

# Environmental Profile

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

Ecochain v3.5.64



Product: 3079976 - AS+ Bend DN 90 30°  
 Unit: 1 piece  
 Manufacturer: Wavin Germany Twist  
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 49767 Twist  
 Germany  
 Contact: <https://www.wavin.com/en-en>

LCA standard: EN15804+A2 (2019)  
 Standard database: Worldwide - Ecoinvent v 3.6 Cut-Off  
 Externally verified: Yes  
 Issue date: 08-04-2022  
 End of validity: 08-04-2027  
 Verifier: Harry van Ewijk - SGS Search



This LCA was evaluated according to EN15804+A2. It was concluded that the LCA complies with this standard.

Wavin AS+ is a mineral-reinforced polypropylene (PP) low noise soil and waste solution. The AS+ has a unique material composition for optimal noise reduction.

The LCA background information and project dossier have been registered in the online Ecochain application in the account Wavin Germany Twist (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 Climate Change [kg CO2 eq]; **GWP-f** = EF Climate change - Fossil [kg CO2 eq]; **GWP-b** = EF Climate Change - Biogenic [kg CO2 eq]; **GWP-luluc** = EF 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

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# Results

Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	5.81E-1	2.08E-2	2.83E-2	6.30E-1	8.87E-3	3.10E-1	1.90E-3	-3.47E-1	6.05E-1
GWP-f	kg CO2 eq	5.82E-1	2.08E-2	2.30E-2	6.26E-1	8.86E-3	2.96E-1	1.89E-3	-3.76E-1	5.57E-1
GWP-b	kg CO2 eq	-1.29E-3	9.60E-6	3.45E-3	2.17E-3	5.38E-6	1.44E-2	3.61E-6	2.95E-2	4.61E-2
GWP-luluc	kg CO2 eq	5.25E-4	7.62E-6	1.77E-3	2.30E-3	3.14E-6	7.25E-5	7.41E-8	-2.92E-4	2.09E-3
ODP	kg CFC11 eq	5.03E-8	4.59E-9	2.63E-9	5.75E-8	2.04E-9	1.72E-8	1.07E-10	-1.30E-8	6.39E-8
AP	mol H+ eq	2.61E-3	1.21E-4	1.11E-4	2.84E-3	5.05E-5	4.13E-4	2.56E-6	-1.25E-3	2.06E-3
EP-fw	kg P eq	1.61E-5	2.10E-7	3.51E-7	1.67E-5	7.29E-8	3.62E-6	3.37E-9	-7.08E-6	1.33E-5
EP-m	kg N eq	4.93E-4	4.25E-5	2.91E-5	5.64E-4	1.81E-5	1.08E-4	1.63E-6	-2.23E-4	4.69E-4
EP-T	mol N eq	5.55E-3	4.69E-4	3.07E-4	6.33E-3	1.99E-4	1.20E-3	1.04E-5	-2.49E-3	5.24E-3
POCP	kg NMVOC eq	1.92E-3	1.34E-4	8.81E-5	2.14E-3	5.69E-5	3.67E-4	3.35E-6	-1.08E-3	1.49E-3
ADP-mm	kg Sb eq	5.61E-5	5.27E-7	4.74E-7	5.71E-5	2.29E-7	1.44E-6	2.60E-9	-3.44E-6	5.54E-5
ADP-f	MJ	1.25E+1	3.14E-1	2.90E-1	1.31E+1	1.36E-1	1.27E+0	7.84E-3	-1.23E+1	2.27E+0
WDP	m3 depriv.	5.64E-1	1.12E-3	1.72E-1	7.38E-1	4.18E-4	2.89E-2	4.64E-5	-2.63E-1	5.05E-1
PM	disease inc.	2.41E-8	1.87E-9	1.50E-9	2.74E-8	8.00E-10	6.59E-9	5.40E-11	-1.23E-8	2.26E-8
IR	kBq U-235 eq	2.37E-2	1.31E-3	3.88E-4	2.54E-2	5.95E-4	4.47E-3	3.60E-5	-7.73E-3	2.28E-2
ETP-fw	CTUe	1.35E+2	2.80E-1	4.42E-1	1.36E+2	1.10E-1	3.03E+0	6.70E-3	-3.87E+0	1.35E+2
HTP-c	CTUh	2.36E-10	9.07E-12	1.90E-11	2.64E-10	3.93E-12	1.68E-10	1.94E-13	-8.25E-11	3.54E-10
HTP-nc	CTUh	6.40E-8	3.06E-10	4.66E-10	6.47E-8	1.32E-10	2.20E-9	3.96E-12	-2.48E-9	6.46E-8
SQP	Pt	2.98E+0	2.72E-1	2.82E-2	3.28E+0	1.16E-1	8.78E-1	2.01E-2	-5.86E+0	-1.57E+0
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	6.81E-1	3.93E-3	9.54E-1	1.64E+0	1.95E-3	1.12E-1	2.92E-4	-1.16E+0	5.93E-1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	6.81E-1	3.93E-3	9.54E-1	1.64E+0	1.95E-3	1.12E-1	2.92E-4	-1.16E+0	5.93E-1
PENRE	MJ	1.34E+1	3.33E-1	3.16E-1	1.40E+1	1.44E-1	1.35E+0	8.32E-3	-1.32E+1	2.36E+0
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.34E+1	3.33E-1	3.16E-1	1.40E+1	1.44E-1	1.35E+0	8.32E-3	-1.32E+1	2.36E+0
PET	MJ	1.41E+1	3.37E-1	1.27E+0	1.57E+1	1.46E-1	1.46E+0	8.61E-3	-1.43E+1	2.95E+0
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	1.29E-2	3.82E-5	4.06E-3	1.70E-2	1.54E-5	9.13E-4	9.62E-6	-4.42E-3	1.35E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	6.37E-6	7.95E-7	3.57E-7	7.53E-6	3.48E-7	2.80E-6	9.51E-9	-2.46E-6	8.22E-6
NHWD	kg	5.21E-2	1.99E-2	1.45E-3	7.35E-2	8.43E-3	6.13E-2	3.45E-2	-1.20E-2	1.66E-1
RWD	kg	2.61E-5	2.06E-6	5.11E-7	2.87E-5	9.25E-7	5.65E-6	5.10E-8	-7.02E-6	2.83E-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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