

Result summary

Traffic Sign recycled HDPE (incl. return scenario)

Climate Signs

Calculation number: EPD-NIBE-20220711-28747

Generation on: 09-11-2022

Issue date: 09-11-2022

Valid until: 09-11-2027

Status: verified

R<THiNK

1 Traffic Sign recycled HDPE (incl. return scenario)

1.1 COMPANY INFORMATION / DECLARATION OWNER

Manufacturer: Climate Signs

Production Location: Climate Signs

Address: Bramenberg 22, 3755 BZEemnes

E-mail: info@climatesigns.nl

Website: www.climatesigns.nl

1.2 EPD INFORMATION

Calculation number: EPD-NIBE-20220711-28747

Date of issue: 09-11-2022

End of validity: 09-11-2027

Version NIBE's EPD Application: v2.0

Version database: v3.11 (2022-07-18)

PCR: NMD Determination method Environmental performance Construction works v1.1
March 2022

1.3 VERIFICATION OF THE DECLARATION

CEN standard EN 15804:2012 serves as the core PCR.

Independent verification of the declaration, according to EN ISO 14025:2010.

Internal External

Deze LCA voldoet aan de methodische eisen en datacollectie volgens de NMD Bepalingsmethode versie 1.1 maart 2022, Daardoor wordt ook voldaan aan het gestelde in ISO 14040/44 en EN 15804.

De resultaten van de LCA zijn een eigenverklaring van de producent en blijven daarmee de verantwoordelijkheid van de producent.



Third party verifier: Anne Kees Jeeninga, Advieslab

1.4 DECLARED UNIT

1 Traffic sign

Traffic Sign including finishing layers (retroreflective foil etc) with a reference service life of 12 years. The traffic sign has the dimensions 1000×1000mm and a thickness of 2mm. The pole, foundation and fixing materials are not included.

The signs comply with NEN 3381 and EN 12899-1:2007. Certificate number No. 1388-CPR-5.2/2022

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1.5 SCOPE OF DECLARATION

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	MND	MND	MND	MND	X	X	X	X	X

(X = included, MND = module not declared)

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1.6 PRODUCT DESCRIPTION

Traffic Sign made from recycled granulate that is created by an injection molding proces. Including a reflective foil layer.

The product has a reference service life of 12 years. The traffic sign has the dimensions 1000×1000mm and a thickness of 2mm. The pole, foundation and fixing materials are not included.

The product has the function of providing traffic participants with information of traffic situations/commandments, etc.

1.7 DESCRIPTION OF THE MANUFACTURING PROCESS

The raw materials enter the factory.

The recycled granulate is feeded to the injection molding machine in which the granulate melts and is injected in the mold. The mold is cooled and the created sign is taken out of the mold.

The signs are stacked and packaged in carboard boxes which are placed on a pallet for transport to Eemnes.

In Eemnes the signs are provided with a reflective foil, packaged in the same cardboard boxes and stored in the warehouse.

The pallets are reused and are therefore left out of the LCA.

The application of the foil is done by hand and does not require any energy use.

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1.8 RESULTS

Environmental effects	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
ADPE	Kg Sb	1.03E-5	7.62E-6	9.95E-5	4.50E-6	5.01E-6	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.18E-6	4.21E-5	2.57E-8	2.61E-5	1.97E-4
ADPF	Kg Sb	4.29E-2	2.19E-3	1.02E-2	1.29E-3	2.16E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.27E-4	1.54E-2	2.76E-5	2.29E-2	9.77E-2
GWP	Kg CO2 Equiv.	5.67E+0	2.98E-1	1.51E+0	1.76E-1	4.54E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.53E-2	7.29E+0	2.51E-2	-2.25E-1	1.53E+1
ODP	Kg CFC-11 Equiv.	3.30E-8	5.29E-8	9.75E-8	3.12E-8	2.14E-8	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.51E-8	4.72E-7	5.94E-10	-3.15E-7	4.09E-7
POCP	Kg Ethene Equiv.	6.10E-3	1.80E-4	1.08E-3	1.06E-4	2.67E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.15E-5	1.32E-3	5.93E-6	2.39E-3	1.15E-2
AP	Kg SO2 Equiv.	3.08E-2	1.31E-3	8.04E-3	7.74E-4	1.49E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.75E-4	8.47E-3	1.60E-5	7.13E-3	5.84E-2
EP	Kg PO43- Equiv.	2.55E-3	2.58E-4	9.22E-4	1.52E-4	1.61E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.37E-5	1.35E-3	6.14E-6	5.45E-4	6.02E-3
HTP	kg 1.4 DB	4.54E-1	1.26E-1	8.90E-1	7.41E-2	1.32E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.59E-2	2.68E+0	2.15E-3	3.05E-1	4.70E+0
FAETP	kg 1.4 DB	1.45E-2	3.67E-3	2.22E-2	2.16E-3	2.78E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.05E-3	4.51E-2	1.85E-3	7.09E-3	1.00E-1
MAETP	kg 1.4 DB	3.51E+1	1.32E+1	8.18E+1	7.78E+0	8.83E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.77E+0	1.30E+2	1.88E+0	2.10E+1	3.04E+2
TETP	kg 1.4 DB	1.86E-3	4.44E-4	2.37E-2	2.62E-4	1.06E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.27E-4	8.87E-3	4.49E-6	1.27E-3	3.76E-2
AP	mol H+ eqv.	3.55E-2	1.75E-3	9.59E-3	1.03E-3	1.78E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.99E-4	1.07E-2	2.10E-5	8.37E-3	6.93E-2
GWP-total	kg CO2 eqv.	5.86E+0	3.01E-1	1.46E+0	1.78E-1	5.02E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.61E-2	7.33E+0	2.94E-2	-4.72E-2	1.57E+1
GWP-b	kg CO2 eqv.	-3.72E-2	1.39E-4	-8.12E-2	8.19E-5	3.87E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.97E-5	-8.30E-3	2.58E-5	9.35E-2	5.74E-3
GWP-f	kg CO2 eqv.	5.90E+0	3.01E-1	1.54E+0	1.77E-1	4.63E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.60E-2	7.33E+0	2.93E-2	-1.41E-1	1.57E+1
GWP-luluc	kg CO2 eqv.	7.82E-4	1.10E-4	2.54E-3	6.50E-5	1.71E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.15E-5	2.19E-3	1.18E-6	7.73E-4	6.66E-3
ETP-fw	CTUe	2.19E+1	4.05E+0	5.88E+1	2.39E+0	7.55E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.16E+0	1.60E+2	3.00E-1	1.31E+1	2.69E+2

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PM	disease incidence	2.85E-7	2.71E-8	7.80E-8	1.60E-8	1.69E-8	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.74E-9	1.48E-7	3.95E-10	8.38E-8	6.62E-7
EP-m	kg N eqv.	4.51E-3	6.15E-4	1.41E-3	3.63E-4	3.00E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.76E-4	2.79E-3	1.24E-5	1.08E-3	1.13E-2
EP-fw	kg P eqv.	2.98E-4	3.04E-6	9.90E-5	1.79E-6	1.42E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.68E-7	6.98E-5	4.28E-8	4.73E-5	5.34E-4
EP-T	mol N eqv.	4.28E-2	6.78E-3	1.55E-2	4.00E-3	3.10E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.94E-3	3.08E-2	7.70E-5	1.21E-2	1.17E-1
HTP-c	CTUh	6.94E-10	1.31E-10	1.49E-9	7.74E-11	1.93E-10	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.75E-11	3.66E-9	1.62E-12	5.87E-10	6.87E-9
HTP-nc	CTUh	1.52E-8	4.43E-9	5.50E-8	2.61E-9	4.54E-9	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.27E-9	7.11E-8	7.89E-11	1.51E-8	1.69E-7
IR	kBq U235 eqv.	2.87E-2	1.90E-2	4.51E-2	1.12E-2	6.29E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.43E-3	1.02E-1	2.22E-4	5.39E-2	2.72E-1
SQP	Pt	7.07E+0	3.94E+0	2.16E+1	2.32E+0	1.68E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.12E+0	2.12E+1	1.34E-1	-4.57E+0	5.44E+1
ODP	kg CFC 11 eqv.	3.42E-8	6.64E-8	9.53E-8	3.92E-8	2.29E-8	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.90E-8	4.98E-7	7.43E-10	-3.68E-7	4.07E-7
POCP	kg NMVOC eqv.	2.22E-2	1.94E-3	5.34E-3	1.14E-3	1.23E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.53E-4	9.39E-3	2.85E-5	7.41E-3	4.93E-2
ADP-f	MJ	8.87E+1	4.54E+0	1.96E+1	2.68E+0	4.38E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.30E+0	3.08E+1	5.68E-2	5.57E+1	2.08E+2
ADP-mm	kg Sb-eqv.	1.03E-5	7.62E-6	9.95E-5	4.50E-6	5.01E-6	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.18E-6	4.21E-5	2.57E-8	2.61E-5	1.97E-4
WDP	m3 world eqv.	1.43E+0	1.62E-2	7.92E-1	9.58E-3	9.57E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.64E-3	9.87E-1	2.44E-3	2.20E+0	5.54E+0

ADPE=Depletion of abiotic resources-elements | **ADPF**=Depletion of abiotic resources-fossil fuels | **GWP**=Global warming | **ODP**=Ozone layer depletion | **POCP**=Photochemical oxidants creation | **AP**=Acidification of soil and water | **EP**=Eutrophication | **HTP**=Human toxicity | **FAETP**=Ecotoxicity, fresh water | **MAETP**=Ecotoxicity, marine water (MAETP) | **TETP**=Ecotoxicity, terrestrial | **AP**=Acidification (AP) | **GWP-total**=Global warming potential (GWP-total) | **GWP-b**=Global warming potential - Biogenic (GWP-b) | **GWP-f**=Global warming potential - Fossil (GWP-f) | **GWP-luluc**=Global warming potential - Land use and land use change (GWP-luluc) | **ETP-fw**=Ecotoxicity, freshwater (ETP-fw) | **PM**=Particulate Matter (PM) | **EP-m**=Eutrophication marine (EP-m) | **EP-fw**=Eutrophication, freshwater (EP-fw) | **EP-T**=Eutrophication, terrestrial (EP-T) | **HTP-c**=Human toxicity, cancer (HTP-c) | **HTP-nc**=Human toxicity, non-cancer (HTP-nc) | **IR**=Ionising radiation, human health (IR) | **SQP**=Land use (SQP) | **ODP**=Ozone depletion (ODP) | **POCP**=Photochemical ozone formation - human health (POCP) | **ADP-f**=Resource use, fossils (ADP-f) | **ADP-mm**=Resource use, minerals and metals (ADP-mm) | **WDP**=Water use (WDP)

1 Traffic Sign recycled HDPE (incl. return scenario)

Parameter	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
PERE	MJ	-2.99E+2	5.68E-2	2.16E+1	3.35E-2	-8.32E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.62E-2	9.83E-2	7.85E-4	1.30E+0	-2.84E+2
PERM	MJ	3.01E+2	0.00E+0	9.03E+0	0.00E+0	9.30E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-9.38E-1	3.18E+2
PERT	MJ	1.96E+0	5.68E-2	3.07E+1	3.35E-2	1.04E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.62E-2	1.96E+0	9.98E-4	3.57E-1	3.61E+1
PENRE	MJ	9.56E+1	4.82E+0	1.63E+1	2.84E+0	3.62E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.38E+0	1.58E+0	5.31E-2	-8.25E+0	1.18E+2
PENRM	MJ	0.00E+0	0.00E+0	3.50E+0	0.00E+0	4.78E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.61E+1	6.96E+1
PENRT	MJ	9.56E+1	4.82E+0	2.09E+1	2.84E+0	4.70E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.38E+0	3.28E+1	6.04E-2	5.78E+1	2.21E+2
SM	Kg	8.00E+0	0.00E+0	2.40E-1	0.00E+0	2.47E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.49E+0
RSF	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	M3	3.49E-2	5.53E-4	2.60E-2	3.26E-4	2.68E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.58E-4	2.75E-2	5.93E-5	3.40E-2	1.26E-1
HWD	Kg	5.03E-6	1.15E-5	4.13E-4	6.78E-6	1.47E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.29E-6	5.00E-5	8.64E-8	-5.60E-5	4.48E-4
NHWD	Kg	1.30E-1	2.88E-1	2.30E-1	1.70E-1	6.92E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.23E-2	1.27E+0	2.27E-1	7.21E-2	2.54E+0
RWD	Kg	2.51E-5	2.98E-5	4.16E-5	1.76E-5	7.06E-6	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.52E-6	1.16E-4	3.38E-7	3.76E-5	2.84E-4
CRU	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	Kg	0.00E+0	0.00E+0	1.96E-1	0.00E+0	2.79E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.51E+0	0.00E+0	0.00E+0	6.99E+0
MER	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EE	MJ	0.00E+0	0.00E+0	1.28E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.82E+1	3.95E+1
EET	MJ	0.00E+0	0.00E+0	8.07E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.42E+1	2.50E+1
EEE	MJ	0.00E+0	0.00E+0	4.69E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.40E+1	1.45E+1
ECI NL	€	0,49	0,04	0,21	0,02	0,04	0,00	0,00	0,00	0,00	0,01	0,67	0,00	0,06	1,55

PERE=renewable primary energy ex. raw materials | PERM=renewable primary energy used as raw materials | PERT=renewable primary energy total | PENRE=non-renewable primary energy ex. raw materials | PENRM=non-renewable primary energy used as raw materials | PENRT=non-renewable primary energy total | SM=use of secondary material | RSF=use of renewable secondary fuels | NRSF=use of non-renewable secondary fuels | FW=use of net fresh water | HWD=hazardous waste disposed | NHWD=non hazardous waste disposed | RWD=radioactive waste disposed | CRU=Components for re-use | MFR=Materials for recycling | MER=Materials for energy recovery | EE=Exported energy | EET=Exported Energy Thermic | EEE=Exported Energy Electric

1.9 ADDITIONAL INFORMATION

Allocation

Explanation of used allocation method

1 Traffic Sign recycled HDPE (incl. return scenario)

Environmental profile

HDPE recycled (RER) in accordance with EN15804, the required processes to end-of-waste-point of the raw material are assigned to the previous life cycle, therefore the material becomes available free of burden.
