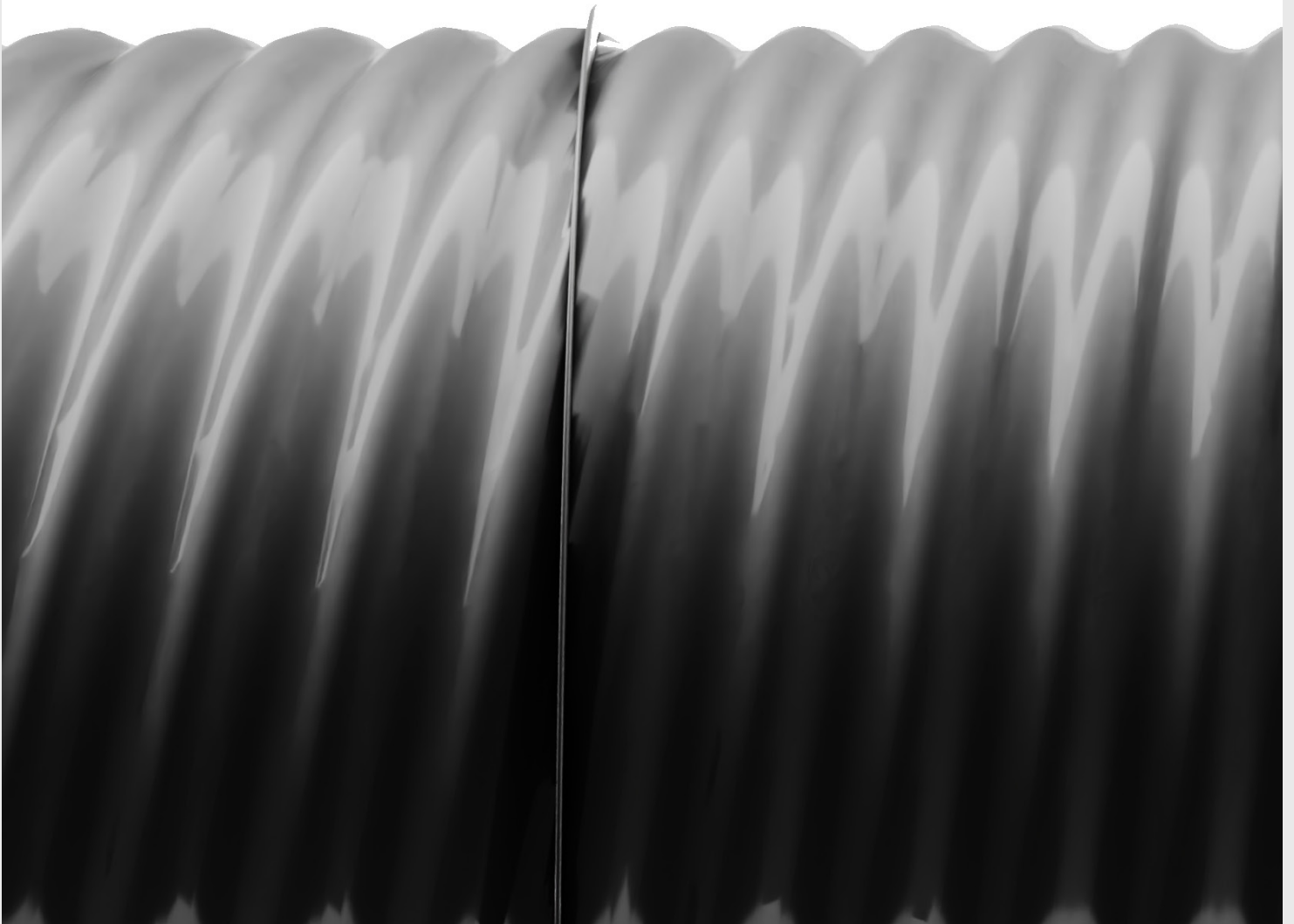


Steel pipes and Retention tanks

HelCor Pipe, HelCor PipeArch Pipes,
ViaCon StormWater Tanks, WaterCor Tanks

Type III Environmental Product Declaration No. 368/2022



VIACON

Owner of the EPD:

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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 and their aspects verified by the independent body according to ISO 14025. Basically, 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, C2-C4 and D modules in accordance with EN 15804 (Cradle-to-Gate with options)

The year of preparing the EPD: 2022

Products standards: EN 1090-1

Service Life: 100 years

PCR: ITB-PCR A

Declared unit: 1 ton

Reasons for performing LCA: B2B

Representativeness: Polish, European



ITB is the verified member of The European Platform for EPD program operators and LCA practitioner

www.eco-platform.org

Issuance date: 26.09.2022

Validity date: 26.09.2027



Fig. 1. A view of ViaCon Polska Sp. z o.o. in Rydzyna (Poland).

Manufacturer

ViaCon Polska launched its operations on 1 April 1997. The company belongs to ViaCon Group, which was established in Sweden and Norway in 1986. At present ViaCon Group is made up of approximately 30 companies based in the following countries: Bulgaria, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Lithuania, Latvia, Norway, the Netherlands, Poland, Sweden, Hungary, Slovakia, Romania, Turkey and United Arab Emirates. All companies mentioned above are a part of ViaCon Group that was acquired in September 2018 by Nordic Investment Fund FSN Capital. The support from the whole group and opportunity to exploit its joint experience, enable each of the subsidiaries to offer professional advisory services and products of the highest quality.

Products Description & Application

STEEL PIPES

HelCor and HelCor PipeArch* are helically corrugated steel products made of S250GD – S350GD steel grade. Complete system of helically corrugated pipes includes elbows or T-connections and also additional elements such as manholes, inspection chambers etc. According to the European Standard PN-EN 1991- 2 HelCor and HelCor PipeArch pipes can be used as engineering structures for every class of road and railway (up to V=200km/h).

HelCor and HelCor PipeArch pipes have Technical Approval issued by Polish Road and Bridge Research Institute (IBDiM). They have been approved for use in Scandinavia, The Baltic States, Switzerland, Hungary, Slovakia, The Czech Republic, Romania, Austria, The Ukraine and other European countries. HelCor and HelCor PipeArch are approved by Polish Central Mining Institute (GIG) to be used on subsidence areas.

Steel used for the production of the pipes, as well as coupling bands conform to the European Standards of EN 10327 "Continuously hot-dip coated strip and sheet of low carbon steels for cold forming – Technical delivery conditions" and EN 10326 "Continuously hot-dip coated strip and sheet of structural steels - Technical delivery conditions".

Steel is delivered in coils, with a protective coating: 600 g/m² zinc coating both sides, equivalent to 42 μm on each side, 1000 g/m² zinc coating both sides, equivalent to 70μm on each side, 600 g/m² zinc coating both sides, equivalent to 42μm on each side, with an additional 250μm polymer film (Trenchcoat™ or W-Protect®) on one or both sides.

The standard lengths of the HelCor pipes are 6 m, 7 m and 8 m, however the production process allows the manufacturing of any length of pipe.

The pipe-arches are produced in 6 m long segments from HCPA-01 to HCPA-20 and 7 m and 8 m long segments from HCPA- 21 to HCPA-50.

RETENTION TANKS

ViaCon StormWater Tanks and WaterCor Tanks** are made of spiral corrugated pipes HelCor. Pipes and connections are watertight and protected against corrosion by hot dip galvanization and polymer coating. Tanks are designed for rain water and sewage store in range of pH = 3 – 12. The system demands less space and is more economical than other classic solutions. Diameters up to 3,9m and high capacity in a wide range of cover depth make the system perfect for solving the problem of rain water disposal in high developed areas.

The specification of the steel pipes and retention tanks manufactured by ViaCon Polska Sp. z o.o. is listed in Table 1.

Table 1. The specification of the steel pipes and retention tanks manufactured by ViaCon Polska Sp. z o. o.

| Product | Diameter, mm | Steel grade | Application |
|---|--------------|--|---|
| HelCor Pipes HelCor PipeArch Pipes structures | 300 - 3900 | S250GD – S350GD galvanized or trenchcoated | mainly in civil engineering as steel-soil composite structures bearing rail and road traffic loads |
| ViaCon StormWater Tanks WaterCor Tanks | 300 – 3900 | S250GD – S350GD galvanized, trenchcoated or painted | retention tanks infiltration tanks firewater tanks drinking water tanks perforated tanks sand and oil separators |

*New trade name for HelCor Pipes and HelCor PipeArch Pipes is HelCor. New trade name for HelCor with an additional polymer film Trenchcoat™, W-Protect® corrosion protection coating or other is HelCor+.

**New trade name for ViaCon StormWater Tanks, WaterCor Tanks is ViaCon Storm. New trade name for ViaCon StormWater Tanks, WaterCor Tanks with an additional polymer film Trenchcoat™, W-Protect® or other corrosion protection coating is ViaCon Storm+.

Life Cycle Assessment (LCA) – general rules applied

ALLOCATION

The allocation rules used for this EPD are based on general ITB PCR A v. 1.5. Production of the steel pipes and retention tanks is a line process conducted in the manufacturing plant of ViaCon Polska Sp. z o. o., located in Rydzyna (Poland). All impacts from raw materials extraction and processing are allocated in module A1 of the LCA. Impacts from the global line production of ViaCon Polska Sp. z o. o. were inventoried and 100% was allocated to the production of the hot rolled steel profiles based on the products mass basis. Water and energy consumption, associated emissions and generated wastes are allocated to module A3.

SYSTEM LIMITS

The life cycle analysis (LCA) of the declared products covers: product stage – modules A1-A3, end of life – modules C2-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 v. 1.5.

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.

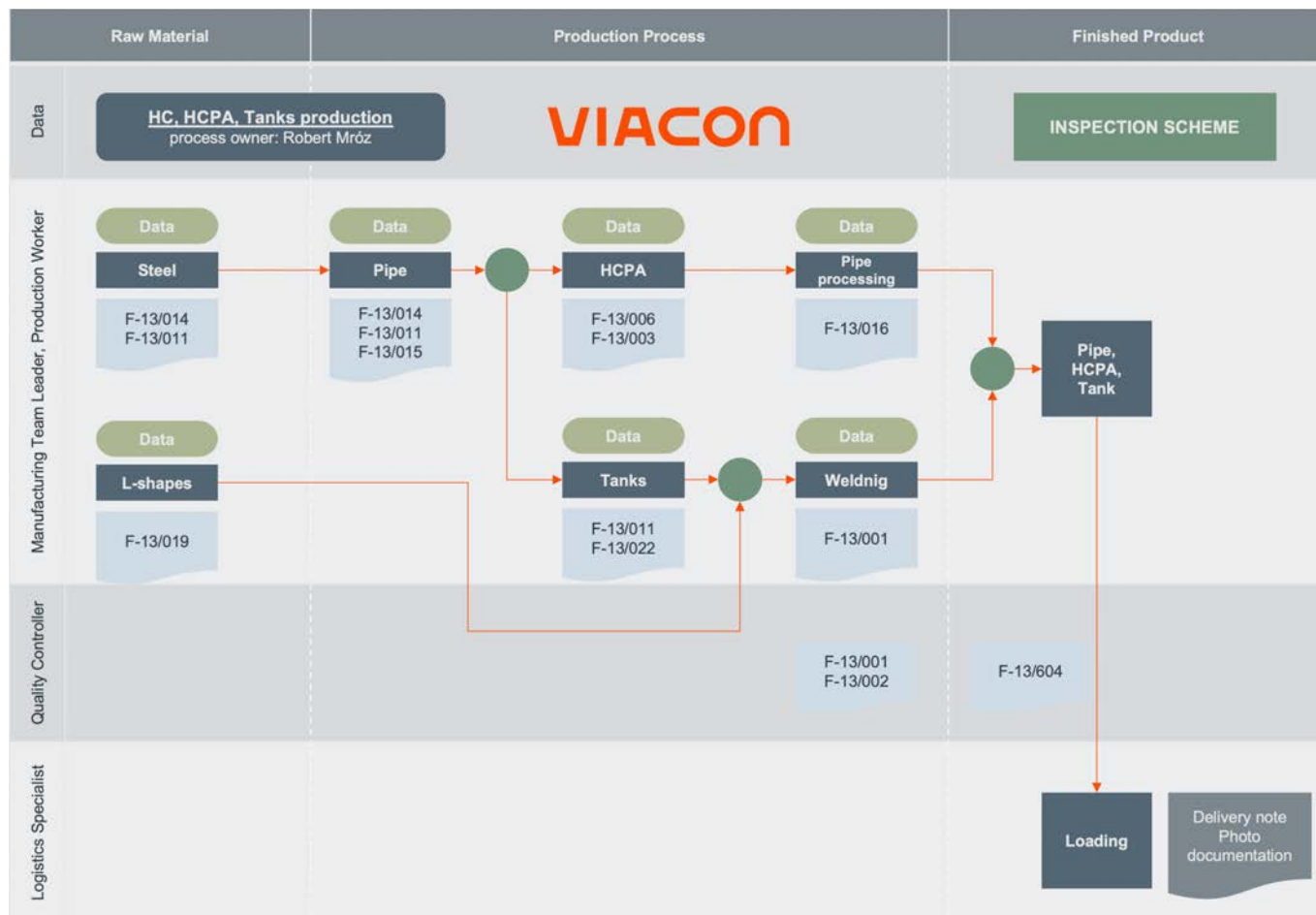
MODULES A1 AND A2: RAW MATERIALS SUPPLY AND TRANSPORT

Galvanized steel coils (100% BOF process), paints, ancillary materials and packaging materials come from local as well as foreign suppliers. Means of transport include lorries with loading capacity <10 t and > 16 t. European standards for average combustion were used for calculations.

MODULES A3: PRODUCTION

A scheme of the steel pipes and retention tanks presented in Fig. 2.

Fig. 2. A scheme of the steel pipes and retention tanks production process by ViaCon Polska Sp. z o.o.



MODULES C2-C4 AND D: END-OF-LIFE (EOL)

Versatile application of the steel pipes and retention tanks excludes the possibility of precise modeling of impacts occurring at the deconstruction stage thus the module C1 is not declared within this EPD. In the adapted end-of-life scenario, the deconstructed steel pipes and retention tanks are transported to a waste processing plant distant by 70 km on > 16t lorry EURO 5, where undergo shredding. Module D presents credits resulting from the recycling of the primary steel scrap (100%), calculated in accordance with the net scrap approach developed by World Steel Association.

Table 2. End-of-life scenario for the steel pipes and retention tanks manufactured by ViaCon Polska Sp. z o.o.

| Material | Material recovery | Recycling | Landfilling |
|-------------|-------------------|-----------|-------------|
| Steel scrap | 100% | 95% | 5% |

DATA QUALITY

The data selected for LCA originate from ITB-LCI questionnaires completed by ViaCon Polska Sp. z o.o. using the inventoried data at the rolling mill, KOBiZE 2021 report, ITB database and Ecoinvent v.3.8. 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 Polska Sp. z o. o. covers a period from 01.01.2021 to 31.12.2021 (1 year). The life cycle assessments were prepared for Poland and Europe as reference area.

ASSUMPTIONS AND ESTIMATES

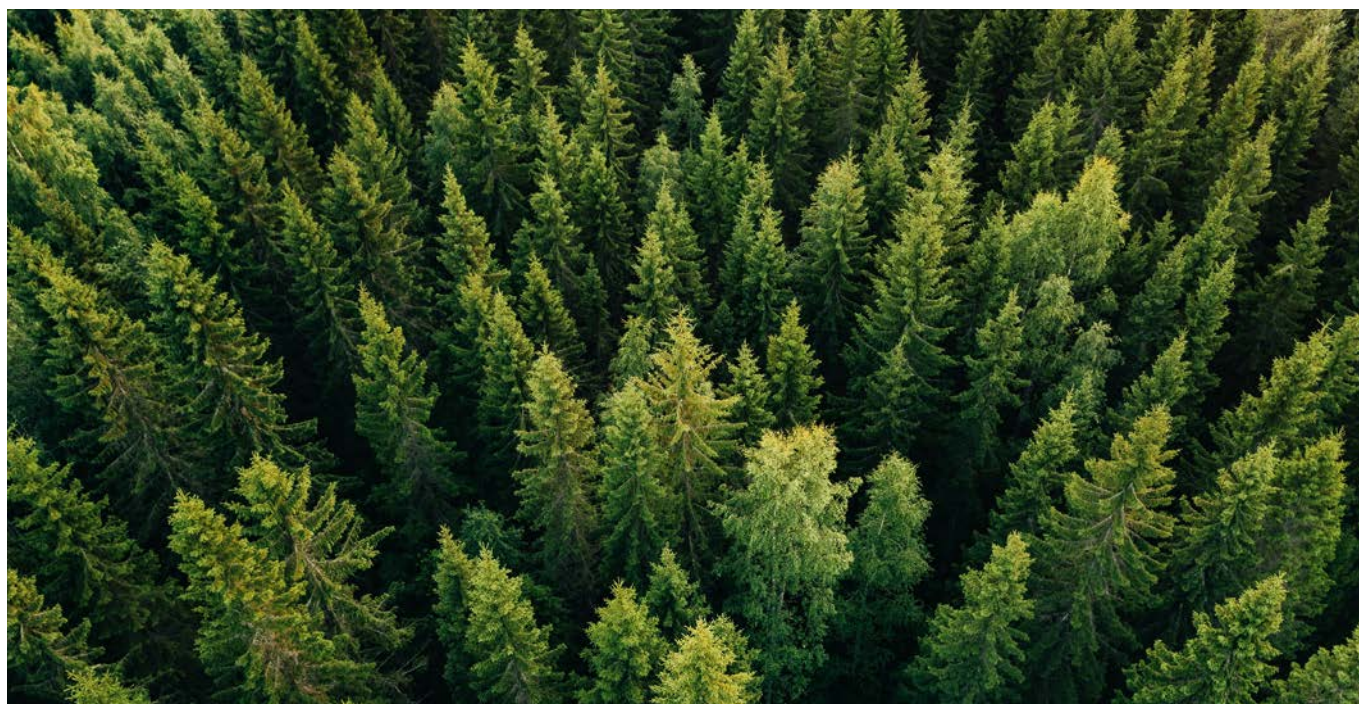
The impacts of the representative steel pipes and retention tanks were aggregated using weighted average. Impacts were inventoried and calculated for all steel pipes and retention tanks manufactured by ViaCon Polska Sp. z o. o.

CALCULATION RULES

LCA was performed using ITB-LCA tool developed in accordance with EN 15804+A2.

DATABASES

The data for the LCA calculation comes from specific EPDs (steel blooms), KOBiZE, Ecoinvent v.3.8 and ITB Database. Specific data quality analysis was a part of an external audit.



Life Cycle Assessment (LCA) – Results

DECLARED UNIT

The declaration refers to declared unit (DU) – 1 ton of the steel pipes and retention tanks manufactured by ViaCon Polska Sp. z o.o.

Table 3. System boundaries for the environmental characteristic of the steel pipes and retention tanks.

| 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-in-stallation 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 | MND | MD | MD | MD | MD |

Table 4. Life cycle assessment (LCA) results of the steel pipes manufactured by ViaCon Polska Sp. z o.o. – environmental impacts (DU: 1 ton)

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D |
|---|------------------------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Global Warming Potential | eq. kg CO ₂ | 2.18E+03 | 4.25E+00 | 2.07E+01 | 2.20E+03 | 4.87E-01 | 2.38E+01 | 2.64E-01 | -8.69E+02 |
| Greenhouse gas potential - fossil | eq. kg CO ₂ | 2.16E+03 | 4.24E+00 | 2.04E+01 | 2.19E+03 | 4.85E-01 | 2.38E+01 | 2.63E-01 | -1.82E+03 |
| Greenhouse gas potential - biogenic | eq. kg CO ₂ | 1.30E+01 | 1.45E-02 | 3.27E-01 | 1.33E+01 | 1.66E-03 | 2.04E-02 | 6.71E-04 | -4.08E+00 |
| Global warming potential - land use and land use change | eq. kg CO ₂ | 3.60E+00 | 1.66E-03 | 4.72E-03 | 3.61E+00 | 1.90E-04 | 2.35E-03 | 2.49E-04 | -7.65E-01 |
| Stratospheric ozone depletion potential | eq. kg CFC 11 | 1.22E-04 | 9.80E-07 | 4.16E-06 | 1.27E-04 | 1.12E-07 | 5.04E-06 | 1.07E-07 | -8.62E-05 |
| Soil and water acidification potential | eq. mol H+ | 2.99E+01 | 1.72E-02 | 2.03E-01 | 3.01E+01 | 1.97E-03 | 1.19E-01 | 2.48E-03 | -6.60E+00 |
| Eutrophication potential - freshwater | eq. kg P | 1.15E+00 | 2.85E-04 | 2.99E-02 | 1.18E+00 | 3.26E-05 | 7.31E-04 | 2.45E-05 | -9.09E-01 |
| Eutrophication potential - seawater | eq. kg N | 2.66E+00 | 5.19E-03 | 2.84E-02 | 2.69E+00 | 5.94E-04 | 4.62E-02 | 8.62E-04 | -1.56E+00 |
| Eutrophication potential - terrestrial | eq. mol N | 1.16E+02 | 5.66E-02 | 2.52E-01 | 1.16E+02 | 6.48E-03 | 5.06E-01 | 9.43E-03 | -1.64E+01 |
| Potential for photochemical ozone synthesis | eq. kg NMVOC | 1.02E+01 | 1.73E-02 | 7.59E-02 | 1.03E+01 | 1.98E-03 | 1.43E-01 | 2.74E-03 | -8.64E+00 |
| Potential for depletion of abiotic resources - non-fossil resources | eq. kg Sb | 7.15E-02 | 1.50E-05 | 2.65E-05 | 7.15E-02 | 1.72E-06 | 1.23E-05 | 6.04E-07 | -2.65E-03 |
| Abiotic depletion potential - fossil fuels | MJ | 2.39E+04 | 6.29E+01 | 5.00E+02 | 2.44E+04 | 7.20E+00 | 3.17E+02 | 7.22E+00 | -1.89E+04 |
| Water deprivation potential | eq. m ³ | 1.08E+03 | 2.91E-01 | 5.72E+00 | 1.08E+03 | 3.33E-02 | 8.51E-01 | 2.29E-02 | -8.06E+02 |

Table 5. Life cycle assessment (LCA) results of the steel pipes manufactured by ViaCon Polska Sp. z o. o. – additional impacts indicators (DU: 1 ton)

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D |
|--|-------------------|-----|-----|-----|-------|-----|-----|-----|-----|
| Particulate matter | disease incidence | 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 |
| Potential comparative toxic unit for ecosystems | CTUe | 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 |
| Potential comparative toxic unit for humans (non-cancer effects) | CTUh | INA | INA | INA | INA | INA | INA | INA | INA |
| Potential soil quality index | dimensionless | INA | INA | INA | INA | INA | INA | INA | INA |

Table 6. Life cycle assessment (LCA) results of the steel retention tanks manufactured by ViaCon Polska Sp. z o. o. – the resource use (DU: 1 ton)

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | 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 |
| Consumption of renewable primary energy resources used as raw materials | MJ | INA | INA | INA | INA | INA | INA | INA | INA |
| Total consumption of renewable primary energy resources | MJ | 1.27E+03 | 9.02E-01 | 1.99E+01 | 1.29E+03 | 1.03E-01 | 1.82E+00 | 6.27E-02 | -8.16E+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 |
| Consumption of non-renewable primary energy resources used as raw materials | MJ | INA | INA | INA | INA | INA | INA | INA | INA |
| Total consumption of non-renewable primary energy resources | MJ | 2.49E+04 | 6.29E+01 | 5.33E+02 | 2.55E+04 | 7.20E+00 | 3.44E+02 | 7.22E+00 | -1.99E+04 |
| Consumption of secondary materials | kg | 2.51E+02 | 2.11E-02 | 3.08E-02 | 2.51E+02 | 2.41E-03 | 1.24E-01 | 1.52E-03 | -2.34E+02 |
| Consumption of renewable secondary fuels | MJ | 8.30E-02 | 2.32E-04 | 1.86E-04 | 8.34E-02 | 2.66E-05 | 4.06E-04 | 3.96E-05 | -6.27E-02 |
| Consumption of non-renewable secondary fuels | MJ | INA | INA | INA | INA | INA | INA | INA | INA |
| Net consumption of freshwater resources | m ³ | 2.43E+01 | 7.91E-03 | 2.22E-01 | 2.45E+01 | 9.05E-04 | 5.70E-03 | 7.90E-03 | -1.78E+01 |

Table 7. Life cycle assessment (LCA) results of the steel retention tanks manufactured by ViaCon Polska Sp. z o. o. – waste categories (DU: 1 ton)

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D |
|---------------------------------|-----------------------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Hazardous waste neutralized | kg | 3.58E+02 | 7.06E-02 | 7.25E-02 | 3.59E+02 | 8.08E-03 | 8.86E-04 | 7.67E-03 | -3.16E+02 |
| Non-hazardous waste neutralised | kg | 4.16E+03 | 1.25E+00 | 5.14E+00 | 4.17E+03 | 1.43E-01 | 4.32E-01 | 1.08E-01 | -3.37E+03 |
| Radioactive waste | kg | 4.63E-02 | 4.33E-04 | 1.85E-03 | 4.86E-02 | 4.96E-05 | 2.24E-03 | 4.79E-05 | -4.00E-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 |
| Materials for recycling | kg | 2.65E-01 | 1.95E-04 | 6.33E-01 | 8.98E-01 | 2.23E-05 | 4.23E-04 | 1.44E-05 | -1.44E-01 |
| Materials for energy recovery | kg | 1.34E-03 | 1.57E-06 | 5.91E-06 | 1.35E-03 | 1.80E-07 | 6.77E-06 | 1.71E-07 | -4.59E-04 |
| Energy exported | MJ per energy carrier | 7.07E+01 | 6.98E-02 | 8.39E-01 | 7.17E+01 | 7.99E-03 | 1.39E+00 | 0.00E+00 | -3.22E+01 |

Table 8. Life cycle assessment (LCA) results of the steel retention tanks manufactured by ViaCon Polska Sp. z o. o. – waste categories (DU: 1 ton)

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D |
|---------------------------------|-----------------------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Hazardous waste neutralized | kg | 3.59E+02 | 7.06E-02 | 7.25E-02 | 3.60E+02 | 8.08E-03 | 8.86E-04 | 7.67E-03 | -3.36E+02 |
| Non-hazardous waste neutralised | kg | 4.25E+03 | 1.25E+00 | 5.14E+00 | 4.26E+03 | 1.43E-01 | 4.32E-01 | 1.08E-01 | -3.88E+03 |
| Radioactive waste | kg | 5.04E-02 | 4.33E-04 | 1.85E-03 | 5.27E-02 | 4.96E-05 | 2.24E-03 | 4.79E-05 | -4.32E-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 |
| Materials for recycling | kg | 2.78E-01 | 1.95E-04 | 6.33E-01 | 9.11E-01 | 2.23E-05 | 4.23E-04 | 1.44E-05 | -2.48E-01 |
| Materials for energy recovery | kg | 2.00E-03 | 1.57E-06 | 5.91E-06 | 2.01E-03 | 1.80E-07 | 6.77E-06 | 1.71E-07 | -1.24E-03 |
| Energy exported | MJ per energy carrier | 8.09E+01 | 6.98E-02 | 8.39E-01 | 8.18E+01 | 7.99E-03 | 1.39E+00 | 0.00E+00 | -6.59E+01 |

Table 9. Life cycle assessment (LCA) results of the steel retention tanks manufactured by ViaCon Polska Sp. z o. o. – environmental impacts (DU: 1 ton)

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D |
|---|------------------------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Global Warming Potential | eq. kg CO ₂ | 2.31E+03 | 4.25E+00 | 2.07E+01 | 2.33E+03 | 4.87E-01 | 2.38E+01 | 2.64E-01 | -1.08E+03 |
| Greenhouse gas potential - fossil | eq. kg CO ₂ | 2.29E+03 | 4.24E+00 | 2.04E+01 | 2.32E+03 | 4.85E-01 | 2.38E+01 | 2.63E-01 | -2.03E+03 |
| Greenhouse gas potential - biogenic | eq. kg CO ₂ | 1.51E+01 | 1.45E-02 | 3.27E-01 | 1.54E+01 | 1.66E-03 | 2.04E-02 | 6.71E-04 | -1.36E+01 |
| Global warming potential - land use and land use change | eq. kg CO ₂ | 3.46E+00 | 1.66E-03 | 4.72E-03 | 3.47E+00 | 1.90E-04 | 2.35E-03 | 2.49E-04 | -1.25E+00 |
| Stratospheric ozone depletion potential | eq. kg CFC 11 | 1.28E-04 | 9.80E-07 | 4.16E-06 | 1.33E-04 | 1.12E-07 | 5.04E-06 | 1.07E-07 | -1.14E-04 |
| Soil and water acidification potential | eq. mol H+ | 3.05E+01 | 1.72E-02 | 2.03E-01 | 3.07E+01 | 1.97E-03 | 1.19E-01 | 2.48E-03 | -2.80E+01 |
| Eutrophication potential - freshwater | eq. kg P | 1.21E+00 | 2.85E-04 | 2.99E-02 | 1.24E+00 | 3.26E-05 | 7.31E-04 | 2.45E-05 | -1.08E+00 |
| Eutrophication potential - seawater | eq. kg N | 2.78E+00 | 5.19E-03 | 2.84E-02 | 2.81E+00 | 5.94E-04 | 4.62E-02 | 8.62E-04 | -2.49E+00 |
| Eutrophication potential - terrestrial | eq. mol N | 1.17E+02 | 5.66E-02 | 2.52E-01 | 1.17E+02 | 6.48E-03 | 5.06E-01 | 9.43E-03 | -1.09E+02 |
| Potential for photochemical ozone synthesis | eq. kg NMVOC | 1.07E+01 | 1.73E-02 | 7.59E-02 | 1.08E+01 | 1.98E-03 | 1.43E-01 | 2.74E-03 | -9.56E+00 |
| Potential for depletion of abiotic resources - non-fossil resources | eq. kg Sb | 7.31E-02 | 1.50E-05 | 2.65E-05 | 7.32E-02 | 1.72E-06 | 1.23E-05 | 6.04E-07 | -6.72E-02 |
| Abiotic depletion potential - fossil fuels | MJ | 2.53E+04 | 6.29E+01 | 5.00E+02 | 2.58E+04 | 7.20E+00 | 3.17E+02 | 7.22E+00 | -2.23E+04 |
| Water deprivation potential | eq. m ³ | 1.12E+03 | 2.91E-01 | 5.72E+00 | 1.13E+03 | 3.33E-02 | 8.51E-01 | 2.29E-02 | -1.00E+03 |

Table 10. Life cycle assessment (LCA) results of the steel retention tanks manufactured by ViaCon Polska Sp. z o. o. – additional impacts indicators (DU: 1 ton)

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D |
|--|-------------------|-----|-----|-----|-------|-----|-----|-----|-----|
| Particulate matter | disease incidence | 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 |
| Potential comparative toxic unit for ecosystems | CTUe | 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 |
| Potential comparative toxic unit for humans (non-cancer effects) | CTUh | INA | INA | INA | INA | INA | INA | INA | INA |
| Potential soil quality index | dimensionless | INA | INA | INA | INA | INA | INA | INA | INA |

Table 11. Life cycle assessment (LCA) results of the steel retention tanks manufactured by ViaCon Polska Sp. z o. o. – the resource use (DU: 1 ton)

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | 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 |
| Consumption of renewable primary energy resources used as raw materials | MJ | INA | INA | INA | INA | INA | INA | INA | INA |
| Total consumption of renewable primary energy resources | MJ | 1.43E+03 | 9.02E-01 | 1.99E+01 | 1.45E+03 | 1.03E-01 | 1.82E+00 | 6.27E-02 | -1.15E+03 |
| Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials | MJ | 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 |
| Total consumption of non-renewable primary energy resources | MJ | 2.63E+04 | 6.29E+01 | 5.33E+02 | 2.69E+04 | 7.20E+00 | 3.44E+02 | 7.22E+00 | -2.33E+04 |
| Consumption of secondary materials | kg | 3.04E+02 | 2.11E-02 | 3.08E-02 | 3.04E+02 | 2.41E-03 | 1.24E-01 | 1.52E-03 | -2.36E+02 |
| Consumption of renewable secondary fuels | MJ | 9.71E-02 | 2.32E-04 | 1.86E-04 | 9.75E-02 | 2.66E-05 | 4.06E-04 | 3.96E-05 | -7.04E-02 |
| Consumption of non-renewable secondary fuels | MJ | INA | INA | INA | INA | INA | INA | INA | INA |
| Net consumption of freshwater resources | m ³ | 2.55E+01 | 7.91E-03 | 2.22E-01 | 2.57E+01 | 9.05E-04 | 5.70E-03 | 7.90E-03 | -2.27E+01 |

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
- PN-EN 1090-1+A1:2012 Wykonanie konstrukcji stalowych i aluminiowych -- Część 1: Zasady oceny zgodności elementów konstrukcyjnych
- KOBiZE Wskaźniki emisyjności CO₂, SO₂, NO_x, CO i pyłu całkowitego dla energii elektrycznej. Grudzień 2021
- World Steel Association 2017 Life Cycle inventory methodology report for steel products

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.) | |
| <input checked="" type="checkbox"/> External | <input type="checkbox"/> 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 | |



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CERTIFICATE № 368/2022 **of TYPE III ENVIRONMENTAL DECLARATION**

Product:

Steel pipes and retention tanks
HelCor Pipe, HelCor PipeArch Pipes
ViaCon StormWater Tanks, WaterCor Tanks

Manufacturer:

ViaCon Sp z o.o.

ul. Przemysłowa 6, 64-130 Rydzyna, Poland

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 26th September 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



Deputy Director
for Research and Innovation


Krzysztof Kuczyński, PhD

Warsaw, September 2022



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