Environmental Profile

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

Ecochain v3.5.80

Product:	3015152 - X-Stream PP Bend 15° BK 500 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	5.36E+0	7.81E-1	8.60E-2	6.23E+0	2.94E-1	3.11E+1	1.38E-1	-1.65E+1	2.12E+1
GWP-f	kg CO2 eq	2.76E+1	7.80E-1	8.68E-2	2.84E+1	2.94E-1	8.65E+0	1.38E-1	-1.65E+1	2.10E+1
GWP-b	kg CO2 eq	-2.22E+1	4.74E-4	-9.16E-4	-2.22E+1	1.78E-4	2.24E+1	1.20E-4	-4.86E-2	1.60E-1
GWP-luluc	kg CO2 eq	1.80E-2	2.76E-4	8.87E-5	1.84E-2	1.04E-4	1.71E-3	2.40E-6	-1.34E-2	6.82E-3
ODP	kg CFC11 eq	1.24E-6	1.80E-7	4.91E-9	1.42E-6	6.77E-8	2.39E-7	3.48E-9	-9.95E-7	7.35E-7
AP	mol H+ eq	1.07E-1	4.44E-3	8.76E-4	1.12E-1	1.67E-3	9.94E-3	8.31E-5	-5.82E-2	6.57E-2
EP-fw	kg P eq	5.06E-4	6.42E-6	4.89E-6	5.17E-4	2.42E-6	4.95E-5	1.09E-7	-2.98E-4	2.71E-4
EP-m	kg N eq	2.01E-2	1.59E-3	9.21E-5	2.18E-2	5.99E-4	2.97E-3	5.37E-5	-1.22E-2	1.32E-2
EP-T	mol N eq	2.26E-1	1.75E-2	1.10E-3	2.44E-1	6.60E-3	3.28E-2	3.37E-4	-1.39E-1	1.46E-1
POCP	kg NMVOC eq	9.82E-2	5.01E-3	3.73E-4	1.04E-1	1.89E-3	1.02E-2	1.26E-4	-5.74E-2	5.85E-2
ADP-mm	kg Sb eq	3.92E-4	2.02E-5	1.17E-5	4.23E-4	7.60E-6	3.84E-5	8.41E-8	-1.45E-4	3.24E-4
ADP-f	MJ	8.83E+2	1.20E+1	8.06E-1	8.96E+2	4.51E+0	3.04E+1	2.54E-1	-4.77E+2	4.54E+2
WDP	m3 depriv.	1.66E+1	3.68E-2	3.10E-2	1.67E+1	1.38E-2	5.71E-1	1.42E-3	-8.51E+0	8.78E+0
PM	disease inc.	1.23E-6	7.04E-8	5.39E-9	1.31E-6	2.65E-8	1.60E-7	1.75E-9	-7.21E-7	7.78E-7
IR	kBq U-235 eq	6.60E-1	5.23E-2	6.04E-4	7.13E-1	1.97E-2	9.47E-2	1.18E-3	-3.53E-1	4.75E-1
ETP-fw	CTUe	2.33E+2	9.72E+0	7.18E+0	2.50E+2	3.66E+0	3.39E+1	2.13E-1	-1.43E+2	1.45E+2
HTP-c	CTUh	1.65E-8	3.46E-10	3.66E-10	1.72E-8	1.30E-10	4.32E-9	6.31E-12	-1.04E-8	1.12E-8
HTP-nc	CTUh	2.45E-7	1.16E-8	9.30E-9	2.66E-7	4.37E-9	5.08E-8	1.37E-10	-1.35E-7	1.87E-7
SQP	Pt	1.91E+3	1.02E+1	1.33E+0	1.92E+3	3.86E+0	2.43E+1	6.51E-1	-1.59E+3	3.62E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.16E+2	1.72E-1	1.43E+1	3.30E+2	6.47E-2	1.47E+0	9.75E-3	-2.41E+2	9.08E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.16E+2	1.72E-1	1.43E+1	3.30E+2	6.47E-2	1.47E+0	9.75E-3	-2.41E+2	9.08E+1
PENRE	MJ	9.48E+2	1.27E+1	8.58E-1	9.61E+2	4.79E+0	3.24E+1	2.69E-1	-5.13E+2	4.85E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	9.48E+2	1.27E+1	8.58E-1	9.61E+2	4.79E+0	3.24E+1	2.69E-1	-5.13E+2	4.85E+2
PET	MJ	1.26E+3	1.29E+1	1.51E+1	1.29E+3	4.85E+0	3.39E+1	2.79E-1	-7.55E+2	5.76E+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	2.67E-1	1.36E-3	8.67E-4	2.69E-1	5.10E-4	1.73E-2	3.12E-4	-1.39E-1	1.49E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.75E-4	3.06E-5	1.62E-10	3.05E-4	1.15E-5	5.08E-5	3.07E-7	-2.24E-4	1.44E-4
NHWD	kg	2.00E+0	7.42E-1	6.26E-4	2.74E+0	2.80E-1	1.51E+0	1.12E+0	-1.22E+0	4.43E+0
RWD	kg	6.90E-4	8.14E-5	6.51E-11	7.71E-4	3.07E-5	1.21E-4	1.66E-6	-3.57E-4	5.67E-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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