Environmental Profile

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

Ecochain v3.5.80

Product:	3020802 - X-Stream PP Bend 90° BK 600 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	4.18E+1	1.89E+0	4.28E-2	4.37E+1	9.56E-1	6.91E+1	4.50E-1	-4.96E+1	6.46E+1
GWP-f	kg CO2 eq	8.24E+1	1.89E+0	4.32E-2	8.43E+1	9.55E-1	2.79E+1	4.50E-1	-4.94E+1	6.42E+1
GWP-b	kg CO2 eq	-4.06E+1	1.15E-3	-4.56E-4	-4.06E+1	5.80E-4	4.11E+1	3.91E-4	-1.57E-1	3.61E-1
GWP-luluc	kg CO2 eq	4.13E-2	6.68E-4	4.41E-5	4.20E-2	3.38E-4	5.47E-3	7.74E-6	-2.84E-2	1.94E-2
ODP	kg CFC11 eq	2.94E-6	4.35E-7	2.44E-9	3.38E-6	2.20E-7	7.42E-7	1.13E-8	-2.65E-6	1.70E-6
AP	mol H+ eq	3.10E-1	1.07E-2	4.36E-4	3.21E-1	5.44E-3	3.10E-2	2.70E-4	-1.61E-1	1.96E-1
EP-fw	kg P eq	1.39E-3	1.55E-5	2.43E-6	1.41E-3	7.86E-6	1.58E-4	3.54E-7	-7.65E-4	8.09E-4
EP-m	kg N eq	5.56E-2	3.85E-3	4.58E-5	5.95E-2	1.95E-3	9.16E-3	1.75E-4	-3.19E-2	3.88E-2
EP-T	mol N eq	6.26E-1	4.24E-2	5.48E-4	6.69E-1	2.14E-2	1.01E-1	1.09E-3	-3.60E-1	4.32E-1
POCP	kg NMVOC eq	2.78E-1	1.21E-2	1.85E-4	2.90E-1	6.13E-3	3.16E-2	4.11E-4	-1.54E-1	1.74E-1
ADP-mm	kg Sb eq	1.17E-3	4.88E-5	5.81E-6	1.23E-3	2.47E-5	1.21E-4	2.73E-7	-3.98E-4	9.75E-4
ADP-f	MJ	2.75E+3	2.90E+1	4.01E-1	2.78E+3	1.47E+1	9.63E+1	8.25E-1	-1.48E+3	1.41E+3
WDP	m3 depriv.	5.27E+1	8.89E-2	1.54E-2	5.28E+1	4.50E-2	1.84E+0	4.45E-3	-2.64E+1	2.83E+1
PM	disease inc.	3.27E-6	1.70E-7	2.68E-9	3.44E-6	8.62E-8	5.04E-7	5.67E-9	-1.78E-6	2.26E-6
IR	kBq U-235 eq	1.81E+0	1.27E-1	3.01E-4	1.94E+0	6.41E-2	2.96E-1	3.82E-3	-9.36E-1	1.36E+0
ETP-fw	CTUe	6.03E+2	2.35E+1	3.57E+0	6.30E+2	1.19E+1	1.08E+2	6.90E-1	-3.39E+2	4.11E+2
HTP-c	CTUh	3.80E-8	8.37E-10	1.82E-10	3.90E-8	4.23E-10	1.35E-8	2.04E-11	-2.24E-8	3.05E-8
HTP-nc	CTUh	6.63E-7	2.80E-8	4.63E-9	6.96E-7	1.42E-8	1.61E-7	4.46E-10	-3.41E-7	5.30E-7
SQP	Pt	3.54E+3	2.48E+1	6.62E-1	3.57E+3	1.25E+1	7.68E+1	2.11E+0	-2.93E+3	7.32E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	6.15E+2	4.15E-1	7.10E+0	6.23E+2	2.10E-1	4.69E+0	3.18E-2	-4.50E+2	1.77E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	6.15E+2	4.15E-1	7.10E+0	6.23E+2	2.10E-1	4.69E+0	3.18E-2	-4.50E+2	1.77E+2
PENRE	MJ	2.96E+3	3.07E+1	4.27E-1	2.99E+3	1.56E+1	1.03E+2	8.75E-1	-1.59E+3	1.51E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.96E+3	3.07E+1	4.27E-1	2.99E+3	1.56E+1	1.03E+2	8.75E-1	-1.59E+3	1.51E+3
PET	MJ	3.57E+3	3.12E+1	7.53E+0	3.61E+3	1.58E+1	1.07E+2	9.07E-1	-2.05E+3	1.69E+3
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	8.21E-1	3.28E-3	4.31E-4	8.25E-1	1.66E-3	5.51E-2	1.02E-3	-4.13E-1	4.69E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	6.41E-4	7.41E-5	8.07E-11	7.15E-4	3.75E-5	1.59E-4	9.96E-7	-5.54E-4	3.58E-4
NHWD	kg	4.89E+0	1.80E+0	3.12E-4	6.68E+0	9.08E-1	4.75E+0	3.63E+0	-2.72E+0	1.33E+1
RWD	kg	1.81E-3	1.97E-4	3.24E-11	2.00E-3	9.97E-5	3.77E-4	5.38E-6	-9.16E-4	1.57E-3
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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