Environmental Profile

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

Ecochain v3.5.80

Product:	3042393 - X-Stream PP Bend 90° BK 300 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	1.38E+1	3.47E-1	4.28E-2	1.41E+1	1.61E-1	5.32E+0	7.58E-2	-7.88E+0	1.18E+1
GWP-f	kg CO2 eq	1.37E+1	3.47E-1	4.32E-2	1.41E+1	1.61E-1	5.33E+0	7.58E-2	-7.85E+0	1.18E+1
GWP-b	kg CO2 eq	6.36E-2	2.11E-4	-4.56E-4	6.33E-2	9.77E-5	-6.44E-3	6.59E-5	-2.69E-2	3.02E-2
GWP-luluc	kg CO2 eq	4.07E-3	1.23E-4	4.41E-5	4.24E-3	5.69E-5	9.08E-4	1.31E-6	-1.53E-3	3.67E-3
ODP	kg CFC11 eq	3.95E-7	8.00E-8	2.44E-9	4.77E-7	3.71E-8	1.19E-7	1.90E-9	-3.88E-7	2.47E-7
AP	mol H+ eq	5.08E-2	1.98E-3	4.36E-4	5.32E-2	9.16E-4	5.04E-3	4.55E-5	-2.14E-2	3.78E-2
EP-fw	kg P eq	2.20E-4	2.86E-6	2.43E-6	2.25E-4	1.32E-6	2.62E-5	5.98E-8	-8.69E-5	1.66E-4
EP-m	kg N eq	8.31E-3	7.07E-4	4.58E-5	9.06E-3	3.28E-4	1.48E-3	2.94E-5	-3.82E-3	7.07E-3
EP-T	mol N eq	9.35E-2	7.79E-3	5.48E-4	1.02E-1	3.61E-3	1.63E-2	1.84E-4	-4.23E-2	7.96E-2
POCP	kg NMVOC eq	4.25E-2	2.23E-3	1.85E-4	4.49E-2	1.03E-3	5.13E-3	6.92E-5	-1.93E-2	3.18E-2
ADP-mm	kg Sb eq	2.07E-4	8.98E-6	5.81E-6	2.22E-4	4.16E-6	1.97E-5	4.60E-8	-5.17E-5	1.94E-4
ADP-f	MJ	4.66E+2	5.33E+0	4.01E-1	4.72E+2	2.47E+0	1.58E+1	1.39E-1	-2.41E+2	2.49E+2
WDP	m3 depriv.	9.22E+0	1.63E-2	1.54E-2	9.25E+0	7.58E-3	3.09E-1	7.66E-4	-4.24E+0	5.33E+0
PM	disease inc.	4.46E-7	3.13E-8	2.68E-9	4.80E-7	1.45E-8	8.24E-8	9.56E-10	-1.77E-7	4.02E-7
IR	kBq U-235 eq	2.73E-1	2.33E-2	3.01E-4	2.96E-1	1.08E-2	4.77E-2	6.43E-4	-1.16E-1	2.39E-1
ETP-fw	CTUe	1.03E+2	4.33E+0	3.57E+0	1.11E+2	2.01E+0	1.79E+1	1.16E-1	-3.11E+1	9.96E+1
HTP-c	CTUh	4.33E-9	1.54E-10	1.82E-10	4.67E-9	7.14E-11	2.25E-9	3.45E-12	-1.33E-9	5.67E-9
HTP-nc	CTUh	1.18E-7	5.16E-9	4.63E-9	1.27E-7	2.39E-9	2.71E-8	7.52E-11	-3.77E-8	1.19E-7
SQP	Pt	2.34E+1	4.56E+0	6.62E-1	2.86E+1	2.11E+0	1.26E+1	3.56E-1	-6.76E+0	3.69E+1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.75E+1	7.64E-2	7.10E+0	6.47E+1	3.54E-2	7.78E-1	5.35E-3	-3.05E+0	6.25E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.75E+1	7.64E-2	7.10E+0	6.47E+1	3.54E-2	7.78E-1	5.35E-3	-3.05E+0	6.25E+1
PENRE	MJ	5.00E+2	5.65E+0	4.27E-1	5.06E+2	2.62E+0	1.68E+1	1.47E-1	-2.60E+2	2.66E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.00E+2	5.65E+0	4.27E-1	5.06E+2	2.62E+0	1.68E+1	1.47E-1	-2.60E+2	2.66E+2
PET	MJ	5.58E+2	5.73E+0	7.53E+0	5.71E+2	2.66E+0	1.76E+1	1.53E-1	-2.63E+2	3.28E+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	1.44E-1	6.03E-4	4.31E-4	1.45E-1	2.79E-4	9.19E-3	1.71E-4	-6.26E-2	9.24E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	6.26E-5	1.36E-5	8.07E-11	7.62E-5	6.32E-6	2.59E-5	1.68E-7	-6.40E-5	4.45E-5
NHWD	kg	5.29E-1	3.30E-1	3.12E-4	8.60E-1	1.53E-1	8.03E-1	6.12E-1	-1.92E-1	2.24E+0
RWD	kg	2.57E-4	3.62E-5	3.24E-11	2.93E-4	1.68E-5	6.05E-5	9.07E-7	-1.05E-4	2.66E-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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