Environmental Profile

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

Ecochain v3.5.80

Product:	3015156 - X-Stream PP Bend 30° 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	2.96E+0	1.74E-1	1.15E-2	3.15E+0	2.70E-2	1.11E+0	1.27E-2	-1.46E+0	2.84E+0
GWP-f	kg CO2 eq	2.94E+0	1.73E-1	1.16E-2	3.12E+0	2.70E-2	1.11E+0	1.27E-2	-1.45E+0	2.83E+0
GWP-b	kg CO2 eq	2.22E-2	1.05E-4	-1.22E-4	2.22E-2	1.64E-5	-1.08E-3	1.10E-5	-4.75E-3	1.64E-2
GWP-luluc	kg CO2 eq	1.08E-3	6.14E-5	1.18E-5	1.15E-3	9.56E-6	1.54E-4	2.32E-7	-2.86E-4	1.03E-3
ODP	kg CFC11 eq	1.50E-7	4.00E-8	6.55E-10	1.91E-7	6.22E-9	2.06E-8	3.20E-10	-1.02E-7	1.15E-7
AP	mol H+ eq	1.18E-2	9.88E-4	1.17E-4	1.29E-2	1.54E-4	8.81E-4	7.71E-6	-3.75E-3	1.02E-2
EP-fw	kg P eq	5.46E-5	1.43E-6	6.53E-7	5.67E-5	2.22E-7	4.46E-6	1.04E-8	-1.62E-5	4.52E-5
EP-m	kg N eq	1.89E-3	3.54E-4	1.23E-5	2.26E-3	5.50E-5	2.63E-4	4.86E-6	-6.82E-4	1.90E-3
EP-T	mol N eq	2.18E-2	3.90E-3	1.47E-4	2.59E-2	6.07E-4	2.89E-3	3.11E-5	-7.53E-3	2.19E-2
POCP	kg NMVOC eq	9.13E-3	1.11E-3	4.98E-5	1.03E-2	1.73E-4	9.05E-4	1.17E-5	-3.36E-3	8.03E-3
ADP-mm	kg Sb eq	7.79E-5	4.49E-6	1.56E-6	8.40E-5	6.99E-7	3.37E-6	7.90E-9	-9.44E-6	7.86E-5
ADP-f	MJ	8.89E+1	2.66E+0	1.08E-1	9.17E+1	4.15E-1	2.70E+0	2.34E-2	-4.24E+1	5.25E+1
WDP	m3 depriv.	1.78E+0	8.17E-3	4.14E-3	1.79E+0	1.27E-3	5.25E-2	1.72E-4	-7.66E-1	1.08E+0
PM	disease inc.	1.05E-7	1.57E-8	7.20E-10	1.22E-7	2.44E-9	1.42E-8	1.61E-10	-3.00E-8	1.08E-7
IR	kBq U-235 eq	6.78E-2	1.16E-2	8.07E-5	7.95E-2	1.81E-3	8.16E-3	1.08E-4	-2.19E-2	6.77E-2
ETP-fw	CTUe	3.36E+1	2.16E+0	9.58E-1	3.67E+1	3.37E-1	3.09E+0	1.96E-2	-5.92E+0	3.42E+1
HTP-c	CTUh	1.45E-9	7.70E-11	4.89E-11	1.57E-9	1.20E-11	4.31E-10	6.13E-13	-2.51E-10	1.76E-9
HTP-nc	CTUh	3.61E-8	2.58E-9	1.24E-9	3.99E-8	4.01E-10	4.86E-9	1.29E-11	-7.16E-9	3.81E-8
SQP	Pt	8.41E+0	2.28E+0	1.78E-1	1.09E+1	3.55E-1	2.16E+0	5.99E-2	-1.29E+0	1.21E+1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.68E+1	3.82E-2	1.91E+0	2.87E+1	5.95E-3	1.32E-1	8.77E-4	-5.53E-1	2.83E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.68E+1	3.82E-2	1.91E+0	2.87E+1	5.95E-3	1.32E-1	8.77E-4	-5.53E-1	2.83E+1
PENRE	MJ	9.54E+1	2.83E+0	1.14E-1	9.84E+1	4.40E-1	2.87E+0	2.49E-2	-4.57E+1	5.60E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	9.54E+1	2.83E+0	1.14E-1	9.84E+1	4.40E-1	2.87E+0	2.49E-2	-4.57E+1	5.60E+1
PET	MJ	1.22E+2	2.87E+0	2.02E+0	1.27E+2	4.46E-1	3.01E+0	2.57E-2	-4.63E+1	8.43E+1
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	3.05E-2	3.01E-4	1.16E-4	3.09E-2	4.69E-5	1.59E-3	2.86E-5	-1.10E-2	2.15E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.20E-5	6.81E-6	2.17E-11	2.88E-5	1.06E-6	4.49E-6	2.87E-8	-1.40E-5	2.04E-5
NHWD	kg	1.65E-1	1.65E-1	8.36E-5	3.30E-1	2.57E-2	1.46E-1	1.03E-1	-3.58E-2	5.69E-1
RWD	kg	7.14E-5	1.81E-5	8.69E-12	8.95E-5	2.82E-6	1.04E-5	1.52E-7	-2.01E-5	8.28E-5
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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