Environmental Profile

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

Ecochain v3.5.80

Product:	3071020 - X-Stream PP Bend 90° BK 250 S/S Nor
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	6.01E+0	2.63E-1	4.28E-2	6.32E+0	8.95E-2	1.05E+1	4.21E-2	-5.69E+0	1.12E+1
GWP-f	kg CO2 eq	1.16E+1	2.63E-1	4.32E-2	1.19E+1	8.94E-2	4.59E+0	4.21E-2	-6.25E+0	1.04E+1
GWP-b	kg CO2 eq	-5.60E+0	1.60E-4	-4.56E-4	-5.60E+0	5.43E-5	5.89E+0	3.66E-5	5.72E-1	8.57E-1
GWP-luluc	kg CO2 eq	9.72E-3	9.31E-5	4.41E-5	9.86E-3	3.16E-5	5.46E-4	7.34E-7	-7.61E-3	2.82E-3
ODP	kg CFC11 eq	5.06E-7	6.06E-8	2.44E-9	5.69E-7	2.06E-8	8.44E-8	1.06E-9	-4.46E-7	2.29E-7
AP	mol H+ eq	4.71E-2	1.50E-3	4.36E-4	4.90E-2	5.09E-4	3.57E-3	2.53E-5	-2.03E-2	3.28E-2
EP-fw	kg P eq	2.46E-4	2.16E-6	2.43E-6	2.51E-4	7.36E-7	1.61E-5	3.34E-8	-1.36E-4	1.32E-4
EP-m	kg N eq	8.91E-3	5.36E-4	4.58E-5	9.50E-3	1.82E-4	1.13E-3	1.64E-5	-4.32E-3	6.50E-3
EP-T	mol N eq	9.84E-2	5.91E-3	5.48E-4	1.05E-1	2.01E-3	1.24E-2	1.03E-4	-4.91E-2	7.02E-2
POCP	kg NMVOC eq	4.01E-2	1.69E-3	1.85E-4	4.20E-2	5.74E-4	3.80E-3	3.85E-5	-1.90E-2	2.74E-2
ADP-mm	kg Sb eq	1.66E-4	6.81E-6	5.81E-6	1.79E-4	2.31E-6	1.32E-5	2.56E-8	-4.60E-5	1.48E-4
ADP-f	MJ	3.37E+2	4.04E+0	4.01E-1	3.42E+2	1.37E+0	1.01E+1	7.73E-2	-1.66E+2	1.87E+2
WDP	m3 depriv.	7.15E+0	1.24E-2	1.54E-2	7.17E+0	4.21E-3	1.84E-1	4.50E-4	-3.50E+0	3.86E+0
PM	disease inc.	5.07E-7	2.37E-8	2.68E-9	5.33E-7	8.07E-9	5.57E-8	5.31E-10	-2.56E-7	3.42E-7
IR	kBq U-235 eq	2.70E-1	1.77E-2	3.01E-4	2.88E-1	6.00E-3	3.21E-2	3.57E-4	-1.42E-1	1.85E-1
ETP-fw	CTUe	1.80E+2	3.28E+0	3.57E+0	1.87E+2	1.11E+0	1.24E+1	6.49E-2	-8.51E+1	1.16E+2
HTP-c	CTUh	6.06E-9	1.17E-10	1.82E-10	6.36E-9	3.97E-11	1.66E-9	1.93E-12	-3.13E-9	4.93E-9
HTP-nc	CTUh	1.13E-7	3.91E-9	4.63E-9	1.21E-7	1.33E-9	1.85E-8	4.19E-11	-5.07E-8	9.06E-8
SQP	Pt	5.17E+2	3.45E+0	6.62E-1	5.21E+2	1.17E+0	7.91E+0	1.98E-1	-4.97E+2	3.35E+1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.16E+2	5.79E-2	7.10E+0	1.24E+2	1.97E-2	4.73E-1	2.96E-3	-7.90E+1	4.50E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.16E+2	5.79E-2	7.10E+0	1.24E+2	1.97E-2	4.73E-1	2.96E-3	-7.90E+1	4.50E+1
PENRE	MJ	3.62E+2	4.29E+0	4.27E-1	3.67E+2	1.46E+0	1.07E+1	8.20E-2	-1.79E+2	1.99E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.62E+2	4.29E+0	4.27E-1	3.67E+2	1.46E+0	1.07E+1	8.20E-2	-1.79E+2	1.99E+2
PET	MJ	4.78E+2	4.35E+0	7.53E+0	4.90E+2	1.48E+0	1.12E+1	8.50E-2	-2.58E+2	2.44E+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	1.33E-1	4.57E-4	4.31E-4	1.34E-1	1.55E-4	5.89E-3	9.50E-5	-6.47E-2	7.54E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	9.84E-5	1.03E-5	8.07E-11	1.09E-4	3.51E-6	1.79E-5	9.37E-8	-8.95E-5	4.07E-5
NHWD	kg	8.03E-1	2.50E-1	3.12E-4	1.05E+0	8.50E-2	5.76E-1	3.40E-1	-3.75E-1	1.68E+0
RWD	kg	2.71E-4	2.75E-5	3.24E-11	2.99E-4	9.33E-6	4.15E-5	5.04E-7	-1.41E-4	2.09E-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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