	3.10E-4	3.27E-6	2.43E-6	3.16E-4	1.36E-6	2.82E-5	6.17E-8	-1.89E-4	1.56E-4
EP-m	kg N eq	1.22E-2	8.10E-4	4.58E-5	1.31E-2	3.38E-4	1.73E-3	3.04E-5	-7.67E-3	7.52E-3
EP-T	mol N eq	1.38E-1	8.93E-3	5.48E-4	1.47E-1	3.72E-3	1.91E-2	1.90E-4	-8.75E-2	8.29E-2
POCP	kg NMVOC eq	5.94E-2	2.55E-3	1.85E-4	6.21E-2	1.06E-3	5.93E-3	7.13E-5	-3.57E-2	3.34E-2
ADP-mm	kg Sb eq	2.39E-4	1.03E-5	5.81E-6	2.55E-4	4.29E-6	2.21E-5	4.74E-8	-8.98E-5	1.91E-4
ADP-f	MJ	5.07E+2	6.10E+0	4.01E-1	5.13E+2	2.54E+0	1.74E+1	1.43E-1	-2.76E+2	2.57E+2
WDP	m3 depriv.	9.55E+0	1.87E-2	1.54E-2	9.58E+0	7.81E-3	3.24E-1	8.05E-4	-4.93E+0	4.98E+0
PM	disease inc.	7.66E-7	3.59E-8	2.68E-9	8.05E-7	1.50E-8	9.21E-8	9.85E-10	-4.66E-7	4.47E-7
IR	kBq U-235 eq	3.96E-1	2.67E-2	3.01E-4	4.23E-1	1.11E-2	5.47E-2	6.63E-4	-2.21E-1	2.69E-1
ETP-fw	CTUe	1.44E+2	4.96E+0	3.57E+0	1.53E+2	2.07E+0	1.93E+1	1.20E-1	-9.35E+1	8.08E+1
HTP-c	CTUh	1.08E-8	1.76E-10	1.82E-10	1.12E-8	7.35E-11	2.49E-9	3.56E-12	-7.07E-9	6.69E-9
HTP-nc	CTUh	1.49E-7	5.91E-9	4.63E-9	1.60E-7	2.46E-9	2.91E-8	7.76E-11	-8.59E-8	1.06E-7
SQP	Pt	1.35E+3	5.22E+0	6.62E-1	1.36E+3	2.18E+0	1.39E+1	3.67E-1	-1.13E+3	2.48E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.17E+2	8.76E-2	7.10E+0	2.24E+2	3.65E-2	8.36E-1	5.50E-3	-1.71E+2	5.38E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.17E+2	8.76E-2	7.10E+0	2.24E+2	3.65E-2	8.36E-1	5.50E-3	-1.71E+2	5.38E+1
PENRE	MJ	5.44E+2	6.48E+0	4.27E-1	5.51E+2	2.70E+0	1.86E+1	1.52E-1	-2.97E+2	2.75E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.44E+2	6.48E+0	4.27E-1	5.51E+2	2.70E+0	1.86E+1	1.52E-1	-2.97E+2	2.75E+2
PET	MJ	7.60E+2	6.57E+0	7.53E+0	7.74E+2	2.74E+0	1.94E+1	1.58E-1	-4.68E+2	3.28E+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	1.56E-1	6.91E-4	4.31E-4	1.57E-1	2.88E-4	9.89E-3	1.76E-4	-8.20E-2	8.52E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.79E-4	1.56E-5	8.07E-11	1.94E-4	6.51E-6	2.93E-5	1.73E-7	-1.45E-4	8.56E-5
NHWD	kg	1.30E+0	3.78E-1	3.12E-4	1.68E+0	1.58E-1	8.65E-1	6.30E-1	-8.17E-1	2.52E+0
RWD	kg	4.16E-4	4.15E-5	3.24E-11	4.58E-4	1.73E-5	7.01E-5	9.34E-7	-2.27E-4	3.19E-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

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