Environmental Profile

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

Ecochain v3.5.80

Product:	3020798 - X-Stream PP Bend 90° 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	5.03E+0	6.00E-1	4.28E-2	5.67E+0	3.02E-1	3.19E+1	1.42E-1	-1.70E+1	2.10E+1
GWP-f	kg CO2 eq	2.78E+1	5.99E-1	4.32E-2	2.85E+1	3.01E-1	8.87E+0	1.42E-1	-1.69E+1	2.09E+1
GWP-b	kg CO2 eq	-2.28E+1	3.64E-4	-4.56E-4	-2.28E+1	1.83E-4	2.30E+1	1.24E-4	-4.97E-2	1.33E-1
GWP-luluc	kg CO2 eq	1.84E-2	2.12E-4	4.41E-5	1.87E-2	1.07E-4	1.75E-3	2.44E-6	-1.37E-2	6.82E-3
ODP	kg CFC11 eq	1.16E-6	1.38E-7	2.44E-9	1.30E-6	6.95E-8	2.45E-7	3.57E-9	-9.98E-7	6.18E-7
AP	mol H+ eq	1.08E-1	3.41E-3	4.36E-4	1.12E-1	1.72E-3	1.02E-2	8.51E-5	-5.97E-2	6.45E-2
EP-fw	kg P eq	5.14E-4	4.93E-6	2.43E-6	5.22E-4	2.48E-6	5.08E-5	1.12E-7	-3.04E-4	2.71E-4
EP-m	kg N eq	2.04E-2	1.22E-3	4.58E-5	2.16E-2	6.14E-4	3.05E-3	5.52E-5	-1.25E-2	1.29E-2
EP-T	mol N eq	2.30E-1	1.35E-2	5.48E-4	2.44E-1	6.77E-3	3.37E-2	3.45E-4	-1.42E-1	1.42E-1
POCP	kg NMVOC eq	1.00E-1	3.85E-3	1.85E-4	1.04E-1	1.94E-3	1.05E-2	1.30E-4	-5.89E-2	5.78E-2
ADP-mm	kg Sb eq	4.04E-4	1.55E-5	5.81E-6	4.26E-4	7.80E-6	3.94E-5	8.61E-8	-1.49E-4	3.24E-4
ADP-f	MJ	9.01E+2	9.20E+0	4.01E-1	9.10E+2	4.63E+0	3.12E+1	2.60E-1	-4.90E+2	4.56E+2
WDP	m3 depriv.	1.71E+1	2.82E-2	1.54E-2	1.71E+1	1.42E-2	5.86E-1	1.41E-3	-8.69E+0	9.04E+0
PM	disease inc.	1.25E-6	5.41E-8	2.68E-9	1.31E-6	2.72E-8	1.64E-7	1.79E-9	-7.40E-7	7.60E-7
IR	kBq U-235 eq	6.55E-1	4.02E-2	3.01E-4	6.96E-1	2.02E-2	9.71E-2	1.21E-3	-3.60E-1	4.54E-1
ETP-fw	CTUe	2.31E+2	7.47E+0	3.57E+0	2.42E+2	3.76E+0	3.47E+1	2.18E-1	-1.46E+2	1.35E+2
HTP-c	CTUh	1.66E-8	2.66E-10	1.82E-10	1.70E-8	1.34E-10	4.41E-9	6.43E-12	-1.07E-8	1.09E-8
HTP-nc	CTUh	2.45E-7	8.90E-9	4.63E-9	2.58E-7	4.48E-9	5.21E-8	1.41E-10	-1.38E-7	1.77E-7
SQP	Pt	1.96E+3	7.87E+0	6.62E-1	1.96E+3	3.96E+0	2.49E+1	6.68E-1	-1.63E+3	3.67E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.15E+2	1.32E-1	7.10E+0	3.23E+2	6.64E-2	1.51E+0	1.00E-2	-2.47E+2	7.69E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.15E+2	1.32E-1	7.10E+0	3.23E+2	6.64E-2	1.51E+0	1.00E-2	-2.47E+2	7.69E+1
PENRE	MJ	9.66E+2	9.76E+0	4.27E-1	9.76E+2	4.91E+0	3.32E+1	2.76E-1	-5.27E+2	4.88E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	9.66E+2	9.76E+0	4.27E-1	9.76E+2	4.91E+0	3.32E+1	2.76E-1	-5.27E+2	4.88E+2
PET	MJ	1.28E+3	9.90E+0	7.53E+0	1.30E+3	4.98E+0	3.47E+1	2.86E-1	-7.75E+2	5.64E+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	2.73E-1	1.04E-3	4.31E-4	2.75E-1	5.24E-4	1.78E-2	3.21E-4	-1.42E-1	1.52E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.75E-4	2.35E-5	8.07E-11	2.98E-4	1.18E-5	5.21E-5	3.15E-7	-2.29E-4	1.33E-4
NHWD	kg	2.04E+0	5.70E-1	3.12E-4	2.61E+0	2.87E-1	1.55E+0	1.15E+0	-1.25E+0	4.34E+0
RWD	kg	6.73E-4	6.25E-5	3.24E-11	7.35E-4	3.15E-5	1.24E-4	1.70E-6	-3.65E-4	5.28E-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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