

# Environmental Profile

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

Ecochain v3.5.64



Product: 3080011 - AS+ Double Branch DN 90x90x90 87° IR  
 Unit: 1 piece  
 Manufacturer: Wavin Germany Twist  
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 49767 Twist  
 Germany  
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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	1.56E+0	5.41E-2	7.14E-2	1.69E+0	2.24E-2	8.48E-1	4.83E-3	-8.43E-1	1.72E+0
GWP-f	kg CO2 eq	1.56E+0	5.41E-2	5.82E-2	1.67E+0	2.24E-2	7.75E-1	4.83E-3	-1.00E+0	1.48E+0
GWP-b	kg CO2 eq	-2.47E-3	2.50E-5	8.72E-3	6.27E-3	1.36E-5	7.32E-2	9.16E-6	1.59E-1	2.38E-1
GWP-luluc	kg CO2 eq	1.81E-3	1.98E-5	4.47E-3	6.30E-3	7.92E-6	1.85E-4	1.88E-7	-1.32E-3	5.17E-3
ODP	kg CFC11 eq	1.41E-7	1.19E-8	6.64E-9	1.60E-7	5.16E-9	4.46E-8	2.72E-10	-3.99E-8	1.70E-7
AP	mol H+ eq	7.09E-3	3.14E-4	2.80E-4	7.68E-3	1.27E-4	1.08E-3	6.50E-6	-3.54E-3	5.36E-3
EP-fw	kg P eq	4.65E-5	5.46E-7	8.86E-7	4.80E-5	1.84E-7	9.21E-6	8.54E-9	-2.51E-5	3.22E-5
EP-m	kg N eq	1.40E-3	1.11E-4	7.35E-5	1.59E-3	4.56E-5	2.89E-4	4.21E-6	-6.55E-4	1.27E-3
EP-T	mol N eq	1.55E-2	1.22E-3	7.77E-4	1.75E-2	5.03E-4	3.19E-3	2.64E-5	-7.35E-3	1.39E-2
POCP	kg NMVOC eq	5.22E-3	3.48E-4	2.23E-4	5.79E-3	1.44E-4	9.77E-4	8.51E-6	-2.99E-3	3.93E-3
ADP-mm	kg Sb eq	1.50E-4	1.37E-6	1.20E-6	1.52E-4	5.79E-7	3.80E-6	6.60E-9	-9.50E-6	1.47E-4
ADP-f	MJ	3.32E+1	8.16E-1	7.34E-1	3.47E+1	3.44E-1	3.27E+0	1.99E-2	-3.17E+1	6.62E+0
WDP	m3 depriv.	1.46E+0	2.92E-3	4.35E-1	1.90E+0	1.05E-3	7.37E-2	1.16E-4	-7.81E-1	1.19E+0
PM	disease inc.	6.83E-8	4.86E-9	3.80E-9	7.69E-8	2.02E-9	1.72E-8	1.37E-10	-3.89E-8	5.74E-8
IR	kBq U-235 eq	6.51E-2	3.42E-3	9.79E-4	6.95E-2	1.50E-3	1.16E-2	9.15E-5	-2.47E-2	5.79E-2
ETP-fw	CTUe	3.52E+2	7.27E-1	1.12E+0	3.54E+2	2.79E-1	7.83E+0	1.72E-2	-1.61E+1	3.46E+2
HTP-c	CTUh	6.44E-10	2.36E-11	4.79E-11	7.15E-10	9.93E-12	4.35E-10	4.91E-13	-2.57E-10	9.04E-10
HTP-nc	CTUh	1.63E-7	7.96E-10	1.18E-9	1.65E-7	3.33E-10	5.68E-9	1.01E-11	-7.91E-9	1.63E-7
SQP	Pt	1.10E+1	7.08E-1	7.12E-2	1.18E+1	2.94E-1	2.25E+0	5.10E-2	-2.99E+1	-1.55E+1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.44E+0	1.02E-2	2.41E+0	4.86E+0	4.93E-3	2.86E-1	7.43E-4	-5.66E+0	-5.11E-1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.44E+0	1.02E-2	2.41E+0	4.86E+0	4.93E-3	2.86E-1	7.43E-4	-5.66E+0	-5.11E-1
PENRE	MJ	3.55E+1	8.66E-1	7.99E-1	3.72E+1	3.65E-1	3.48E+0	2.11E-2	-3.41E+1	6.94E+0
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.55E+1	8.66E-1	7.99E-1	3.72E+1	3.65E-1	3.48E+0	2.11E-2	-3.41E+1	6.94E+0
PET	MJ	3.80E+1	8.76E-1	3.21E+0	4.21E+1	3.70E-1	3.76E+0	2.18E-2	-3.98E+1	6.43E+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	3.39E-2	9.94E-5	1.03E-2	4.42E-2	3.89E-5	2.36E-3	2.44E-5	-1.43E-2	3.24E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.79E-5	2.07E-6	9.01E-7	2.09E-5	8.78E-7	7.29E-6	2.41E-8	-7.45E-6	2.16E-5
NHWD	kg	1.47E-1	5.17E-2	3.67E-3	2.03E-1	2.13E-2	1.58E-1	8.76E-2	-3.69E-2	4.33E-1
RWD	kg	7.19E-5	5.36E-6	1.29E-6	7.85E-5	2.34E-6	1.47E-5	1.29E-7	-2.27E-5	7.30E-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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