

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	voestalpine AG
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-VOE-20250329-IBC1-EN
Issue date	05.12.2025
Valid to	04.12.2030

**Cold-drawn precision steel tube
voestalpine Rotec GmbH**

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1. General Information

voestalpine Rotec GmbH

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-VOE-20250329-IBC1-EN

This declaration is based on the product category rules:

Structural steels, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

05.12.2025

Valid to

04.12.2030



Dipl.-Ing. Hans Peters
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Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Cold-drawn precision steel tube

Owner of the declaration

voestalpine AG
voestalpine-Straße 3
4020 Linz
Austria

Declared product / declared unit

1 ton cold-drawn precision steel tube (yearly average)

Scope:

This EPD refers to a declared unit of 1 ton of average cold-drawn precision steel tubes produced by voestalpine Rotec GmbH at the site in Krieglach (Austria). The products under consideration are cold-drawn precision steel tubes made from welded and seamless tubes. All quantities produced are included in the average analysis in the form of an annual average. The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR	
Independent verification of the declaration and data according to ISO 14025:2011	
<input type="checkbox"/>	internally
<input checked="" type="checkbox"/>	externally



Dr. Marco Muhl,
(Independent verifier)

2. Product

2.1 Product description/Product definition

The products of voestalpine Rotec GmbH are seamless cold-drawn precision steel tubes (EN10305-1) and welded cold-drawn precision steel tubes (EN10305-2) as well as sectional tubes.

Features:

- High dimensional accuracy for interior and outer diameter
- Smooth drawing surface (defined surface roughness)
- Defined strength values
- Good concentricity

Seamless precision steel tubes are used wherever high dimensional accuracy, smooth surfaces and increased strength values are required.

Precision tubes according to EN10305-2 are produced by cold forming stretch-reduced or HF-welded pre-tubes (hollows). Forming is carried out by cold drawing.

For the use of the product in the EU/EFTA (with the exception of Switzerland), the respective national regulations at the place of use and the technical provisions based on these regulations apply, e.g:

- EN 10305-1:2016; Precision steel tubes - Technical delivery conditions - Part 1: Seamless cold drawn tubes
- EN 10305-2:2016; Precision steel tubes - Technical delivery conditions - Part 2: Welded cold drawn tubes

2.2 Application

The products of voestalpine Rotec GmbH are mainly used in the following areas:

- Seamless cold-drawn precision steel tubes
 - Automotive industry
 - Fuel injection pipes
 - Rocker arm axles
 - Stabilizers
 - Piston rods
 - Transmission shafts
 - Various industries
 - Tubes for heat exchangers and appliances
 - Tubes for the two-wheeler industry
 - Hydraulics, cylinders
 - Chain tubes
 - Rivet tubes
 - Pipes for gas cylinders
- Welded cold-drawn precision steel tubes
 - Automotive industry
 - Drive shafts
 - Tubes for steering systems
 - Camshafts
 - Various industries
 - Elevator tubes
 - Winding tubes
 - Roller tubes
 - Tubes for the furniture industry
- Cold-drawn profile tubes
 - Agriculture
 - Frame tubes
 - Steel industry
 - Automotive industry (steering parts, transmission parts, safety parts)
 - Mechanical engineering

2.3 Technical Data

This EPD relates to all products of the voestalpine Rotec GmbH in various steel grades, dimensions, designs and delivery states.

Structural data

Name	Value	Unit
Density	7850	kg/m ³
Modulus of elasticity	212900	N/mm ²
Coefficient of thermal expansion	11.45	10 ⁻⁶ K ⁻¹
Thermal conductivity	50	W/(mK)
Melting point	1536	°C

Performance values of the product in relation to its characteristics according to the relevant technical intended use (no CE marking).

2.4 Delivery status

The products of voestalpine Rotec GmbH are delivered in the customer's desired designs, whereby the products with a length of 20 mm to a maximum of 17,700 mm, an outer diameter of 3 mm to 180 mm and are available with a wall thickness of 0.5 mm to 22 mm.

2.5 Base materials/Ancillary materials

The products of voestalpine Rotec GmbH consist of pre-tubes (hollows) from external suppliers who in turn obtain the pre-material from the blast furnace route, but increasingly also from electric steel production.

This product/article/at least one partial article contains substances listed in the *candidate list* (date: 25.01.2025) exceeding 0.1 percentage by mass: **no**.

This product/article/at least one partial article contains other CMR substances in categories 1A or 1B which are not on the *candidate list*, exceeding 0.1 percentage by mass: **no**.

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No. 528/2012): **no**.

2.6 Manufacture

The raw material for the production of precision steel tubes from voestalpine Rotec GmbH are purchased tubes, so-called tube flaps, from European manufacturers.

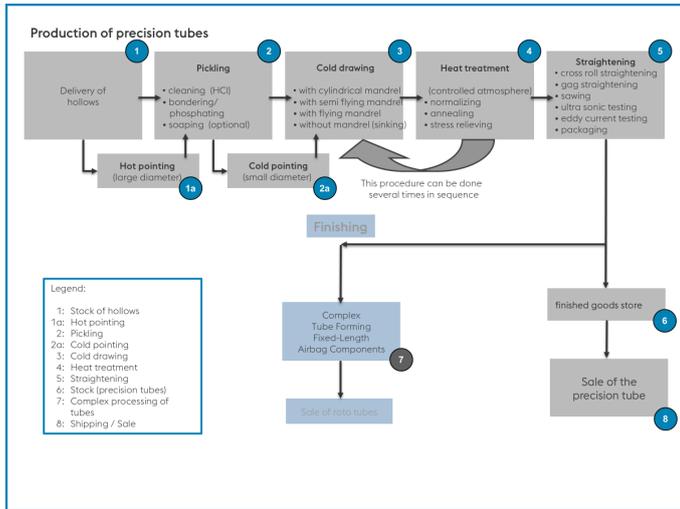
After delivery and assembly according to customer order, the tubes are prepared for cold forming in a fully automated pickling plant.

The tubes are then cold-formed on various drawing lines depending on their dimensions and then straightened, sawn to length and bundled ready for dispatch.

In order to be able to form the tubes on the drawing lines, it is necessary to "point" them at one end - production of the tube tang. This is also largely carried out by cold forming on the drawing lines. Large, thick-walled hollows are heated and tanged on a separate line for this purpose.

In some cases, hatches are also cold-formed several times, which requires heat treatment in one of the three tube annealing furnaces.

Overview of the process steps:



1 delivery, 1a hot pointing, 2 pickling, 2a cold pointing, 3 Drawing shop, 4 Heat treatment, 5 Straightening/sawing/packaging, 6 Shipping.

2.7 Environment and health during manufacturing

The voestalpine Rotec GmbH site is certified in accordance with ISO 9001, ISO 14001, ISO 45001 and IATF 16949. The testing institute is accredited in accordance with ÖNORM EN ISO/IEC 17024.

In the manufacturing process, environmental pollution is avoided as far as possible and the necessary resources are used sparingly in order to continuously improve environmental performance.

In addition, the plant is inspected by the authorities at regular intervals as part of environmental inspections.

2.8 Product processing/Installation

The processing of products of voestalpine Rotec GmbH takes place directly at the installation site and in processing plants in the region of the future place of use. Installation is carried out in accordance with the applicable standards and guidelines of the respective place of use by the customer.

2.9 Packaging

The products of this declaration are always delivered to the customer unpacked. The pipes are bundled with steel straps for storage and transportation.

Customer options:

To prevent internal soiling, the pipe ends can be sealed with plastic pipe stoppers.

To protect the pipe surface, cardboard is sometimes inserted between the product and the steel belt.

It is also possible to wrap the pipe coils with anti-corrosion paper as corrosion protection.

A small proportion of pipe bundles are delivered to the customer in wooden packaging.

2.10 Condition of use

No changes to the material quality are to be expected during the use of the steel-tube products if they are used as intended.

2.11 Environment and health during use

During the use of the steel-tube products, no impacts on the health of humans and animals, nor harmful emissions into air, soil, and water are to be expected.

2.12 Reference service life

For precision tube products from voestalpine Rotec GmbH the reference service life is not specified due to the diversity of the areas of application and their stresses.

Furthermore, the service life of the steel tubes is influenced by the respective installation parameters and the ambient conditions.

2.13 Extraordinary effects

Fire

Steel tubes are not flammable. No flammable gases or vapors arise.

Fire protection

Name	Value
Building material class	A1
Burning droplets	n.a.
Smoke gas development	n.a.

n.a. = not applicable

Water

No negative consequences for the environment are to be expected under the influence of water (e.g. flooding).

Mechanical destruction

Unforeseeable mechanical effects on the declared product have no consequences for the environment due to the plastic deformability of steel.

2.14 Re-use phase

The declared product consists of 100 % steel and can, therefore, either be reused or reintroduced into the steel industry as a valuable secondary raw material. Steel is a permanent material that can be recycled as often as required.

2.15 Disposal

The declared product can be used entirely as a recycled raw material.

The waste code according to the European Waste Catalog is: 17 04 05 (iron and steel).

The waste type is to be equated with the code number 35103 in accordance with the Austrian Waste List Ordinance.

2.16 Further information

Further information on the product can be found on the website at <https://www.voestalpine.com/rotec>.

3. LCA: Calculation rules

3.1 Declared Unit

This Environmental Product Declaration refers to a declared unit of 1 ton cold-drawn precision steel tube produced by voestalpine Rotec GmbH, declared as a yearly average.

Declared unit

Name	Value	Unit
Declared unit	1	t

Precision steel tubes are produced in various diameters and lengths and with different cross-sectional geometries. The tubes are pickled and annealed up to four times, depending on the raw material and the requirements for the finished products.

The declared results refer to a weighted average of the entire product group. Due to different annealing programs, there are deviations in the environmental impact between the products. The analysis of the possible range of results for different annealing programs shows a high representativeness of the results (GWP-total) for single and double annealed products. This group represents the main production volume. For precision steel tubes that are not annealed, the average considered tends to overestimate the environmental impacts. The environmental impact of precision steel tubes that are annealed three or four times tends to be underestimated by the average. Due to the low share of these variants in the annual production, the average consideration is classified as representative for the entire range.

3.2 System boundary

The life cycle assessment of the cold-drawn precision steel tubes refers to a cradle-to-gate analysis of the environmental impacts with modules C1–C4 and module D (A1–A3 + C + D). The following life cycle phases are taken into consideration in the analysis:

Module A1-A3 | Production stage

The production stage includes the upstream burdens of raw material supply (steel pre-material), their transports and the processing at the manufacturing plant located in Krieglach (Austria). Scrap used in the production of precursor materials is considered burden-free. Energy provision at the site in Krieglach is based on 100 % green electricity (GWP-total = 0,02 kg CO₂-equ./kWh) and natural gas.

The packaging of the products is considered based on manufacturer specific information.

Module C1 | Destruction and demolition

It is assumed that the product is not connected with other materials and can therefore be dismantled. Due to a large variety of applications of the declared products, it is not possible to define a representative scenario for module C1. Deconstruction can happen manually or with the help of suitable tools. Relative to the environmental burden of module A1-A3, the associated efforts are to be expected as negligible. No environmental impacts from the deconstruction of the products are declared.

Module C2 | Transport to disposal

Module C2 includes the transport to disposal. For this purpose, transport by truck over a distance of 50 km is assumed as a scenario.

Module C3 | Waste processing

Product flows that reach Module D for recycling leave the product system in C3. Environmental impacts resulting from the grinding and sorting of steel scrap are not included due to the negligible expected environmental impact

Module C4 | Landfilling

Das Module C4 declares the environmental impacts incurred by landfilling (5 % of the product).

Module D | Benefits and loads beyond the system boundary

The potential for substituting primary steel with a recycling scenario (95 % of the product) is contained in Module D.

3.3 Estimates and assumptions

Assumptions and approximations are applied in case of a lack of representative data. All assumptions and approximations are documented precisely and represent a best-guess representation of reality.

3.4 Cut-off criteria

The LCA model covers all available input and output flows, which can be represented based on robust data and from which a significant contribution can be expected. Data gaps are filled with conservative assumptions of average data or generic data if available and are documented accordingly. Only data with a contribution of less than 1 % were cut off. Thus, no data were neglected, of which a substantial impact is to be expected. All relevant data were collected comprehensively. Cut-off material and energy flows were chosen carefully based on their expected quantitative contribution as well as potential environmental impacts. Thus, it can be assumed that the sum of all neglected input flows does not account for more than 5 % of the total material, water and energy flows.

3.5 Background data

To model the background system in the life cycle assessment, both primary and secondary data are used.

Product-specific Environmental Product Declarations (EPDs) from suppliers are available to represent the upstream supply chain of certain welded and seamless pipes used.

Secondary data is sourced from the MLC 2024.2 background database (e.g., worldsteel industry averages).

3.6 Data quality

Data collection is based on industry-specific questionnaires. It follows an iterative process clarifying questions via email, telephone calls or in personal/web meetings. Intensive discussions between voestalpine Rotec GmbH and Daxner & Merl result in an accurate mapping of product related material and energy flows. This leads to a high quality of foreground data collected. Data collection relies on a consistent process according to *ISO 14044*.

The technological, geographical and time-related representativeness of the database was kept in mind when selecting background data. Whenever specific data were missing, either generic datasets or representative average data were used instead. The implemented *MLC*-background datasets refer to the latest versions available (not more than ten years old) and are carefully chosen.

The life cycle assessment of the declared products is significantly influenced by the purchase of pre-materials. To ensure the highest possible representativeness of the results, supplier-specific EPDs were used where available, as well as regionalized industry data.

3.7 Period under review

Foreground data of voestalpine Rotec GmbH were collected for the year 2023 and the data are based on the volumes produced on an annual basis.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product's lifespan: Europe

3.9 Allocation

Background data on the steel input supply chain is published by worldsteel. In the absence of supplier-specific data, certain quantities of input material used are modelled using worldsteel industry averages. As these represent an average of the global steel industry, the worldsteel background datasets ensure good geographical and technological representativeness of steel production. All worldsteel datasets are modeled according to the worldsteel LCA methodology (*worldsteel, 2019*), which uses the system extension approach for the allocation of steel production co-products. Therefore, these data sets do not fully

comply with the requirements of *EN 15804+A2*, which provides for the so-called partitioning approach in which the environmental impacts are divided based on physical or economic relationships. Due to the lack of data based on an *EN15804*-compliant approach, the worldsteel data represent the most accurate depiction of steel production in this context. Scrap input is included in the calculation burdenfree. To calculate the net flows, the mass used in production as external steel scrap is deducted from the total mass of the product.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The declared product does not contain any biogenic carbon.

Information describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.015	kg C

The carbon stored in the packaging was taken into account as 'CO₂-neutral'. This means that the storage effect of the carbon bound in the packaging is not included in the calculation and is considered to be emitted immediately

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO₂.

Installation (A5)

The End-of-Life of product packaging is not declared in module A5, but is documented as scenario information in the following table.

3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. The *MLC 2024.2*- database in the *LCA FE-Software-Version 10.9* was used to calculate the LCA.

Name	Value	Unit
Packaging (cardboard)	0.13	kg
Packaging (paper)	0.02	kg
Packaging (wood)	0.02	kg
Packaging (synthetics)	0.01	kg
Packaging (steel strip)	1.5	kg

End of Life (C1-C4)

Name	Value	Unit
Collected separately waste type (steel)	1000	kg
Recycling (95 %)	950	kg
Landfilling (5 %)	50	kg

Re-use, recovery and recycling potential (D), relevant scenario information

Name	Value	Unit
Net flow	207	kg

This scenario contains a recycling rate of 95 %. As scrap is purchased in the upstream supply chain for the production of the welded and seamless pipes, this is offset against the steel scrap for recycling (net flow).

5. LCA: Results

The following table contains the LCA results (environmental impact assessment according to EF 3.1) for a declared unit of 1 ton average cold-drawn precision steel tube.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction 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
X	X	X	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 t cold-drawn precision steel tube

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Global Warming Potential total (GWP-total)	kg CO ₂ eq	2.34E+03	0	3.86E+00	0	1.04E+00	-3.57E+02
Global Warming Potential fossil fuels (GWP-fossil)	kg CO ₂ eq	2.32E+03	0	3.79E+00	0	1.04E+00	-3.59E+02
Global Warming Potential biogenic (GWP-biogenic)	kg CO ₂ eq	1.73E+01	0	9.04E-03	0	3.48E-03	2.12E+00
Global Warming Potential luluc (GWP-luluc)	kg CO ₂ eq	1.58E+00	0	6.36E-02	0	4.53E-03	-4.78E-02
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC11 eq	1.28E-05	0	5.58E-13	0	3.24E-12	4.82E-10
Acidification potential of land and water (AP)	mol H ⁺ eq	6.18E+00	0	1.34E-02	0	6.49E-03	-8.78E-01
Eutrophication potential aquatic freshwater (EP-freshwater)	kg P eq	8.98E-02	0	1.62E-05	0	2.11E-06	-8.36E-05
Eutrophication potential aquatic marine (EP-marine)	kg N eq	1.57E+00	0	6.22E-03	0	1.57E-03	-1.41E-01
Eutrophication potential terrestrial (EP-terrestrial)	mol N eq	1.65E+01	0	6.99E-02	0	1.73E-02	-1.26E+00
Formation potential of tropospheric ozone photochemical oxidants (POCP)	kg NMVOC eq	5.38E+00	0	1.28E-02	0	4.94E-03	-5.73E-01
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	2.83E-03	0	3.3E-07	0	6.98E-08	-2.03E-03
Abiotic depletion potential for fossil resources (ADPF)	MJ	2.86E+04	0	4.99E+01	0	1.73E+01	-3.57E+03
Water use (WDP)	m ³ world eq deprived	4.28E+02	0	5.86E-02	0	1.27E-01	-2.42E+01

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 t cold-drawn precision steel tube

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier (PERE)	MJ	6.03E+03	0	4.3E+00	0	2.56E+00	1.41E+02
Renewable primary energy resources as material utilization (PERM)	MJ	6.84E-01	0	0	0	0	0
Total use of renewable primary energy resources (PERT)	MJ	6.03E+03	0	4.3E+00	0	2.56E+00	1.41E+02
Non renewable primary energy as energy carrier (PENRE)	MJ	2.88E+04	0	4.99E+01	0	1.73E+01	-3.57E+03
Non renewable primary energy as material utilization (PENRM)	MJ	4E-01	0	0	0	0	0
Total use of non renewable primary energy resources (PENRT)	MJ	2.88E+04	0	4.99E+01	0	1.73E+01	-3.57E+03
Use of secondary material (SM)	kg	8.48E+02	0	0	0	0	2.07E+02
Use of renewable secondary fuels (RSF)	MJ	0	0	0	0	0	0
Use of non renewable secondary fuels (NRSF)	MJ	0	0	0	0	0	0
Use of net fresh water (FW)	m ³	2.18E+01	0	4.79E-03	0	3.85E-03	-3.63E+01

RESULTS OF THE LCA - WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 t cold-drawn precision steel tube

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	4.47E+00	0	1.91E-09	0	4.11E-09	-2.67E-05
Non hazardous waste disposed (NHWD)	kg	1.07E+02	0	8.15E-03	0	5.01E+01	4.32E+01
Radioactive waste disposed (RWD)	kg	2.99E-01	0	9.09E-05	0	2.34E-04	3.91E-04
Components for re-use (CRU)	kg	0	0	0	0	0	0
Materials for recycling (MFR)	kg	0	0	0	9.5E+02	0	0
Materials for energy recovery (MER)	kg	0	0	0	0	0	0
Exported electrical energy (EEE)	MJ	0	0	0	0	0	0
Exported thermal energy (EET)	MJ	0	0	0	0	0	0

RESULTS OF THE LCA - additional impact categories according to EN 15804+A2-optional: 1 t cold-drawn precision steel tube

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Incidence of disease due to PM emissions (PM)	Disease	ND	ND	ND	ND	ND	ND

	incidence						
Human exposure efficiency relative to U235 (IR)	kBq U235 eq	ND	ND	ND	ND	ND	ND
Comparative toxic unit for ecosystems (ETP-fw)	CTUe	ND	ND	ND	ND	ND	ND
Comparative toxic unit for humans (carcinogenic) (HTP-c)	CTUh	ND	ND	ND	ND	ND	ND
Comparative toxic unit for humans (noncarcinogenic) (HTP-nc)	CTUh	ND	ND	ND	ND	ND	ND
Soil quality index (SQP)	SQP	ND	ND	ND	ND	ND	ND

The additional and optional impact categories according to EN 15804+A2 are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators 'abiotic depletion potential for non-fossil resources', 'abiotic depletion potential for fossil resources', 'water (user) deprivation potential, deprivation - weighted water consumption'.

The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicators.

6. LCA: Interpretation

The following interpretation contains a summary of the LCA results referenced to a declared unit of 1 ton cold-drawn

precision steel tube.

Relative contribution of considered life cycle stages - cold-drawn precision steel tubes



A comparison of the individual life-cycle phases results in a clear dominance of the production phase (Modules A1–A3). The environmental impact in the production phase is mainly dominated by the supply chain of the purchased steel input material.

As a result of product recyclability, the material removed at the end of life can substitute primary steel. Module D shows the recycling potential of steel at the end of its product life. This results in benefits from the substitution of primary steel.

The environmental impact of the transport of the products to recycling (C2) as well as landfilling of the losses at the end of life (C4) represents a minor contribution to the overall environmental impact of the product.

In summary, the environmental impacts from the upstream supply chain of seamless and welded steel pipes can be identified as key factors in the life cycle assessment of the cold-

drawn precision steel tubes. These are modelled using supplier-specific data when possible, therefore, it can be assumed that the results show a good representativeness.

The declared results refer to a yearly average of precision steel tubes. Depending on the raw material and the requirements for the finished products, the tubes are pickled and annealed multiple times. Due to different annealing programs, there are variations in the environmental impacts of products that are not annealed and those that are annealed multiple times. The analysis of the resulting variance shows a high representativeness for precision steel tubes that are annealed once or twice (deviation of GWP-total of $\leq 3\%$). The environmental impacts of precision steel tubes that are not annealed tend to be overestimated by the declared average (GWP-total = -7%), while the results for products that are annealed three or four times tend to be underestimated (GWP-total = $+9\%$ or $+14\%$).

7. Requisite evidence

Not relevant for this EPD.

8. References

EN 10305-1

DIN EN 10305-1:2016: Precision steel tubes - Technical delivery conditions - Part 1: Seamless cold drawn tubes

EN 10305-2

DIN EN 10305-2:2016: Precision steel tubes - Technical delivery conditions - Part 2: Welded cold drawn tubes

EN 10305-4

DIN EN 10305-4:2016: Precision steel tubes - Technical delivery conditions - Part 4: Seamless cold drawn tubes for hydraulic and pneumatic power systems

EN 15804

DIN EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works – Environmental Product Declarations – Core rules for the product category of construction products.

ISO 14025

DIN EN ISO 14025:2011, Environmental labels and declarations – Typ III Environmental product declarations – Principles and procedures.

ISO 14044

DIN EN ISO 14044:2006-10, Environmental management – Life cycle assessment – Requirements and guidelines.

ISO 9001

ÖNORM EN ISO 9001:2015, Quality management systems — Requirements.

ISO 14001

ÖNORM EN ISO 14001:2015, Environmental management systems — Requirements with guidance for use.

ISO 45001

DIN ISO 45001:2018, Occupational safety and health management – Requirements with guidance for use.

ISO/IEC 17024

ÖNORM EN ISO/IEC 17024:2012, Conformity assessment - General requirements for bodies operating certification of persons

IATF 16949

IATF 16949:2016, Quality management systems - Particular requirements for the application of ISO 9001 for automotive production and relevant service part organizations

EF3.1

Environmental Footprint (EF) 3.1 method

Further literatur

Candidate list

List of Substances of Very High Concern (SVHC) for Authorization (ECHA Candidate List), dated 21.01.2025, published in accordance with Article 59 (10) of the REACH Regulation. European Chemicals Agency.

IBU 2021

Institut Bauen und Umwelt e.V.: General guidance for the EPD program of the Institut Bauen und Umwelt e.V., Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021 <http://www.ibu-epd.com>.

JRC 2022, EF 3.1

European Commission-Joint Research Centre, 2022. Environmental Footprint reference package, EF reference package 3.1.

LCA FE

LCA FE 10, LCA for Experts Software System and Database for Life Cycle Engineering. Version 10.9. Sphera, 1992-2025.

MLC

MLC 2024.2, Database for Life Cycle Engineering implemented in LCA for Experts software system. DB v10.9 2024.2. Sphera, 1992-2025. Available at: <https://lcadatabase.sphera.com/>.

PCR part A

Institut Bauen und Umwelt e.V., 2024. Product category rules for building-related products and services. Part A: Calculation rules for life cycle assessment and requirements on the project report according to EN 15804+A2:2019. Version 1.4.

PCR Structural steels

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