Environmental Profile

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

Ecochain v3.5.80

Product:	3020796 - X-Stream PP Bend 90° BK 250 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	8.05E+0	2.58E-1	4.28E-2	8.35E+0	8.88E-2	3.10E+0	4.18E-2	-4.45E+0	7.13E+0
GWP-f	kg CO2 eq	8.00E+0	2.57E-1	4.32E-2	8.30E+0	8.87E-2	3.10E+0	4.18E-2	-4.43E+0	7.10E+0
GWP-b	kg CO2 eq	4.12E-2	1.56E-4	-4.56E-4	4.09E-2	5.39E-5	-3.55E-3	3.63E-5	-1.50E-2	2.24E-2
GWP-luluc	kg CO2 eq	2.54E-3	9.11E-5	4.41E-5	2.68E-3	3.14E-5	5.02E-4	7.29E-7	-8.66E-4	2.35E-3
ODP	kg CFC11 eq	2.70E-7	5.93E-8	2.44E-9	3.31E-7	2.04E-8	6.61E-8	1.05E-9	-2.41E-7	1.79E-7
AP	mol H+ eq	3.04E-2	1.47E-3	4.36E-4	3.23E-2	5.05E-4	2.80E-3	2.51E-5	-1.19E-2	2.37E-2
EP-fw	kg P eq	1.35E-4	2.12E-6	2.43E-6	1.39E-4	7.30E-7	1.45E-5	3.32E-8	-4.90E-5	1.05E-4
EP-m	kg N eq	4.96E-3	5.25E-4	4.58E-5	5.53E-3	1.81E-4	8.26E-4	1.62E-5	-2.14E-3	4.41E-3
EP-T	mol N eq	5.66E-2	5.78E-3	5.48E-4	6.29E-2	1.99E-3	9.09E-3	1.02E-4	-2.36E-2	5.05E-2
POCP	kg NMVOC eq	2.49E-2	1.65E-3	1.85E-4	2.68E-2	5.70E-4	2.86E-3	3.82E-5	-1.07E-2	1.95E-2
ADP-mm	kg Sb eq	1.61E-4	6.66E-6	5.81E-6	1.74E-4	2.30E-6	1.09E-5	2.55E-8	-2.91E-5	1.58E-4
ADP-f	MJ	2.65E+2	3.95E+0	4.01E-1	2.69E+2	1.36E+0	8.75E+0	7.67E-2	-1.34E+2	1.45E+2
WDP	m3 depriv.	5.26E+0	1.21E-2	1.54E-2	5.29E+0	4.18E-3	1.71E-1	4.47E-4	-2.38E+0	3.09E+0
PM	disease inc.	2.69E-7	2.32E-8	2.68E-9	2.95E-7	8.01E-9	4.57E-8	5.28E-10	-9.76E-8	2.52E-7
IR	kBq U-235 eq	1.65E-1	1.73E-2	3.01E-4	1.83E-1	5.95E-3	2.64E-2	3.55E-4	-6.58E-2	1.50E-1
ETP-fw	CTUe	6.79E+1	3.21E+0	3.57E+0	7.47E+1	1.11E+0	9.96E+0	6.44E-2	-1.77E+1	6.82E+1
HTP-c	CTUh	2.94E-9	1.14E-10	1.82E-10	3.23E-9	3.94E-11	1.28E-9	1.92E-12	-7.51E-10	3.80E-9
HTP-nc	CTUh	7.63E-8	3.82E-9	4.63E-9	8.47E-8	1.32E-9	1.52E-8	4.16E-11	-2.14E-8	7.99E-8
SQP	Pt	1.68E+1	3.38E+0	6.62E-1	2.09E+1	1.17E+0	6.99E+0	1.97E-1	-3.84E+0	2.54E+1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	4.16E+1	5.67E-2	7.10E+0	4.88E+1	1.95E-2	4.30E-1	2.94E-3	-1.71E+0	4.75E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	4.16E+1	5.67E-2	7.10E+0	4.88E+1	1.95E-2	4.30E-1	2.94E-3	-1.71E+0	4.75E+1
PENRE	MJ	2.84E+2	4.19E+0	4.27E-1	2.89E+2	1.45E+0	9.32E+0	8.14E-2	-1.45E+2	1.55E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.84E+2	4.19E+0	4.27E-1	2.89E+2	1.45E+0	9.32E+0	8.14E-2	-1.45E+2	1.55E+2
PET	MJ	3.26E+2	4.25E+0	7.53E+0	3.38E+2	1.47E+0	9.75E+0	8.43E-2	-1.47E+2	2.02E+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	8.44E-2	4.47E-4	4.31E-4	8.52E-2	1.54E-4	5.11E-3	9.43E-5	-3.49E-2	5.57E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.55E-5	1.01E-5	8.07E-11	5.56E-5	3.48E-6	1.44E-5	9.30E-8	-3.78E-5	3.58E-5
NHWD	kg	3.76E-1	2.45E-1	3.12E-4	6.21E-1	8.44E-2	4.51E-1	3.37E-1	-1.08E-1	1.39E+0
RWD	kg	1.60E-4	2.69E-5	3.24E-11	1.87E-4	9.26E-6	3.35E-5	5.00E-7	-5.98E-5	1.70E-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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