Environmental Profile

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

Ecochain v3.5.80

Product:	3015153 - X-Stream PP Bend 15° 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	5.67E+0	1.27E+0	1.14E-1	7.05E+0	4.89E-1	5.56E+1	2.30E-1	-2.79E+1	3.54E+1
GWP-f	kg CO2 eq	4.65E+1	1.27E+0	1.15E-1	4.78E+1	4.88E-1	1.44E+1	2.30E-1	-2.79E+1	3.51E+1
GWP-b	kg CO2 eq	-4.08E+1	7.69E-4	-1.21E-3	-4.08E+1	2.97E-4	4.12E+1	2.00E-4	-8.10E-2	2.68E-1
GWP-luluc	kg CO2 eq	3.21E-2	4.48E-4	1.17E-4	3.27E-2	1.73E-4	2.85E-3	4.00E-6	-2.41E-2	1.16E-2
ODP	kg CFC11 eq	2.13E-6	2.92E-7	6.49E-9	2.43E-6	1.13E-7	4.02E-7	5.78E-9	-1.74E-6	1.21E-6
AP	mol H+ eq	1.82E-1	7.21E-3	1.16E-3	1.90E-1	2.78E-3	1.67E-2	1.38E-4	-1.00E-1	1.10E-1
EP-fw	kg P eq	8.72E-4	1.04E-5	6.47E-6	8.88E-4	4.02E-6	8.26E-5	1.82E-7	-5.21E-4	4.54E-4
EP-m	kg N eq	3.45E-2	2.58E-3	1.22E-4	3.72E-2	9.95E-4	5.00E-3	8.92E-5	-2.12E-2	2.21E-2
EP-T	mol N eq	3.88E-1	2.84E-2	1.46E-3	4.18E-1	1.10E-2	5.52E-2	5.60E-4	-2.41E-1	2.44E-1
POCP	kg NMVOC eq	1.68E-1	8.13E-3	4.93E-4	1.77E-1	3.14E-3	1.72E-2	2.10E-4	-9.93E-2	9.78E-2
ADP-mm	kg Sb eq	6.76E-4	3.28E-5	1.55E-5	7.24E-4	1.26E-5	6.43E-5	1.40E-7	-2.51E-4	5.50E-4
ADP-f	MJ	1.48E+3	1.94E+1	1.07E+0	1.50E+3	7.50E+0	5.09E+1	4.22E-1	-8.01E+2	7.55E+2
WDP	m3 depriv.	2.79E+1	5.97E-2	4.10E-2	2.80E+1	2.30E-2	9.51E-1	2.40E-3	-1.43E+1	1.46E+1
PM	disease inc.	2.14E-6	1.14E-7	7.14E-9	2.26E-6	4.41E-8	2.68E-7	2.90E-9	-1.27E-6	1.31E-6
IR	kBq U-235 eq	1.13E+0	8.50E-2	8.00E-4	1.21E+0	3.28E-2	1.59E-1	1.95E-3	-6.13E-1	7.94E-1
ETP-fw	CTUe	4.05E+2	1.58E+1	9.50E+0	4.30E+2	6.09E+0	5.66E+1	3.54E-1	-2.53E+2	2.40E+2
HTP-c	CTUh	2.93E-8	5.62E-10	4.85E-10	3.04E-8	2.17E-10	7.27E-9	1.05E-11	-1.87E-8	1.91E-8
HTP-nc	CTUh	4.22E-7	1.88E-8	1.23E-8	4.53E-7	7.26E-9	8.50E-8	2.29E-10	-2.36E-7	3.10E-7
SQP	Pt	3.50E+3	1.66E+1	1.76E+0	3.51E+3	6.41E+0	4.05E+1	1.08E+0	-2.91E+3	6.53E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.71E+2	2.79E-1	1.89E+1	5.90E+2	1.08E-1	2.45E+0	1.62E-2	-4.42E+2	1.51E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.71E+2	2.79E-1	1.89E+1	5.90E+2	1.08E-1	2.45E+0	1.62E-2	-4.42E+2	1.51E+2
PENRE	MJ	1.58E+3	2.06E+1	1.13E+0	1.61E+3	7.96E+0	5.42E+1	4.48E-1	-8.62E+2	8.07E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.58E+3	2.06E+1	1.13E+0	1.61E+3	7.96E+0	5.42E+1	4.48E-1	-8.62E+2	8.07E+2
PET	MJ	2.16E+3	2.09E+1	2.00E+1	2.20E+3	8.07E+0	5.67E+1	4.64E-1	-1.30E+3	9.58E+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	4.50E-1	2.20E-3	1.15E-3	4.54E-1	8.48E-4	2.89E-2	5.19E-4	-2.35E-1	2.49E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.86E-4	4.97E-5	2.15E-10	5.36E-4	1.92E-5	8.53E-5	5.11E-7	-3.94E-4	2.46E-4
NHWD	kg	3.54E+0	1.20E+0	8.28E-4	4.74E+0	4.65E-1	2.52E+0	1.86E+0	-2.18E+0	7.41E+0
RWD	kg	1.18E-3	1.32E-4	8.61E-11	1.31E-3	5.10E-5	2.04E-4	2.75E-6	-6.25E-4	9.46E-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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