Environmental Profile

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

Ecochain v3.5.80

Product:	3071017 - X-Stream PP Bend 30° BK 300 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	1.17E+0	1.79E-1	5.06E-2	1.40E+0	2.72E-2	7.69E+0	1.28E-2	-2.55E+0	6.59E+0
GWP-f	kg CO2 eq	6.18E+0	1.79E-1	5.11E-2	6.41E+0	2.72E-2	2.44E+0	1.28E-2	-3.06E+0	5.82E+0
GWP-b	kg CO2 eq	-5.01E+0	1.08E-4	-5.40E-4	-5.01E+0	1.65E-5	5.26E+0	1.11E-5	5.20E-1	7.62E-1
GWP-luluc	kg CO2 eq	7.52E-3	6.32E-5	5.23E-5	7.64E-3	9.63E-6	1.91E-4	2.34E-7	-6.31E-3	1.53E-3
ODP	kg CFC11 eq	3.64E-7	4.12E-8	2.89E-9	4.08E-7	6.27E-9	3.66E-8	3.23E-10	-2.85E-7	1.66E-7
AP	mol H+ eq	2.70E-2	1.02E-3	5.16E-4	2.85E-2	1.55E-4	1.56E-3	7.77E-6	-1.12E-2	1.90E-2
EP-fw	kg P eq	1.56E-4	1.47E-6	2.88E-6	1.60E-4	2.24E-7	5.78E-6	1.05E-8	-9.36E-5	7.28E-5
EP-m	kg N eq	5.47E-3	3.64E-4	5.43E-5	5.89E-3	5.55E-5	5.28E-4	4.89E-6	-2.62E-3	3.86E-3
EP-T	mol N eq	6.03E-2	4.01E-3	6.49E-4	6.49E-2	6.11E-4	5.82E-3	3.14E-5	-3.02E-2	4.12E-2
POCP	kg NMVOC eq	2.28E-2	1.15E-3	2.20E-4	2.42E-2	1.75E-4	1.74E-3	1.18E-5	-1.07E-2	1.54E-2
ADP-mm	kg Sb eq	1.07E-4	4.62E-6	6.88E-6	1.18E-4	7.04E-7	5.39E-6	7.95E-9	-2.44E-5	1.00E-4
ADP-f	MJ	1.53E+2	2.74E+0	4.75E-1	1.56E+2	4.18E-1	3.84E+0	2.36E-2	-7.03E+1	9.04E+1
WDP	m3 depriv.	3.46E+0	8.41E-3	1.83E-2	3.48E+0	1.28E-3	6.31E-2	1.73E-4	-1.76E+0	1.79E+0
PM	disease inc.	3.22E-7	1.61E-8	3.18E-9	3.41E-7	2.46E-9	2.29E-8	1.62E-10	-1.71E-7	1.96E-7
IR	kBq U-235 eq	1.62E-1	1.20E-2	3.56E-4	1.75E-1	1.83E-3	1.31E-2	1.09E-4	-8.93E-2	1.00E-1
ETP-fw	CTUe	1.35E+2	2.23E+0	4.23E+0	1.42E+2	3.39E-1	5.25E+0	1.98E-2	-6.60E+1	8.12E+1
HTP-c	CTUh	4.37E-9	7.92E-11	2.16E-10	4.66E-9	1.21E-11	7.67E-10	6.17E-13	-2.37E-9	3.07E-9
HTP-nc	CTUh	7.06E-8	2.65E-9	5.48E-9	7.87E-8	4.04E-10	7.76E-9	1.30E-11	-3.33E-8	5.36E-8
SQP	Pt	4.56E+2	2.35E+0	7.84E-1	4.59E+2	3.57E-1	2.95E+0	6.03E-2	-4.41E+2	2.13E+1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	9.35E+1	3.93E-2	8.41E+0	1.02E+2	5.99E-3	1.69E-1	8.84E-4	-6.96E+1	3.26E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	9.35E+1	3.93E-2	8.41E+0	1.02E+2	5.99E-3	1.69E-1	8.84E-4	-6.96E+1	3.26E+1
PENRE	MJ	1.64E+2	2.91E+0	5.05E-1	1.68E+2	4.44E-1	4.09E+0	2.51E-2	-7.60E+1	9.64E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.64E+2	2.91E+0	5.05E-1	1.68E+2	4.44E-1	4.09E+0	2.51E-2	-7.60E+1	9.64E+1
PET	MJ	2.58E+2	2.95E+0	8.91E+0	2.70E+2	4.50E-1	4.26E+0	2.59E-2	-1.46E+2	1.29E+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	7.42E-2	3.10E-4	5.11E-4	7.50E-2	4.73E-5	2.27E-3	2.89E-5	-3.75E-2	3.98E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	7.39E-5	7.01E-6	9.55E-11	8.09E-5	1.07E-6	7.55E-6	2.89E-8	-6.01E-5	2.94E-5
NHWD	kg	5.87E-1	1.70E-1	3.69E-4	7.58E-1	2.59E-2	2.56E-1	1.04E-1	-2.73E-1	8.70E-1
RWD	kg	1.72E-4	1.86E-5	3.83E-11	1.90E-4	2.84E-6	1.74E-5	1.53E-7	-9.27E-5	1.18E-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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