ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	Busch + Kunz GmbH & Co. KG
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-BKU-20250240-IBC1-EN
Issue date	12.08.2025
Valid to	11.08.2030

Steel Pipe Fitting

Busch + Kunz GmbH & Co. KG

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

www.ibu-epd.com | https://epd-online.com

1. General Information

Busch + Kunz GmbH & Co. KG

Programme holder

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

Declaration number

EPD-BKU-20250240-IBC1-EN

This declaration is based on the product category rules:

Steel pipes for pressure applications, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

12.08.2025

Valid to

11.08.2030

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Steel Pipe Fitting

Owner of the declaration

Busch + Kunz GmbH & Co. KG
Cark-Benz-Straße 17-19
57299 Burbach
Germany

Declared product / declared unit

1 metric tonne of average Steel Pipe Fitting

Scope:

A life cycle assessment according to ISO 14040/44 has been performed to calculate the environmental impact of 1 metric tonne of average steel pipe fitting manufactured by Busch + Kunz GmbH & Co. KG.

Data from the production plants in Burbach and Torgelow, Germany, are used to generate the average data over multiple product variations. The product groups under study are:

- Steel Pipe Fittings in carbon steel
- Steel Pipe Fittings in stainless steel

The manufacturing process for both groups is similar, with the only major differing factor being the type of steel used. Carbon steel represents the majority in the produced final products as well as in the data sets. A worst-case approach was taken when assumptions were made to take into account the variability in data.

For data under control by Busch + Kunz, primary data was used for the material and energy used. On-site consumed electricity is modelled using the German energy mix.
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
☐ internally ☒ externally

Dr. Matthew Fishwick,
(Independent verifier)

2. Product

2.1 Product description/Product definition

This EPD includes the following products:

- Steel Pipe Fittings in carbon steel
- Steel Pipe Fittings in stainless steel

Of the abovementioned categories, only tees, concentric reducers and eccentric reducers are covered in this EPD. Details of the product variations can be found at: https://www.busch-kunz.de/schweissfittings/

For the placing on the market in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the following legal provisions apply: *2014/68/EU* of the European Parliament and of the Council of 15 May 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of pressure equipment and the harmonised standards based on these provisions:

- *EN 10253-1:2000*, Butt-welding pipe fittings – Part 1: Wrought carbon steel for general use and without specific inspection requirements
- *EN 10253-2:2021*, Butt-welding pipe fittings – Part 2: Non-alloy and ferritic alloy steels with specific inspection requirements
- *EN 10253-3:2009*, Butt-welding pipe fittings - Part 3: Wrought austenitic and austenitic-ferritic (duplex) stainless steels without specific inspection requirements
- *EN 10253-4:2008*, Butt-welding pipe fittings - Part 4: Wrought austenitic and austenitic-ferritic (duplex) stainless steels with specific inspection requirements

The CE-marking takes into account the proof of conformity with the respective harmonised standards based on the legal provisions above. For the application and use the respective national provisions apply.

2.2 Application

Steel Pipe Fittings are used to join different pipes together and can be used for oil, water or gas applications, depending on the material used. Steel Pipe Fittings are designed to be joined by a weld and therefore do not feature threaded ends. Steel Pipe Fittings include different types of fittings in various shapes and dimensions, such as tees, concentric reducers, and eccentric reducers. Pipe bends, crosses, welded elbows and saddle elbows can also fall into the category of butt-welded fittings, however, only the types listed in the product description above are covered in this EPD.

2.3 Technical Data

The assessed products follow a range of standards in relation to materials, production and technical properties, depending on the type of flanges. The following standards are relevant for Busch + Kunz's fittings:

- *EN 10253-1*
- *EN 10253-2*
- *EN 10253-3*
- *EN 10253-4*
- *EN 10216-1*
- *EN 10216-2*
- *EN 10216-3*
- *EN 10216-4*
- *EN 10216-5*
- *EN 10216-7*
- *ASTM A106*
- *ASTM A234*
- *ASTM A333*
- *ASTM A420*
- *ASTM A860*
- *ASTM A960*
- *ASME B16.9*
- *API SPEC 5L*
- *AD2000 HP 8/3*
- *AD2000 W2/4/10*

Constructional data

These values are attributed to fittings made of carbon steel.

Name	Value	Unit
Yield strength pipe [ASTM A370]	235 - 355	N/mm^2
Tensile strength pipe [ASTM A370]	360 - 650	N/mm^2
Hardness [ASTM E110]	170	HV 10
Notched-bar impact value [ASTM A370]	27 - 40	Joule
Ductility [API RP 5L3]	20 - 25	%

The ranges of values for stainless steel are as follows:
Yield Strength: 180 - 210 N/mm^2
Tensile Strength: 470 - 730 N/mm^2
Hardness: 200 - 210 HV 10
Notched-bar impact value: 60 - 100 J
Ductility: 30 - 40 %

The customs tariff numbers of the products are as follows:

- Carbon Steel: 73079980
- Stainless Steel: 73072980

2.4 Delivery status

The measurements of the products can vary between different lengths, thicknesses and diameters depending on the intended use and demand.

2.5 Base materials/Ancillary materials

Name	Value	Unit
Steel (Carbon or Stainless)	100	%

In this EPD, the product modelled is composited of 91 % carbon steel and 9 % stainless steel. The environmental impact for products containing stainless steel would be worse compared to carbon steel in most impact categories.

1) This product contains substances listed in the *Candidate List of substances of very high concern* (date: 21.06.2024) exceeding 0.1 percentage by mass: **no**

2) This product contains other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: **no**

3) 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 manufacturing on site includes the following processes:

- Cutting of steel pipes
- Blasting for surface treatment
- Hydroforming under pressure
- Heat treatment to achieve material requirements
- Turning / milling of ends

Busch + Kunz is operating under a certified *DIN EN ISO 9001* Quality Management System which covers all manufacturing sites.

2.7 Environment and health during manufacturing

During the entire manufacturing process, no other health protection measures are required (extending) beyond the legally specified industrial protection measures for commercial enterprises.

2.8 Product processing/Installation

Steels can be welded manually or automatically. Industrial safety measures are required during processing/installation. No significant environmental pollution is triggered by processing/assembling these products. No special measures are required to protect the environment.
Residue and packaging materials must be collected separately at the construction site. The specifications of local waste authorities must be followed during processing.

2.9 Packaging

The product packaging is dependent on the customer specifications. Therefore, it cannot be correctly modelled and was omitted for this EPD.

2.10 Condition of use

Environmental effects of the usage stage are not considered in the scope of this study. Nevertheless, the product does not require any maintenance, repair or renewal during usage. As a general rule, the material composition of the product does not change over its lifetime.

2.11 Environment and health during use

There are no health risks for users of steel pipes or for persons manufacturing or processing steel pipes. From an environmental perspective, there are no restrictions governing the use of steel pipes.

2.12 Reference service life

The life cycle of steel pipe is dependent on the respective structural design, use and maintenance.
The use phase for steel pipe is not depicted as they involve maintenance-free and generally durable products.

2.13 Extraordinary effects

Fire

Steel pipe fittings comply with the requirements of construction product class A1 'nonflammable' in accordance with *DIN 4102, Part 1* and *EN 13501-1*. No smoke gas develops.

Water

Influence of water on the steel pipe fittings does not cause any negative environmental effects.

Mechanical destruction

High mechanical durability prevents the steel pipe fittings from any major damage due to most mechanical impacts.

2.14 Re-use phase

Theoretically, steel is 100 % recyclable. For this EPD, a recycling quota of 95 % is assumed.

2.15 Disposal

At most, 5 % of steel is assumed to be disposed of in landfills due to recycling losses.
Waste code in accordance with the *European List of Wastes* (EWC), as per the European List of Wastes Ordinance is "17 04 05 Iron and Steel".

2.16 Further information

More information can be found at:
https://www.busch-kunz.de/

3. LCA: Calculation rules

3.1 Declared Unit

The declared unit is 1 metric tonne of average Steel Pipe Fitting (average product across multiple product variations and from two manufacturing plants)

Declared unit and mass reference

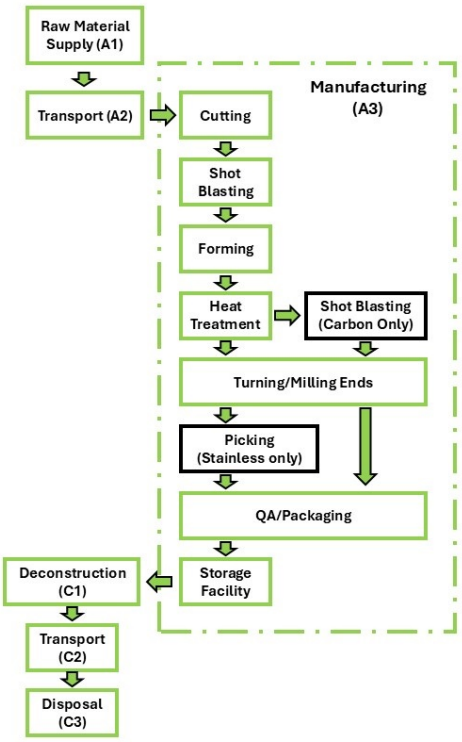
Name	Value	Unit
Declared unit	1	t
Density	7850	kg/m^3

The production process is similar for all products for which this average EPD is applicable. Therefore, all primary data is highly representative in regards to process and geographic as well as temporal correlation.
The amounts of carbon and stainless steel modelled in this EPD correlate to the production volume of Busch + Kunz in the reference year (91 % carbon steel, 9 % stainless steel). Stainless steel has higher environmental impacts compared to carbon steel. For the purposes of assessing stainless steel products, this EPD should therefore be used with caution.

3.2 System boundary

Type of the EPD: cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)

The foreground and background processes of the manufacturing process are displayed in the following graphic with foreground processes inside the green box. Beyond that, the end-of-life is modelled including the transportation to waste handling, waste processing and disposal. Further, the benefits and loads due to recycling and reuse potentials are included in the EPD.



The modules A1-A3 include the production of raw materials,

auxiliary materials and packaging materials, transportation, the energy demand and take into account any losses during manufacture.

Manual deconstruction was assumed at the end of life, therefore C1 was set to 0 for all impact categories.

Module C2 includes the transport to waste handling.

The preparation for recycling of steel is included in C3 and minor disposals are modelled in C4.

Module D includes the recycling potential of steel.

3.3 Estimates and assumptions

The raw material for the product under assessment is either stainless steel, modelled as chromium steel 18/8, or carbon steel, modelled as low-alloyed steel using the generic *ecoinvent 3.9.1* data set. Across all sites and sold products, 91 % of products were produced as carbon steel and 9 % as stainless steel.

- steel production, chromium steel 18/8, hot rolled | steel, chromium steel 18/8, hot rolled | *EN15804*, U - RER
- steel production, low-alloyed, hot rolled | steel, low-alloyed, hot rolled | *EN15804*, U - RER

In module A2, generous transportation distances were assumed. The transportation distance for the majority of steel from the supplier to Busch + Kunz is known and the transportation distances for auxiliary products were calculated from average transportation data sets in ecoinvent.

The transport to waste handling was generously assumed to be 500 km.

In Module C, for the end-of-life, steel is assumed to be recycled by 95 % even if it is 100 % recyclable. Because collecting and melting loss is assumed to be 5 % in total. Therefore, 5 % of steel is assumed to be disposed of in landfills at module C4. The amount of steel that was calculated as the difference between scrap metal used as input and scrap metal output is added as avoided burden for the production of cast iron in module D.

3.4 Cut-off criteria

All inputs and outputs to a (unit) process are included in the calculation, for which data were available. The applied cut-off criteria is 1 % of the total mass input of that unit process in case of insufficient input data or data gaps for a unit process. The total of neglected input flows is a maximum of 5 % mass.

3.5 Background data

The background data base is *ecoinvent*, allocation, cut-off by classification, *ecoinvent* database version 3.9.1 (2022)

3.6 Data quality

For foreground data, site-specific data is used with high geographical, temporal and technical correlation. Data from the year 2023 and from manufacturing processes on site are used. The steel type used in the product will have a high influence on the impact assessment. The results in this EPD therefore correlate to the production volume of Busch + Kunz and results for a purely carbon steel or stainless steel product will vary.

For background data, the data quality varies depending on the datasets in the *ecoinvent 3.9.1* database. For the most relevant secondary data, the data quality is calculated to be:

- Temporal Correlation: Poor
- Geographical Correlation: Fair to Good
- Technological Correlation: Good

It is assumed that the data quality causes higher environmental impact indicators compared to how the impacts would actually be.

3.7 Period under review

For manufacturing data, the energy and materials used in the year 2023 were assessed.

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

Energy and auxiliary materials used in manufacturing are modelled by allocating this data to the production output of one tonne. No co-products are included in the system.

Waste material to recycling is modelled as open-loop recycling with the avoided burden of production being modelled in life cycle stage D. No allocation of waste flows is performed in the system boundary A - C.
In the background data, allocation takes place for certain processes. The *ecoinvent* database, using cut-off by classification, was used in modelling the product system.

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 used background database was *ecoinvent*, Allocation, cut-off by classification, *ecoinvent* database version 3.9.1 (2022)

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon
No biogenic carbon is included in the product.
Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

The following assumptions are the basis for the calculated scenarios of the included modules.

End of life (C1-C4)
At the end of life, steel is assumed to be recycled by 95 % due to collecting and melting losses, which is in line with a 2019 study by the Karlsruhe Institute of Technology (https://www.worldstainless.org/news/global-life-cycle-of-stainless-steel/).

Name	Value	Unit
Recycling	950	kg
Landfilling	50	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information
The difference between input secondary (scrap) steel and output at the end of life is added as avoided burden in the product system. The production of primary cast iron is assumed to be avoided by the scrap steel of this product system.

Name	Value	Unit
Collection Rate	95	%
Avoided Burden (cast iron production)	394	kg

5. LCA: Results

The declared unit of this LCA study is 1 metric tonne of average Steel Pipe Fitting. The EPD is averaged over carbon steel and stainless steel products.

The impact estimate results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds and safety margins or risks.

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 tonne Steel Pipe Fitting

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Global Warming Potential total (GWP-total)	kg CO_2 eq	4.24E+03	0	7.43E+01	9E-01	3.04E-01	-6.07E+02
Global Warming Potential fossil fuels (GWP-fossil)	kg CO_2 eq	4.24E+03	0	7.43E+01	9E-01	3.04E-01	-6.07E+02
Global Warming Potential biogenic (GWP-biogenic)	kg CO_2 eq	0	0	0	0	0	0
Global Warming Potential luluc (GWP-luluc)	kg CO_2 eq	2.55E+00	0	3.63E-02	2E-03	1.83E-04	-3.14E-01
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC11 eq	7.57E-05	0	1.63E-06	1.72E-08	8.8E-09	-1.43E-05
Acidification potential of land and water (AP)	mol H^+ eq	1.65E+01	0	3.47E-01	5.41E-03	2.29E-03	-2.42E+00
Eutrophication potential aquatic freshwater (EP-freshwater)	kg P eq	1.73E+00	0	5.36E-03	7.67E-04	2.53E-05	-2.73E-01
Eutrophication potential aquatic marine (EP-marine)	kg N eq	3.74E+00	0	1.38E-01	1.1E-03	8.79E-04	-5.76E-01
Eutrophication potential terrestrial (EP-terrestrial)	mol N eq	3.8E+01	0	1.47E+00	1.06E-02	9.42E-03	-6.04E+00
Formation potential of tropospheric ozone photochemical oxidants (POCP)	kg NMVOC eq	1.66E+01	0	5.15E-01	3.38E-03	3.28E-03	-3.05E+00
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	3.12E-02	0	2.37E-04	1.01E-05	4.3E-07	-8.67E-04
Abiotic depletion potential for fossil resources (ADPF)	MJ	5.23E+04	0	1.08E+03	1.96E+01	7.63E+00	-7.54E+03
Water use (WDP)	m^3 world eq deprived	1.44E+03	0	5.47E+00	4.47E-01	2.37E-02	-1.29E+02

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 tonne Steel Pipe Fitting

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier (PERE)	MJ	4.07E+03	0	1.7E+01	3.94E+00	6.41E-02	-4.34E+02
Renewable primary energy resources as material utilization (PERM)	MJ	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT)	MJ	4.07E+03	0	1.7E+01	3.94E+00	6.41E-02	-4.34E+02
Non renewable primary energy as energy carrier (PENRE)	MJ	1.34E+03	0	9.36E+01	3.66E-01	6.88E-01	-1.41E+02
Non renewable primary energy as material utilization (PENRM)	MJ	0	0	0	0	0	0
Total use of non renewable primary energy resources (PENRT)	MJ	1.34E+03	0	9.36E+01	3.66E-01	6.88E-01	-1.41E+02
Use of secondary material (SM)	kg	4.72E+02	0	0	0	0	0
Use of renewable secondary fuels (RSF)	MJ	2.85E+01	0	3.22E-01	1.34E-01	6.55E-04	-1.39E+01
Use of non renewable secondary fuels (NRSF)	MJ	4.37E+02	0	8.4E-01	1.36E-01	1.68E-03	-1.66E+01
Use of net fresh water (FW)	m^3	1.56E+01	0	1.38E-01	1.43E-02	7.88E-03	-3.36E+00

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 tonne Steel Pipe Fitting

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	1.35E+03	0	1E+00	2.57E-02	5.24E-03	-8.24E+01
Non hazardous waste disposed (NHWD)	kg	4.81E+02	0	6.69E+01	5.81E-02	5E+01	-2.98E+01
Radioactive waste disposed (RWD)	kg	8.95E-02	0	3.61E-04	1.29E-04	1.12E-06	-1.32E-02
Components for re-use (CRU)	kg	0	0	0	0	0	0
Materials for recycling (MFR)	kg	4.48E+02	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 tonne Steel Pipe Fitting

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Incidence of disease due to PM emissions (PM)	Disease	2.67E-04	0	7.32E-06	3.91E-08	5.01E-08	-5.73E-05

	incidence						
Human exposure efficiency relative to U235 (IR)	kBq U235 eq	3.21E+02	0	1.48E+00	5.02E-01	4.8E-03	-5.2E+01
Comparative toxic unit for ecosystems (ETP-fw)	CTUe	1.82E+04	0	5.28E+02	3.66E+00	3.55E+00	-2.7E+03
Comparative toxic unit for humans (carcinogenic) (HTP-c)	CTUh	2.26E-05	0	4.01E-08	8.76E-10	1.3E-10	-9.66E-06
Comparative toxic unit for humans (noncarcinogenic) (HTP-nc)	CTUh	7.46E-05	0	8.38E-07	1.67E-08	1.64E-09	-1.19E-04
Soil quality index (SQP)	SQP	ND	ND	ND	ND	ND	ND

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

6. LCA: Interpretation

For most environmental impacts, the life cycle stage A1 Raw Material Supply is responsible for 80 - 90 % of impacts. When considering the whole product stage A1 - A3, the share of impacts is even greater and lies between 90 - 99 % for most categories. This is to be expected since not much energy and material is needed to recycle or dispose of the product compared to its production. A major improvement in environmental impact can therefore be identified in the purchased steel pipes.

The recycled content of the main steel supplier is comparatively high, which is reflected in the results of this EPD. Further improving the content of secondary steel or increasing the use of renewable energy in steel production would have a noticeable effect on the impacts of the whole EPD.

The recycling potential modelled in stage D is quite sizable compared to the production impact due to the use of environmentally favourable steel. A generic data set for avoided products in stage D is used to calculate these avoided burdens. Further evaluation of recycling pathways and actual avoided impacts would be needed to improve the full picture of circular steel.

7. Requisite evidence

This EPD concerns steel pipe fittings for oil/gas and water pipelines made from structural steel. Further processing depends on the respective application.
Evidence of tests in line with the technical conditions governing delivery is provided by works test certificates. **7.1 Evidence for drinking water installations (where relevant):**

Further hygienic evidence may be required for drinking water installations. Steel pipes for drinking water installations must be lined with cement mortar. Suitability as drinking water is verified in accordance with the *DVGW worksheet W 347*.

8. References

Standards

ASTM A 106
ASTM A 106:2019, Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service

ASTM A 234
ASTM A 234:2024, Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service

ASTM A 333
ASTM A 333:2024, Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service and Other Applications with Required Notch Toughness

ASTM A 420
ASTM A 420:2024, Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service

ASTM A 860
ASTM A 860:2022, Standard Specification for Wrought High-Strength Ferritic Steel Butt-Welding Fittings

ASTM A 960
ASTM A 960:2024, Standard Specification for Common Requirements for Wrought Steel Piping Fittings

ASME B 16.9
ASME B16.9:2018, Factory-Made Wrought Buttwelding Fittings

API SPEC 5L
API SPEC 5L:2018-05, Line Pipe

AD2000 HP 8/3
AD 2000-Merkblatt HP 8/3:2022-03, Manufacture and testing of pressure vessels - Manufacture and testing of fittings made of unalloyed and alloyed steels

AD2000 W2/4/10
AD 2000-Merkblatt A 2:2020-01, Safety devices against excess pressure - Safety valves

DIN EN ISO 9001:2015-11
Qualitätsmanagementsysteme - Anforderungen

DIN 4102-1
DIN 4102-1:1998-05, Fire behaviour of building materials and building components - Part 1: Building materials; concepts, requirements and tests

DVGW W 347
DVGW W 347: Hygiene requirements for cement-bound

materials intended for use in drinking water supply systems - Testing and evaluation. German Technical and Scientific Association for Gas and Water (DVGW), 3rd edition, November 2023.

EN 10253-1
DIN EN 10253-1:1999-11, Butt-welding pipe fittings - Part 1: Wrought carbon steel for general use and without specific inspection requirements

EN 10253-2
DIN EN 10253-2:2021-11, Butt-welding pipe fittings - Part 2: Non alloy and ferritic alloy steels with specific inspection requirements

EN 10253-3
DIN EN 10253-3:2009-02, Butt-welding pipe fittings - Part 3: Wrought austenitic and austenitic-ferritic (duplex) stainless steels without specific inspection requirements

EN 10253-4
DIN EN 10253-4:2017-11, Butt-welding pipe fittings - Part 4: Wrought austenitic and austenitic-ferritic (duplex) stainless steels with specific inspection requirements

EN 10216-1
DIN EN 10216-1:2014-03, Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 1: Non-alloy steel tubes with specified room temperature properties

EN 10216-2
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Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

Programme holder

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

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

Author of the Life Cycle Assessment

uniconsult GmbH
Tiergartenstraße 138
30559 Hannover
Germany

+4951154455690
unico@unico.de
https://www.unico.de/

Owner of the Declaration

Busch + Kunz GmbH & Co. KG
Cark-Benz-Straße 17-19
57299 Burbach
Germany

+49 2736 4403 0
info@busch-kunz.de
https://www.busch-kunz.de/