Type III Environmental Product Declaration No. 318/2022

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HelCor pipes

galvanized or PE-coated

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Basic information

This declaration is the Type III Environmental Product Declaration (EPD) based on EN 15804+A2 and verified according to ISO 14025 by an external auditor. It contains the information on the impacts of the declared construction materials on the environment. Their aspects were verified by the independent body according to ISO 14025. Basically, a comparison or evaluation of EPD data is possible only if all the compared data were created according to EN 15804+A2.

Life cycle analysis (LCA): A1-A3, C1-C4 and D modules in accordance with EN 15804 (Cradle-to-Gate with options)

The year of preparing the EPD: 2022

Product standard: EN1090, SS-EN 10346, ASTM A 742, AASHTO M 246

Service Life: 100 years

PCR: ITB-PCR A

Declared unit: 1 ton

Reasons for performing LCA: B2B

Representativeness: Swedish, European

MANUFACTURER

The ViaCon Group is a provider of flexible corrugated steel structures and plastic pipes used to build Bridges & Culverts, GeoTechnical- and StormWater Solutions, covering the construction, reconstruction, and relining of culverts, bridges, viaducts, grade separations, wildlife crossings, tunnels, etc. that are used for establishing infrastructural connections and crossings. The ViaCon Group was founded in 1986 in Sweden and Norway, operates on European market.

Fig. 1. ViaCon AB manufacturing plant located in Lycksele (Sweden).

PRODUCTS DESCRIPTION AND APPLICATION

The HelCor pipes are helical corrugated pipes, produced from steel coils with thickness ranging from 1.5 mm to 3.5 mm in two types of corrugations D1 - 68 x 13 mm and D3 - 125 x 26 mm. Steel used for the production of HelCor pipes, as well as coupling bands, conform to EN 10346 and is delivered in coils, with a protection coating in accordance to a/m standards:

- 600 g/m zinc coating total both sides, equivalent to 42 µm on each side,
- 1000 g/m zinc coating total both sides, equivalent to 70 µm on each side
- 600 g/m zinc coating both sides, equivalent to 42 µm on each side, with an additional 300 µm polymer film (TrenchcoatTM or W-ProtectTM) on one or both sides.

The HelCor pipes are designed for all road and railway live load classes as well as under the load of special vehicles. The pipes could be design just as continuously hot-dip galvanized and as an option with an additional 300 µm polymer film (TrenchcoatTM or W-ProtectTM) on one or both sides, in an environment with increased corrosive aggressiveness. The mechanical properties and specification of the HelCor pipes are presented in Tables 1 and 2.

Application areas:

- roads and railway culverts,
- underground passages,
- hydrotechnical structures,
- relining of deteriorated structures,
- ecological passages.

Table 1. Mechanical properties of the HelCor pipes.

HelCor steel pipes mechanical properties				
Steel grade	**Standard**	**Yield point R_e [MPa]**	**Tensile strength R_m [MPa]**	**Elongation A_{80min} [%]**
DX51D	EN 10346	-	270-500	22
S250GD		250	330	19

Table 2. Specification of the HelCor pipes.

DIAMETER [mm]	SECTIONAL AREA [m²]	NOTCH	ZINC COATING		ZINC COATING + POLYMER COATING	
			SHEET THICKNESS [mm]	WEIGHT [kg/m]	SHEET THICKNESS [mm]	WEIGHT [kg/m]
300	0.07	D1	1.5	13.3	1.6	15.1
400	0.12	D1	1.5	17.7	1.6	20.1
500	0.19	D1	1.5	22.1	1.6	25.1
600	0.28	D1	1.5 / 2.0	35.9	1.6 / 2.0	36.5
700	0.38	D1	1.5 / 2.0	41.8	1.6 / 2.0	42.6
800	0.50	D1	1.5 / 2.0	47.8	1.6 / 2.0	48.6
900	0.63	D1	1.5 / 2.0	53.8	1.6 / 2.0	54.7
1000	0.79	D1 / D3	1.5 / 2.0 / 2.5	59.8	1.6 / 2.0 / 2.5 / 2.7	60.8
1100	0.95	D1 / D3	2.0 / 2.5	65.8	2.0 / 2.5 / 2.7	66.9
1200	1.13	D1 / D3	2.0 / 2.5	71.7	2.0 / 2.5 / 2.7	73.0
1300	1.32	D1 / D3	2.0 / 2.5	77.7	2.0 / 2.5 / 2.7	79.0
1400	1.54	D1 / D3	2.0 / 2.5 / 3.0	103.2	2.0 / 2.5 / 2.7	109.1
1500	1.76	D1 / D3	2.0 / 2.65 / 3.0	110.5	2.0 / 2.5 / 2.7	116.9
1600	2.01	D1 / D3	2.0 / 2.5 / 3.0	117.9	2.0 / 2.5 / 2.7	124.7
1700	2.27	D1 / D3	2.0 / 2.5 / 3.0	125.3	2.0 / 2.5 / 2.7	132.5
1800	2.54	D1 / D3	2.5 / 3.0 / 3.5	159.2	2.5 / 2.7 / 3.0 / 3.5	167.7
1900	2.83	D3	2.5 / 3.0 / 3.5	168.0	2.5 / 2.7 / 3.0 / 3.5	177.0
2000	3.14	D3	2.5 / 3.0 / 3.5	176.9	2.7 / 3.0 / 3.5	186.3
2100	3.46	D3	2.5 / 3.0 / 3.5	185.7	2.7 / 3.0 / 3.5	195.7
2200	3.80	D3	2.5 / 3.0 / 3.5	194.6	2.7 / 3.0 / 3.5	205.0
2300	4.15	D3	2.5 / 3.0 / 3.5	203.4	2.7 / 3.0 / 3.5	214.3
2400	4.42	D3	2.5 / 3.0 / 3.5	212.2	2.7 / 3.0 / 3.5	223.6
2500	4.91	D3	3.0 / 3.5	257.9	3.0 / 3.5	274.7
2600	5.30	D3	3.0 / 3.5	268.3	3.0 / 3.5	285.7
2700	5.72	D3	3.0 / 3.5	278.6	3.0 / 3.5	296.7
2800	6.15	D3	3.0 / 3.5	288.9	3.0 / 3.5	307.7
2900	6.60	D3	3.0 / 3.5	299.2	3.0 / 3.5	318.7
3000	7.06	D3	3.0 / 3.5	309.5	3.0 / 3.5	329.6
3100	7.55	D3	3.5	319.5	3.5	340.2
3200	8.04	D3	3.5	330.2	3.5	351.6
3300	8.55	D3	3.5	340.5	3.5	362.6
3400	9.08	D3	3.5	350.8	3.5	373.6
3500	9.62	D3	3.5	361.1	3.5	384.6
3600	10.18	D3	3.5	371.4	3.5	395.6

More information is available on the website of ViaCon AB https://viacon.se/en/.

LIFE CYCLE ASSESSMENT (LCA) – general rules applied

Allocation

The allocation rules used for this EPD are based on general ITB PCR A. Production of the HelCor pipes is a line process conducted in the factory of ViaCon AB, located in Lycksele (Sweden). Allocation was done on product mass basis. All impacts from raw materials extraction and processing are allocated in module A1 of the LCA. Impacts from the global line production ViaCon AB were inventoried and 100% were allocated to the HelCor pipes production. Water and energy consumption (electrical grid, diesel), associated emissions and generated wastes are allocated to module A3. Packaging materials were takien into consideration.

System limits

The life cycle analysis (LCA) of the declared products covers: product stage – modules A1-A3, end of life – modules C1-C4 and benefits and loads beyond the system boundary – module D (cradle-to-gate with options) in accordance with EN 15804+A2 and ITB PCR A. Energy and water consumption, emissions as well as information on generated wastes were inventoried and were included in the calculations. It can be assumed that the total sum of omitted processes does not exceed 5% of all impact categories. In accordance with EN 15804+A2, machines and facilities (capital goods) required for the production as well as transportation of employees were not included in LCA.

Modules A1 and A2: *Raw materials supply and transport*

Galvanized steel coils (BOF and EAF processes), PE-coated steel coils (BOF and EAF processes), PE), steel semi-products (BOF and EAF processes), paint, additives, ancillary materials and packaging materials come from both local and foreign suppliers. Means of transport include railway and lorries. European standards for average combustion were used for calculations.

Module A3: *Production*

HelCor pipes are manufactured in a continuous process of forming corrosion protected metal sheets by spiral winding, resulting in diameters ranging from 300 mm to 3600 mm. During the forming process a seam is formed on the circumference of the pipe, which additionally stiffens the pipe and is the element integrating its body. A scheme of the production process is presented in Fig. 2.

Modules *C1-C4 and D: End-of-life (EoL)*

In the adapted scenario, dismantling of the HelCor pipes is performed with the use of heavy machinery (module C1). There are no specific deconstruction methods, applied in Sweden. It is assumed that 100% of the HelCor pipes are recovered at the EoL cycle. The resulting scrap is already shreeded thus is either transported to a steel mill distant by 200 km, on 16-32t lorry Euro 5 (module C2) or landfilled (module C4). Module D presents credits resulting from the recycling of the steel scrap.

Table 3. End-of-life scenario for the HelCor pipes manufactured by ViaCon AB.

Material	Material recovery	Recycling	Landfilling
Steel scrap	100%	98%	2%

Data quality

The data selected for LCA analysis originate from ITB-LCI questionnaires completed by ViaCon AB using the inventory data, ITB and Ecoinvent databases. No specific data collected is older than five years and no generic datasets used are older than ten years. The representativeness, completeness, reliability, and consistency are judged as good.

Data collection period

Primary data provided by ViaCon AB covers a period of 01.01.2020 – 31.12.2020 (1 year). The life cycle assessments were prepared for Sweden and Europe as reference area.

Assumptions and estimates

The impacts of the representative of HelCor pipes were aggregated using weighted average. Impacts were inventoried and calculated for all products of the HelCor pipes.

Calculation rules

LCA was performed in accordance with EN 15804+A2.

Databases

The data for the processes comes from the following databases: Ecoinvent v.3.8 and ITB-Database. Specific data quality analysis was a part of external audit.

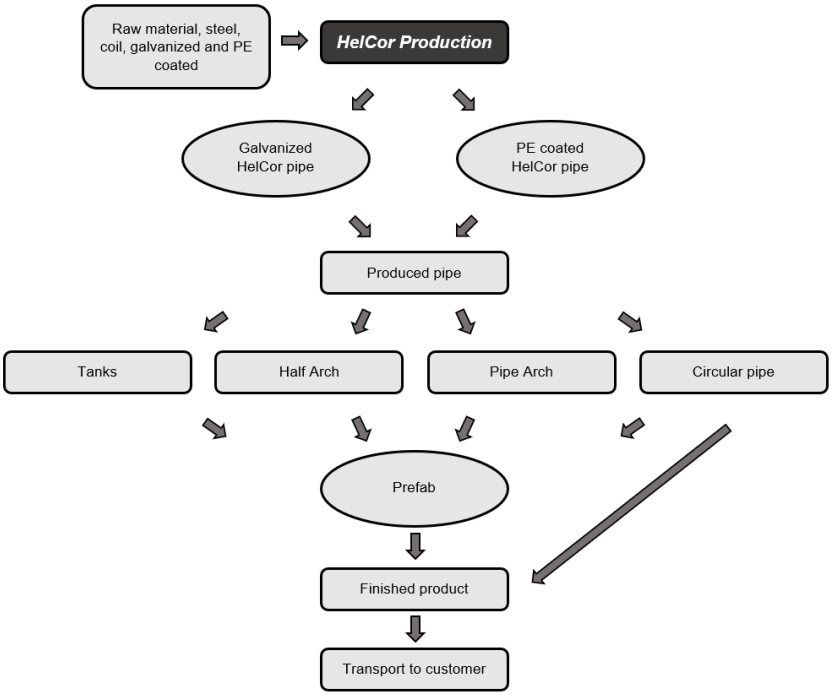

Fig. 2. The scheme of the HelCor pipes production process by ViaCon AB.

LIFE CYCLE ASSESSMENT (LCA) – Results

Declared unit

The declaration refers to declared unit (DU) –1 ton of the HelCor pipes manufactured by ViaCon AB.

Table 4. System boundaries for the environmental characteristic of the HelCor pipes

Environmental assessment information (MD – Module Declared, MND – Module Not Declared, INA – Indicator Not Assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MD	MD	MD	MD	MD

Table 5. Life cycle assessment (LCA) results of the galvanized HelCor pipes manufactured by ViaCon AB – environmental impacts (DU: 1 ton)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO2	1.67E+03	1.23E+01	9.25E+00	1.69E+03	1.17E+00	1.04E+00	0.00E+00	1.06E-01	-5.56E+02
Greenhouse gas potential - fossil	eq. kg CO2	1.65E+03	1.22E+01	8.08E+00	1.67E+03	1.17E+00	1.04E+00	0.00E+00	1.05E-01	-5.39E+02
Greenhouse gas potential - biogenic	eq. kg CO2	2.10E+01	8.98E-02	4.59E-01	2.16E+01	1.05E-03	3.55E-03	0.00E+00	2.68E-04	-1.54E+01
Global warming potential - land use and land use change	eq. kg CO2	2.86E+00	7.72E-03	7.16E-01	3.58E+00	1.15E-04	4.08E-04	0.00E+00	9.94E-05	-7.92E-01
Stratospheric ozone depletion potential	eq. kg CFC 11	9.84E-05	2.59E-06	5.43E-06	1.06E-04	2.48E-07	2.40E-07	0.00E+00	4.26E-08	-4.17E-05
Soil and water acidification potential	eq. mol H+	2.21E+01	5.36E-02	6.49E-02	2.22E+01	6.96E-03	4.22E-03	0.00E+00	9.90E-04	-2.02E+00
Eutrophication potential - freshwater	eq. kg PO_4	8.85E-01	1.47E-03	1.55E-03	8.88E-01	3.65E-05	6.98E-05	0.00E+00	9.81E-06	-3.54E-01
Eutrophication potential - seawater	eq. kg N	2.03E+00	1.60E-02	1.60E-02	2.06E+00	2.86E-03	1.27E-03	0.00E+00	3.45E-04	-4.90E-01
Eutrophication potential - terrestrial	eq. mol N	8.38E+01	9.85E-02	1.50E-01	8.40E+01	3.14E-02	1.39E-02	0.00E+00	3.77E-03	-4.79E+00
Potential for photochemical ozone synthesis	eq. kg NMVOC	7.14E+00	5.24E-02	4.22E-02	7.24E+00	8.57E-03	4.25E-03	0.00E+00	1.10E-03	-1.92E+00
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	5.35E-02	6.49E-05	4.49E-05	5.36E-02	5.87E-07	3.68E-06	0.00E+00	2.42E-07	1.05E-02
Abiotic depletion potential - fossil fuels	MJ	2.12E+04	1.79E+02	1.64E+03	2.30E+04	1.56E+01	1.54E+01	0.00E+00	2.89E+00	-8.66E+03
Water deprivation potential	eq. m^3	9.88E+02	1.27E+00	3.65E+01	1.03E+03	4.19E-02	7.13E-02	0.00E+00	9.16E-03	-6.26E+02

Table 6. Life cycle assessment (LCA) results of the galvanized HelCor pipes manufactured by ViaCon AB – additional impacts indicators (DU: 1 ton)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Particulate matter	disease incidence	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential human exposure efficiency relative to U235	eg. kBq U235	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for ecosystems	CTUe	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for humans (cancer effects)	CTUh	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for humans (non-cancer effects)	CTUh	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential soil quality index	dimensionless	INA	INA	INA	INA	INA	INA	INA	INA	INA

Table 7. Life cycle assessment (LCA) results of the galvanized HelCor pipes manufactured by ViaCon AB - environmental aspects related to resource use (DU: 1 ton)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Consumption of renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Total consumption of renewable primary energy resources	MJ	1.48E+03	5.01E+00	5.05E+02	1.99E+03	8.91E-02	2.21E-01	0.00E+00	2.51E-02	-5.34E+02
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Consumption of non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Total consumption of non-renewable primary energy resources	MJ	2.18E+04	1.79E+02	1.67E+03	2.37E+04	1.56E+01	1.54E+01	0.00E+00	2.89E+00	-9.31E+03
Consumption of secondary materials	kg	1.25E+02	9.91E-02	7.36E-02	1.25E+02	6.10E-03	5.17E-03	0.00E+00	6.07E-04	INA
Consumption of renewable secondary fuels	MJ	3.62E-02	9.31E-04	2.32E-04	3.73E-02	1.99E-05	5.70E-05	0.00E+00	1.59E-05	INA
Consumption of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INA
Net consumption of freshwater resources	m^3	1.09E+01	3.44E-02	1.06E+00	1.20E+01	9.46E-04	1.94E-03	0.00E+00	3.16E-03	INA

Table 8. Life cycle assessment (LCA) results of the galvanized HelCor pipes manufactured by ViaCon AB - environmental information describing waste categories (DU: 1 ton)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	1.53E+01	3.26E-01	6.75E-01	1.63E+01	2.09E-02	1.73E-02	0.00E+00	3.07E-03	-1.41E-02
Non-hazardous waste	kg	8.37E+02	6.52E+00	4.76E+00	8.49E+02	1.47E-01	3.07E-01	0.00E+00	4.32E-02	-5.12E+02
Radioactive waste	kg	5.82E-02	2.83E-05	1.97E-02	7.79E-02	1.09E-04	1.15E-06	0.00E+00	1.92E-05	-3.08E-02
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.84E-01	6.73E-04	8.77E+01	8.80E+01	2.08E-05	4.77E-05	0.00E+00	5.78E-06	0.00E+00
Materials for energy recovery	kg	INA	INA	INA	INA	INA	INA	INA	INA	INA

Table 9. Life cycle assessment (LCA) results of the PE-coated HelCor pipes manufactured by ViaCon AB – environmental impacts (DU: 1 ton)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO2	1.51E+03	1.23E+01	9.25E+00	1.53E+03	1.17E+00	1.04E+00	0.00E+00	1.06E-01	-5.56E+02
Greenhouse gas potential - fossil	eq. kg CO2	1.49E+03	1.22E+01	8.08E+00	1.51E+03	1.17E+00	1.04E+00	0.00E+00	1.05E-01	-5.39E+02
Greenhouse gas potential - biogenic	eq. kg CO2	1.38E+01	8.98E-02	4.59E-01	1.44E+01	1.05E-03	3.55E-03	0.00E+00	2.68E-04	-1.54E+01
Global warming potential - land use and land use change	eq. kg CO2	2.49E+00	7.72E-03	7.16E-01	3.21E+00	1.15E-04	4.08E-04	0.00E+00	9.94E-05	-7.92E-01
Stratospheric ozone depletion potential	eq. kg CFC 11	7.73E-05	2.59E-06	5.43E-06	8.53E-05	2.48E-07	2.40E-07	0.00E+00	4.26E-08	-4.17E-05
Soil and water acidification potential	eq. mol H+	5.86E+00	5.36E-02	6.49E-02	5.98E+00	6.96E-03	4.22E-03	0.00E+00	9.90E-04	-2.02E+00
Eutrophication potential - freshwater	eq. kg PO_4	7.57E-01	1.47E-03	1.55E-03	7.60E-01	3.65E-05	6.98E-05	0.00E+00	9.81E-06	-3.54E-01
Eutrophication potential - seawater	eq. kg N	1.32E+00	1.60E-02	1.60E-02	1.36E+00	2.86E-03	1.27E-03	0.00E+00	3.45E-04	-4.90E-01
Eutrophication potential - terrestrial	eq. mol N	1.37E+01	9.85E-02	1.50E-01	1.39E+01	3.14E-02	1.39E-02	0.00E+00	3.77E-03	-4.79E+00
Potential for photochemical ozone synthesis	eq. kg NMVOC	6.44E+00	5.24E-02	4.22E-02	6.54E+00	8.57E-03	4.25E-03	0.00E+00	1.10E-03	-1.92E+00
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	4.64E-03	6.49E-05	4.49E-05	4.75E-03	5.87E-07	3.68E-06	0.00E+00	2.42E-07	2.63E-03
Abiotic depletion potential - fossil fuels	MJ	1.86E+04	1.79E+02	1.64E+03	2.04E+04	1.56E+01	1.54E+01	0.00E+00	2.89E+00	-8.66E+03
Water deprivation potential	eq. m^3	8.38E+02	1.27E+00	3.65E+01	8.76E+02	4.19E-02	7.13E-02	0.00E+00	9.16E-03	-6.26E+02

Table 10. Life cycle assessment (LCA) results of the PE-coated HelCor pipes manufactured by ViaCon AB – additional impacts indicators (DU: 1 ton)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Particulate matter	disease incidence	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential human exposure efficiency relative to U235	eg. kBq U235	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for ecosystems	CTUe	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for humans (cancer effects)	CTUh	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for humans (non-cancer effects)	CTUh	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential soil quality index	dimensionless	INA	INA	INA	INA	INA	INA	INA	INA	INA

Table 11. Life cycle assessment (LCA) results of the PE-coated HelCor pipes manufactured by ViaCon AB - environmental aspects related to resource use (DU: 1 ton)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Consumption of renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Total consumption of renewable primary energy resources	MJ	1.23E+03	5.01E+00	5.05E+02	1.74E+03	8.91E-02	2.21E-01	0.00E+00	2.51E-02	-5.34E+02
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Consumption of non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Total consumption of non-renewable primary energy resources	MJ	1.92E+04	1.79E+02	1.67E+03	2.11E+04	1.56E+01	1.54E+01	0.00E+00	2.89E+00	-9.31E+03
Consumption of secondary materials	kg	1.24E+02	9.91E-02	7.36E-02	1.24E+02	6.10E-03	5.17E-03	0.00E+00	6.07E-04	INA
Consumption of renewable secondary fuels	MJ	3.04E-02	9.31E-04	2.32E-04	3.15E-02	1.99E-05	5.70E-05	0.00E+00	1.59E-05	INA
Consumption of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INA
Net consumption of freshwater resources	m^3	7.25E+00	3.44E-02	1.06E+00	8.34E+00	9.46E-04	1.94E-03	0.00E+00	3.16E-03	INA

Table 12. Life cycle assessment (LCA) results of the PE-coated HelCor pipes manufactured by ViaCon AB - environmental information describing waste categories (DU: 1 ton)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	2.40E-01	3.26E-01	6.75E-01	1.24E+00	2.09E-02	1.73E-02	0.00E+00	3.07E-03	-1.41E-02
Non-hazardous waste	kg	4.47E+02	6.52E+00	4.76E+00	4.59E+02	1.47E-01	3.07E-01	0.00E+00	4.32E-02	-2.56E+02
Radioactive waste	kg	5.57E-02	2.83E-05	1.97E-02	7.54E-02	1.09E-04	1.15E-06	0.00E+00	1.92E-05	-3.08E-02
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	7.02E-02	6.73E-04	8.77E+01	8.78E+01	2.08E-05	4.77E-05	0.00E+00	5.78E-06	0.00E+00
Materials for energy recovery	kg	INA	INA	INA	INA	INA	INA	INA	INA	INA

Verification

The process of verification of this EPD is in accordance with ISO 14025 and ISO 21930. After verification, this EPD is valid for a 5-year-period. EPD does not have to be recalculated after 5 years, if the underlying data have not changed significantly.

The basis for LCA analysis was EN 15804 and ITB PCR A
Independent verification corresponding to ISO 14025 (subclause 8.1.3.) [x] external [ ] internal
External verification of EPD: Halina Prejzner, PhD Eng LCA, LCI audit and input data verification: Justyna Tomaszewska, PhD Eng, j.tomaszewska@itb.pl Verification of LCA: Michał Piasecki, PhD, DSc, Eng

Normative references

- ITB PCR A General Product Category Rules for Construction Products
- ISO 14025:2006, Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services
- ISO 14044:2006 Environmental management – Life cycle assessment – Requirements and guidelines
- ISO 15686-1:2011 Buildings and constructed assets – Service life planning – Part 1: General principles and framework
- ISO 15686-8:2008 Buildings and constructed assets – Service life planning – Part 8: Reference service life and service-life estimation
- EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
- ISO 14067:2018 Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
- PN-EN 15942:2012 Sustainability of construction works – Environmental product declarations – Communication format business-to-business
- ISO 20915:2018 Life cycle inventory calculation methodology for steel products

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CERTIFICATE № 318/2022
of TYPE III ENVIRONMENTAL DECLARATION

Product:

HelCor pipes galvanized or PE-coated

Manufacturer:

ViaCon AB

Barkvägen 14, 92145 Lycksele, Sweden

confirms the correctness of the data included in the development of
Type III Environmental Declaration and accordance with the requirements of the standard

EN 15804+A2

Sustainability of construction works.
Environmental product declarations.
Core rules for the product category of construction products.

This certificate, issued for the first time on 29th March 2022 is valid for 5 years
or until amendment of mentioned Environmental Declaration

Head of the Thermal Physic, Acoustics
and Environment Department
Agnieszka Winkler-Skalna, PhD

INSTYTUT TECHNIKI BUDOWLANEJ

Deputy Director
for Research and Innovation
Krzysztof Kuczyński, PhD

Warsaw, March 2022