Environmental Profile

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

Ecochain v3.5.80

Product:	3015151 - X-Stream PP Bend 15° 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	-2.59E+0	3.98E-1	6.65E-2	-2.13E+0	1.28E-1	1.98E+1	6.01E-2	-7.97E+0	9.84E+0
GWP-f	kg CO2 eq	1.33E+1	3.98E-1	6.71E-2	1.37E+1	1.28E-1	3.79E+0	6.01E-2	-7.94E+0	9.75E+0
GWP-b	kg CO2 eq	-1.59E+1	2.41E-4	-7.09E-4	-1.59E+1	7.75E-5	1.60E+1	5.22E-5	-2.12E-2	9.02E-2
GWP-luluc	kg CO2 eq	1.13E-2	1.41E-4	6.86E-5	1.15E-2	4.52E-5	7.57E-4	1.05E-6	-8.79E-3	3.48E-3
ODP	kg CFC11 eq	7.16E-7	9.16E-8	3.79E-9	8.11E-7	2.94E-8	1.11E-7	1.51E-9	-5.49E-7	4.04E-7
AP	mol H+ eq	5.37E-2	2.27E-3	6.77E-4	5.67E-2	7.27E-4	4.58E-3	3.61E-5	-3.08E-2	3.12E-2
EP-fw	kg P eq	2.69E-4	3.27E-6	3.78E-6	2.77E-4	1.05E-6	2.20E-5	4.78E-8	-1.69E-4	1.30E-4
EP-m	kg N eq	1.06E-2	8.10E-4	7.12E-5	1.15E-2	2.60E-4	1.39E-3	2.32E-5	-6.79E-3	6.35E-3
EP-T	mol N eq	1.19E-1	8.93E-3	8.51E-4	1.29E-1	2.87E-3	1.54E-2	1.46E-4	-7.78E-2	6.97E-2
POCP	kg NMVOC eq	5.06E-2	2.55E-3	2.88E-4	5.34E-2	8.19E-4	4.74E-3	5.49E-5	-3.13E-2	2.78E-2
ADP-mm	kg Sb eq	2.05E-4	1.03E-5	9.03E-6	2.25E-4	3.30E-6	1.74E-5	3.67E-8	-7.79E-5	1.67E-4
ADP-f	MJ	4.04E+2	6.10E+0	6.23E-1	4.10E+2	1.96E+0	1.37E+1	1.10E-1	-2.21E+2	2.05E+2
WDP	m3 depriv.	7.51E+0	1.87E-2	2.40E-2	7.56E+0	6.01E-3	2.51E-1	6.55E-4	-3.96E+0	3.86E+0
PM	disease inc.	6.79E-7	3.59E-8	4.17E-9	7.19E-7	1.15E-8	7.28E-8	7.59E-10	-4.25E-7	3.80E-7
IR	kBq U-235 eq	3.46E-1	2.67E-2	4.67E-4	3.73E-1	8.56E-3	4.35E-2	5.10E-4	-1.94E-1	2.32E-1
ETP-fw	CTUe	1.31E+2	4.96E+0	5.55E+0	1.41E+2	1.59E+0	1.51E+1	9.24E-2	-8.65E+1	7.13E+1
HTP-c	CTUh	1.02E-8	1.76E-10	2.83E-10	1.07E-8	5.66E-11	1.99E-9	2.77E-12	-6.77E-9	5.98E-9
HTP-nc	CTUh	1.32E-7	5.91E-9	7.19E-9	1.45E-7	1.90E-9	2.28E-8	5.99E-11	-7.74E-8	9.24E-8
SQP	Pt	1.35E+3	5.22E+0	1.03E+0	1.36E+3	1.68E+0	1.09E+1	2.83E-1	-1.13E+3	2.43E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.15E+2	8.76E-2	1.10E+1	2.26E+2	2.81E-2	6.53E-1	4.22E-3	-1.70E+2	5.67E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.15E+2	8.76E-2	1.10E+1	2.26E+2	2.81E-2	6.53E-1	4.22E-3	-1.70E+2	5.67E+1
PENRE	MJ	4.33E+2	6.48E+0	6.63E-1	4.40E+2	2.08E+0	1.46E+1	1.17E-1	-2.37E+2	2.20E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.33E+2	6.48E+0	6.63E-1	4.40E+2	2.08E+0	1.46E+1	1.17E-1	-2.37E+2	2.20E+2
PET	MJ	6.48E+2	6.57E+0	1.17E+1	6.66E+2	2.11E+0	1.53E+1	1.21E-1	-4.08E+2	2.76E+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	1.25E-1	6.91E-4	6.70E-4	1.27E-1	2.22E-4	7.74E-3	1.36E-4	-6.74E-2	6.75E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.69E-4	1.56E-5	1.25E-10	1.85E-4	5.01E-6	2.33E-5	1.34E-7	-1.32E-4	8.15E-5
NHWD	kg	1.21E+0	3.78E-1	4.84E-4	1.59E+0	1.21E-1	6.83E-1	4.85E-1	-7.74E-1	2.10E+0
RWD	kg	3.74E-4	4.15E-5	5.03E-11	4.16E-4	1.33E-5	5.60E-5	7.19E-7	-2.03E-4	2.82E-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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