Environmental Profile

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

Ecochain v3.5.80

Product:	3020799 - X-Stream PP Bend 90° 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	1.42E+1	1.18E+0	4.28E-2	1.54E+1	5.95E-1	5.75E+1	2.80E-1	-3.27E+1	4.11E+1
GWP-f	kg CO2 eq	5.39E+1	1.18E+0	4.32E-2	5.51E+1	5.94E-1	1.75E+1	2.80E-1	-3.26E+1	4.08E+1
GWP-b	kg CO2 eq	-3.97E+1	7.16E-4	-4.56E-4	-3.97E+1	3.61E-4	4.00E+1	2.44E-4	-9.80E-2	2.52E-1
GWP-luluc	kg CO2 eq	3.34E-2	4.17E-4	4.41E-5	3.38E-2	2.10E-4	3.44E-3	4.81E-6	-2.45E-2	1.30E-2
ODP	kg CFC11 eq	2.15E-6	2.72E-7	2.44E-9	2.42E-6	1.37E-7	4.78E-7	7.03E-9	-1.86E-6	1.18E-6
AP	mol H+ eq	2.07E-1	6.72E-3	4.36E-4	2.14E-1	3.39E-3	1.99E-2	1.68E-4	-1.13E-1	1.25E-1
EP-fw	kg P eq	9.71E-4	9.70E-6	2.43E-6	9.83E-4	4.89E-6	9.97E-5	2.20E-7	-5.66E-4	5.22E-4
EP-m	kg N eq	3.86E-2	2.40E-3	4.58E-5	4.10E-2	1.21E-3	5.93E-3	1.09E-4	-2.33E-2	2.49E-2
EP-T	mol N eq	4.34E-1	2.65E-2	5.48E-4	4.61E-1	1.34E-2	6.54E-2	6.81E-4	-2.65E-1	2.75E-1
POCP	kg NMVOC eq	1.91E-1	7.57E-3	1.85E-4	1.98E-1	3.82E-3	2.04E-2	2.56E-4	-1.11E-1	1.12E-1
ADP-mm	kg Sb eq	7.49E-4	3.05E-5	5.81E-6	7.85E-4	1.54E-5	7.70E-5	1.70E-7	-2.80E-4	5.97E-4
ADP-f	MJ	1.76E+3	1.81E+1	4.01E-1	1.78E+3	9.12E+0	6.11E+1	5.13E-1	-9.54E+2	8.95E+2
WDP	m3 depriv.	3.34E+1	5.55E-2	1.54E-2	3.35E+1	2.80E-2	1.15E+0	2.75E-3	-1.69E+1	1.78E+1
PM	disease inc.	2.34E-6	1.06E-7	2.68E-9	2.45E-6	5.37E-8	3.21E-7	3.53E-9	-1.36E-6	1.47E-6
IR	kBq U-235 eq	1.24E+0	7.91E-2	3.01E-4	1.32E+0	3.99E-2	1.89E-1	2.38E-3	-6.75E-1	8.81E-1
ETP-fw	CTUe	4.31E+2	1.47E+1	3.57E+0	4.49E+2	7.41E+0	6.81E+1	4.30E-1	-2.67E+2	2.58E+2
HTP-c	CTUh	3.00E-8	5.23E-10	1.82E-10	3.07E-8	2.64E-10	8.59E-9	1.27E-11	-1.91E-8	2.04E-8
HTP-nc	CTUh	4.60E-7	1.75E-8	4.63E-9	4.83E-7	8.83E-9	1.02E-7	2.77E-10	-2.55E-7	3.39E-7
SQP	Pt	3.41E+3	1.55E+1	6.62E-1	3.42E+3	7.81E+0	4.87E+1	1.32E+0	-2.83E+3	6.49E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.57E+2	2.60E-1	7.10E+0	5.65E+2	1.31E-1	2.96E+0	1.98E-2	-4.32E+2	1.36E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.57E+2	2.60E-1	7.10E+0	5.65E+2	1.31E-1	2.96E+0	1.98E-2	-4.32E+2	1.36E+2
PENRE	MJ	1.89E+3	1.92E+1	4.27E-1	1.91E+3	9.69E+0	6.51E+1	5.45E-1	-1.03E+3	9.56E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.89E+3	1.92E+1	4.27E-1	1.91E+3	9.69E+0	6.51E+1	5.45E-1	-1.03E+3	9.56E+2
PET	MJ	2.45E+3	1.95E+1	7.53E+0	2.47E+3	9.82E+0	6.81E+1	5.65E-1	-1.46E+3	1.09E+3
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	5.31E-1	2.05E-3	4.31E-4	5.33E-1	1.03E-3	3.48E-2	6.32E-4	-2.73E-1	2.96E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.98E-4	4.63E-5	8.07E-11	5.44E-4	2.33E-5	1.02E-4	6.20E-7	-4.23E-4	2.47E-4
NHWD	kg	3.71E+0	1.12E+0	3.12E-4	4.83E+0	5.66E-1	3.02E+0	2.26E+0	-2.25E+0	8.43E+0
RWD	kg	1.27E-3	1.23E-4	3.24E-11	1.39E-3	6.20E-5	2.42E-4	3.35E-6	-6.79E-4	1.02E-3
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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