

# Environmental Profile

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

Ecochain v3.5.64



Product: 3079967 - AS+ Bend DN 50 45°  
 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	2.49E-1	8.47E-3	1.08E-2	2.68E-1	3.45E-3	1.35E-1	7.64E-4	-1.28E-1	2.80E-1
GWP-f	kg CO2 eq	2.49E-1	8.46E-3	8.79E-3	2.67E-1	3.45E-3	1.22E-1	7.63E-4	-1.59E-1	2.34E-1
GWP-b	kg CO2 eq	-3.42E-4	3.91E-6	1.32E-3	9.78E-4	2.10E-6	1.38E-2	1.41E-6	3.03E-2	4.51E-2
GWP-luluc	kg CO2 eq	3.14E-4	3.10E-6	6.75E-4	9.92E-4	1.22E-6	2.85E-5	2.92E-8	-2.45E-4	7.77E-4
ODP	kg CFC11 eq	2.30E-8	1.87E-9	1.00E-9	2.59E-8	7.95E-10	6.88E-9	4.21E-11	-6.70E-9	2.69E-8
AP	mol H+ eq	1.15E-3	4.91E-5	4.23E-5	1.24E-3	1.97E-5	1.69E-4	1.01E-6	-5.74E-4	8.52E-4
EP-fw	kg P eq	7.66E-6	8.54E-8	1.34E-7	7.88E-6	2.84E-8	1.41E-6	1.33E-9	-4.39E-6	4.93E-6
EP-m	kg N eq	2.29E-4	1.73E-5	1.11E-5	2.57E-4	7.03E-6	4.55E-5	6.58E-7	-1.08E-4	2.03E-4
EP-T	mol N eq	2.52E-3	1.91E-4	1.17E-4	2.83E-3	7.75E-5	5.02E-4	4.08E-6	-1.21E-3	2.21E-3
POCP	kg NMVOC eq	8.40E-4	5.45E-5	3.36E-5	9.28E-4	2.22E-5	1.54E-4	1.32E-6	-4.80E-4	6.25E-4
ADP-mm	kg Sb eq	2.40E-5	2.14E-7	1.81E-7	2.44E-5	8.93E-8	5.96E-7	1.02E-9	-1.51E-6	2.36E-5
ADP-f	MJ	5.29E+0	1.28E-1	1.11E-1	5.53E+0	5.30E-2	5.06E-1	3.07E-3	-4.97E+0	1.13E+0
WDP	m3 depriv.	2.29E-1	4.57E-4	6.57E-2	2.95E-1	1.63E-4	1.13E-2	1.88E-5	-1.29E-1	1.77E-1
PM	disease inc.	1.12E-8	7.60E-10	5.74E-10	1.25E-8	3.12E-10	2.68E-9	2.11E-11	-6.56E-9	8.99E-9
IR	kBq U-235 eq	1.05E-2	5.35E-4	1.48E-4	1.12E-2	2.32E-4	1.80E-3	1.41E-5	-4.18E-3	9.03E-3
ETP-fw	CTUe	5.41E+1	1.14E-1	1.69E-1	5.43E+1	4.30E-2	1.20E+0	2.68E-3	-2.93E+0	5.27E+1
HTP-c	CTUh	1.04E-10	3.69E-12	7.23E-12	1.15E-10	1.53E-12	6.82E-11	7.66E-14	-4.31E-11	1.42E-10
HTP-nc	CTUh	2.48E-8	1.25E-10	1.78E-10	2.51E-8	5.13E-11	8.82E-10	1.57E-12	-1.34E-9	2.47E-8
SQP	Pt	1.95E+0	1.11E-1	1.08E-2	2.07E+0	4.53E-2	3.49E-1	7.87E-3	-5.66E+0	-3.19E+0
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	4.29E-1	1.60E-3	3.64E-1	7.94E-1	7.60E-4	4.36E-2	1.14E-4	-1.06E+0	-2.25E-1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	4.29E-1	1.60E-3	3.64E-1	7.94E-1	7.60E-4	4.36E-2	1.14E-4	-1.06E+0	-2.25E-1
PENRE	MJ	5.67E+0	1.36E-1	1.21E-1	5.92E+0	5.62E-2	5.39E-1	3.26E-3	-5.34E+0	1.18E+0
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.67E+0	1.36E-1	1.21E-1	5.92E+0	5.62E-2	5.39E-1	3.26E-3	-5.34E+0	1.18E+0
PET	MJ	6.10E+0	1.37E-1	4.85E-1	6.72E+0	5.70E-2	5.83E-1	3.37E-3	-6.40E+0	9.58E-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	5.32E-3	1.55E-5	1.55E-3	6.89E-3	5.99E-6	3.64E-4	3.77E-6	-2.42E-3	4.84E-3

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.93E-6	3.23E-7	1.36E-7	3.39E-6	1.35E-7	1.13E-6	3.73E-9	-1.25E-6	3.41E-6
NHWD	kg	2.41E-2	8.10E-3	5.55E-4	3.28E-2	3.28E-3	2.45E-2	1.35E-2	-6.16E-3	6.79E-2
RWD	kg	1.16E-5	8.38E-7	1.95E-7	1.26E-5	3.60E-7	2.29E-6	2.00E-8	-3.86E-6	1.14E-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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