Environmental Product Declaration (EPD)

Declaration code EPD-VSM-GB-67.0

Viega GmbH & Co. KG

connecting technology

Viega Smartpress press connectors and pipes

Basis:

DIN EN ISO 14025
EN 15804 + A2

Company EPD **E**nvironmental **P**roduct **D**eclaration

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Declaration holder	Viega GmbH & Co. KG Viega Platz 1 57439 Attendorn, Germany www.viega.de		
Declaration code	EPD-VSM-GB-67.0		
Designation of declared product	Viega Smartpress press connectors and pipes		
Scope	Transportation of media inside/outside buildings.		
Basis	This EPD was prepared on the basis of EN ISO 14025:2011 and DIN EN 15804:2012+A2:2019. In addition, the "Allgemeiner Leitfaden zur Erstellung von Typ III Umweltproduktdeklarationen" (General guideline for preparation of Type III Environmental Product Declarations) applies. The declaration is based on the PCR documents “PCR Part A” PCR-A-0.3:2018 and “Piping systems including connecting and fitting technology” PCR-RS-1.0:2022.		
Validity	Publication date: 18.12.2023	Last revision: 15.10.2025	Valid until: 18.12.2028
	This verified Company Environmental Product Declaration (company EPD) applies solely to the specified products and is valid for a period of five years from the date of publication in accordance with DIN EN 15804.		
LCA Basis	The LCA was prepared in accordance with DIN EN ISO 14040 and DIN EN ISO 14044. The base data includes the data collected at one production plant of Viega GmbH & Co. KG, and the generic data derived from the Ecoinvent 3 data base (v3.8 with aggregated inputs) and Ecoinvent EN 15804. LCA calculations were carried out for the included “cradle to grave” including all upstream chains (e.g. raw material extraction, etc.).		
Notes	The ift-Guidance Sheet “Conditions and Guidance for the Use of ift Test Documents” applies. The declaration holder assumes full liability for the underlying data, certificates and verifications.		

Christoph Seehauser Deputy Head of Sustainability	Dr. Torsten Mielecke Chairman of Expert Committee ift-EPD and PCR	Prof. Dr. Eric Brehm External verifier

1 General Product Information

Product definition

The EPD relates to the product group connecting technology and applies to:

1 kg Viega Smartpress press connector and 1 linear metre pipe of company Viega GmbH & Co. KG

These are divided into the following product groups

Product group (PG)		Weight
PG1	Viega Smartpress press connector	0.45 – 2,316.15 g/pcs.
PG2	Viega Smartpress pipe	153.48 – 344.53 g/m

*The respective conversion values can be found in Annex B.

Table 1 Product groups*

The declared unit is obtained by summing up:

PG	Assessed product	Weight	Declared unit
1	Adapter (Item no. 733414)	2.32 kg/pcs.[1]	1 kg
2	Viega Smartpress G-R. (Item no. 730697)	0.34 kg/m[1]	1 linear metre

[1]A conversion for different unit weights/length weights is possible by dividing the results by the balanced unit weight/length weight and multiplying them by the respective unit weight/length weight from Annex B.

Table 2 Functional unit per reference product

The average unit is declared as follows:
Directly used material flows are determined by means of manufactured masses (kg) and allocated to the declared unit. All other inputs and outputs in the production were scaled to the declared unit in their entirety since there is no typical functional unit due to the high number of variants. The reference period is the year 2022.

The validity of the EPD is restricted to the systems listed in Table 1.

Product description

Flow-optimized press connector system with press connectors made of gunmetal or stainless steel and multi-layer composite piping. Multi-layer composite piping, dimensionally stable, oxygen-tight, color: white. Press connector with PPSU support body to ensure the tightness and mechanical strength of the connection. Secure and fast connection without expanding and calibrating the pipe ends thanks to O-ringless pressing technology in all pipe dimensions. Pipes are fitted with pipe plugs for protection. Suitable for wall mounting and concealed applications of risers and storey installations.
For a detailed product description refer to the manufacturer specifications or the product specifications of the respective offer/quotation.

Product manufacture

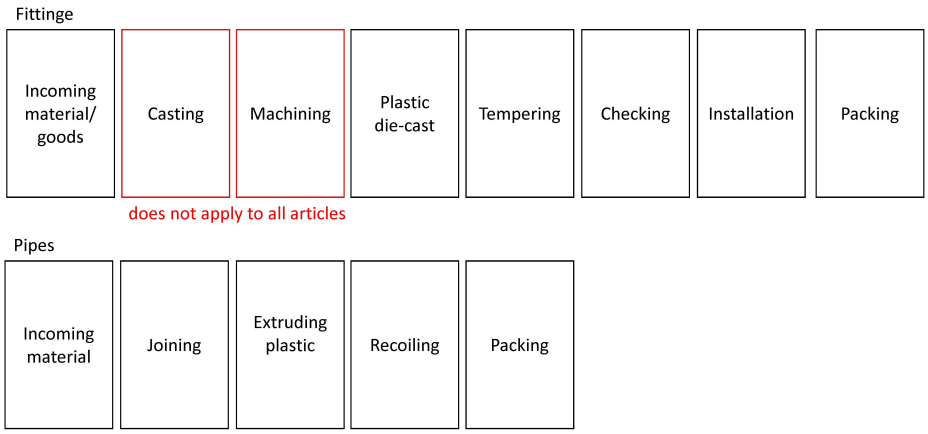


Illustration 1 Manufacturing process

Application

- Drinking water
- Heating systems
- Rainwater
- Compressed air systems

Test evidence / reports

For information on updated verifications (including other national approvals) refer to Viega Smartpress | viega.com.

Management systems

The following management systems are held:

- Quality management system as per DIN EN ISO 9001:2015
- Energy management system as per DIN EN ISO 50001:2018
- Environmental management system as per DIN EN ISO 14001:2015
- Occupational health and safety management system as per DIN EN ISO 45001:2018

Additional information

For additional verifications of applicability or conformity refer to the CE marking and the documents accompanying the product, if applicable.

2 Materials used

Primary materials

The raw materials used can be found in chapter 6.2 Inventory analysis (Inputs).
The raw materials used can be found in chapter 6 Life Cycle Assessment.

Declarable substances

For individual articles, substances according to REACH candidate list are included (declaration of 04.10.2023). Further information on the listed substance are available on request from the manufacturer.

All relevant safety data sheets are available from Viega GmbH & Co. KG.

3 Construction process stage

Processing recommendations, installation

Observe the instructions for assembly/installation, operation, maintenance and disassembly, provided by the manufacturer. For this, see www.viega.de

4 Use stage

Emissions to the environment

No emissions to indoor air, water and soil are known. There may be VOC emissions. There is no contact with the indoor/outdoor air.

Reference service life (RSL)

The RSL information was provided by the manufacturer. The RSL must be established under specified reference conditions of use and relate to the declared technical and functional performance of the product within the building. It must be determined according to all specific rules given in European product standards or, if none are available, according to a c-PCR. It must also take into account ISO 15686-1, -2, -7 and -8. If there is guidance on deriving RSLs from European Product Standards or a c-PCR, then such guidance must take precedence.
If it is not possible to determine the service life as the RSL in accordance with ISO 15686, the BBSR table “Nutzungsdauer von Bauteilen zur Lebenszyklusanalyse nach BNB” (service life of building components for life cycle assessment in accordance with the sustainable construction evaluation system) can be used. For further information and explanations refer to www.nachhaltigesbauen.de.

For this EPD the following applies:
A reference service life (RSL) must be stated for the “cradle to grave” EPD and module D (A + B + C + D).
The service life for Viega Smartpress press connectors and pipes of company Viega GmbH & Co. KG is specified as 50 years according to the manufacturer.

The service life is dependent on the characteristics of the product and in-use conditions. The conditions and characteristics described in the EPD are applicable, in particular the characteristics listed below:

- Outdoor environment: Climatic influences may have a negative impact on the service life.
- Indoor environment: No impacts known that have a negative effect on the service life.

The service life solely applies to the characteristics specified in this EPD or the corresponding references.
The RSL does not reflect the actual life time, which is usually determined by the service life and the redevelopment of a building. It does not give any information on the useful life, warranty referring to performance characteristics or guarantees.

5 End-of-life stage

Possible end-of-life stages

Viega Smartpress press connectors and pipes are sent to central collection points. There the products are usually shredded and sorted into their constituents. The end-of-life stage depends on the site where the products are used and is therefore subject to the local regulations. Observe the locally applicable regulatory requirements.

In this EPD, the modules of after-use are presented according to the market situation.
Metal and plastics are recycled to certain parts. Residual fractions are sent to landfill or, in part, thermally recycled.

Disposal routes

The LCA includes the average disposal routes.

All life cycle scenarios are detailed in the Annex.

6 Life Cycle Assessment (LCA)

Environmental product declarations are based on life cycle assessments (LCAs) which use material and energy flows for the calculation and subsequent representation of environmental impacts.

As a basis for this, life cycle assessments were prepared for Viega Smartpress press connectors and pipes. These LCAs are in conformity with the requirements set out in DIN EN 15804 and the international standards DIN EN ISO 14040, DIN EN ISO 14044, ISO 21930 and EN ISO 14025.

The LCA is representative of the products presented in the Declaration and the specified reference period.

6.1 Definition of goal and scope

Aim

The goal of the LCA is to demonstrate the environmental impacts of the products. In accordance with DIN EN 15804, the environmental impacts covered by this Environmental Product Declaration are presented for the entire product life cycle in the form of basic information. No other additional environmental impacts are specified.

Data quality, data availability and geographical and time-related system boundaries

The specific data originate exclusively from the 2022 fiscal year. They were collected on-site at the plant located in Ennest and originate in parts from company records and partly from values directly obtained by measurement. Validity of the data was checked by the ift Rosenheim.

The generic data originate from the Ecoinvent 3 data base (v3.9.1 with aggregated inputs from 2022) and Ecoinvent EN 15804. The last update of both databases was in 2023. Data from before this date originate also from these databases and are not more than ten years old. No other generic data were used for the calculation.

Generic data are selected as accurately as possible in terms of geographic reference. If no country-specific data sets are available or if the regional reference cannot be determined, European or globally valid data sets are used.

Data gaps were either filled with comparable data or conservative assumptions, or the data were cut off in compliance with the 1% rule.

The life cycle was modelled using the sustainability software tool “Umberto 11” for the development of life cycle assessments.

The data quality complies with the requirements of prEN 15941:2022.

Scope / system boundaries

The system boundaries refer to the supply of raw materials and purchased parts, manufacture/production, use and end-of-life stage of the Viega Smartpress press connectors and pipes.
No additional data from pre-suppliers/subcontractors or other sites were taken into consideration.

Cut-off criteria

All company data collected, i.e. all commodities/input and raw materials used, the thermal energy and electricity consumption, were taken into consideration.

The boundaries cover only the product-relevant data. Building sections/parts of facilities that are not relevant to the manufacture of the products, were excluded.

The transport distances of the pre-products used were taken into consideration as a function of 100% of the mass of the products. The following means of transportation was adopted.

- >32 t truck/semitrailer, Euro 6, diesel, 53 % capacity utilization

Other transport distances of the pre-products were not taken into consideration.

The criteria for the exclusion of inputs and outputs as set out in DIN EN 15804 are fulfilled. From the data analysis it can be assumed that the total of negligible processes per life cycle stage does not exceed 1% of the mass/primary energy. This way the total of negligible processes does not exceed 5% of the energy and mass input. The life cycle calculation also includes material and energy flows that account for less than 1%.

6.2 Inventory analysis

Aim

All material and energy flows are described below. The processes covered are presented as input and output parameters and refer to the declared units.

Life cycle stages

The complete life cycle of Viega Smartpress press connectors and pipes is shown in the annex. The product stage "A1 – A3", construction process stage "A4 – A5", use stage "B1 – B7", end-of-life stage "C1 – C4" and the benefits and loads beyond the system boundaries "D" are considered.

Benefits

The below benefits have been defined as per DIN EN 15804:

- Benefits from recycling
- Benefits (thermal and electrical) from incineration

Allocation of co-products

Allocations occur during production.
Allocation was based on the masses (units) of products produced.

Allocations for re-use, recycling and recovery

If the products are reused/recycled and recovered during the product stage (rejects), the elements are shredded, if necessary and then sorted into their constituents. This is done by various process plants, e.g. magnetic separators.
The system boundaries were set following their disposal, reaching the end-of-waste status.

Allocations beyond life cycle boundaries

The use of recycled materials in the manufacturing process was based on the current market-specific situation. In parallel to this, a recycling potential was taken into consideration that reflects the economic value of the product after recycling (recyclate).
The system boundary set for the recycled material refers to collection.

Secondary material

The use of secondary material in module A3 by Viega GmbH & Co. KG was considered. Secondary material is not used.

Inputs

The following production-related inputs were recorded in the life cycle assessment for each 1 kg Viega Smartpress press connector and 1 linear metre pipe:

Energy
For the input material natural gas, "natural gas, high pressure, GER, domestic supply with seasonal storage" was assumed. For the electricity mix, the "Electricity Mix Germany" was assumed.

A portion of the process heat is used for space heating. This can, however, not be quantified, hence a “worst case” figure was taken into account for the product.

Water
There is no water consumption in the individual process steps for production.
The consumption of fresh water specified in Section 6.3 originates (among others) from the process chain of the pre-products and the process water for cooling.

Raw material/Pre-products
The chart below shows the share of raw materials/pre-products in percent.

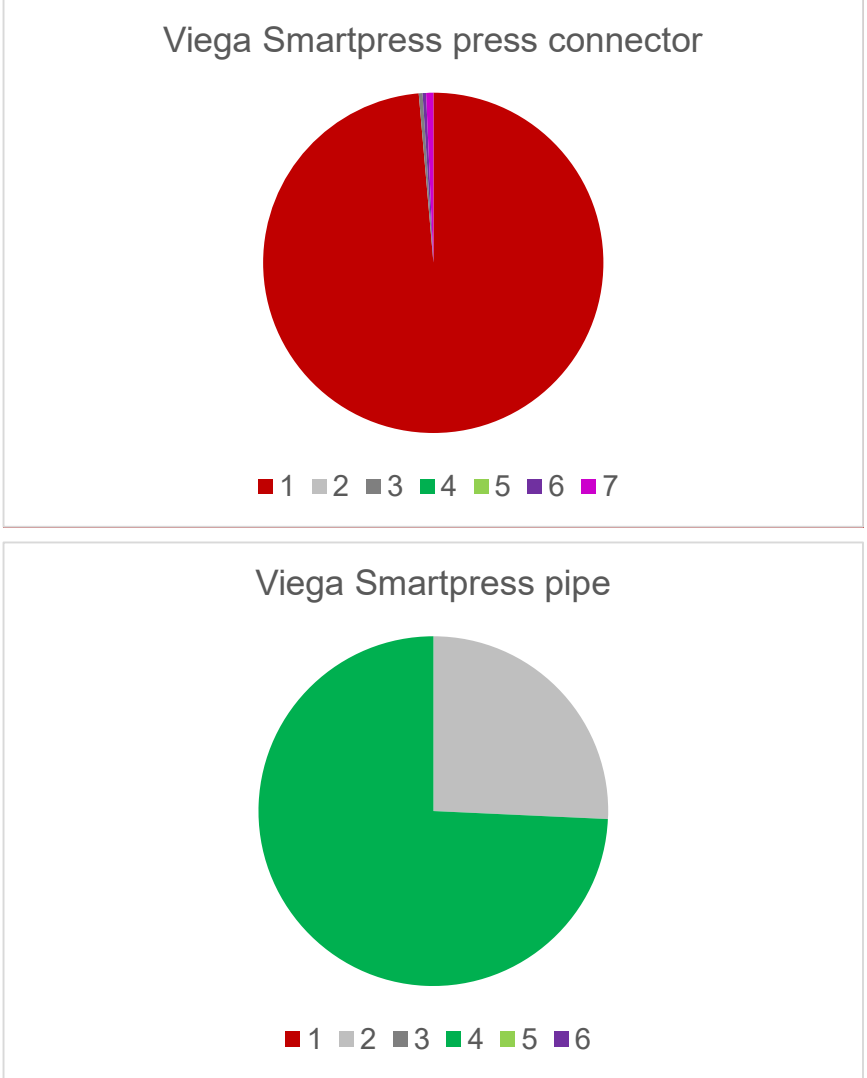


Illustration 2 Percentage of individual materials per declared unit

No.	Material	Mass in %	
		Viega Smartpress press connector	Viega Smartpress pipe
1	Gunmetal	98.63	0.00
2	Aluminium	0.00	25.71
3	Stainless steel	0.34	0.00
4	POM	0.00	0.00
5	PE	0.00	74.29
6	PP	0.34	0.00
7	PA	0.68	0.00

Table 3 Percentage of individual materials per declared unit

Ancillary materials and consumables
There are 6 g (Viega Smartpress press connector) and 1 g (Viega Smartpress pipe) of ancillary materials and consumables.

Product packaging
The amounts used for product packaging are as follows:

No.	Packaging	Mass in g	
		Viega Smartpress press connector	Viega Smartpress pipe
1	PE	0.01	0.00
2	Paper/cardboard	0.00	0.07

Table 4 Weight in kg of packaging per declared unit

Biogenic carbon content
Only the biogenic carbon content of the associated packaging is specified, as the total mass of substances containing biogenic carbon is less than 5% of the total mass of the product and asso-ciated packaging. In accordance with EN 16449, packaging pro-duces the following amounts of biogenic carbon :

Product.	Component	Content in kg C per m²
Smartpress press connector	Associated packaging	0.00
Smartpress pipe	Associated packaging	0.03

Table 5: Biogenic carbon content of packaging at gate per declared unit

Outputs

The following manufacturing-related outputs were included in the LCA per 1 kg Viega Smartpress press connector or 1 linear metre pipe:

Waste
Secondary raw materials were included in the benefits.
See Section 6.3 Impact assessment.

Waste water
No waste water is produced during the manufacturing process.

6.3 Impact assessment

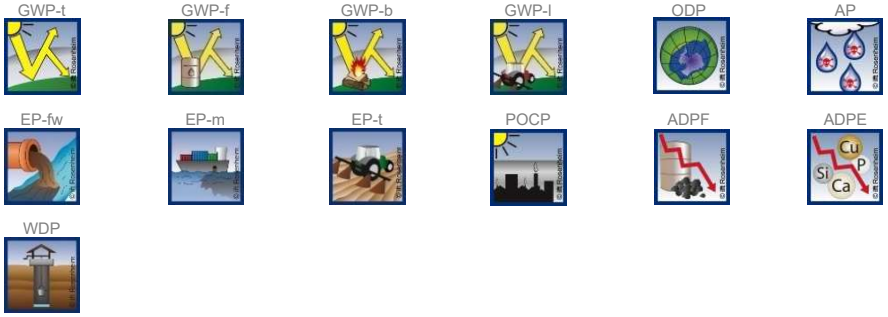
Aim

The impact assessment covers both inputs and outputs. The impact categories applied are stated below:

Core indicators

The models for impact assessment were applied as described in DIN EN 15804-A2.
The core indicators presented in the EPD are as follows:

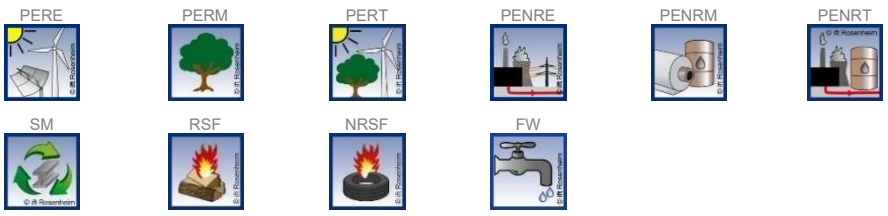
- Climate change - total (GWP-t)
- Climate change - fossil (GWP-f)
- Climate change - biogenic (GWP-b)
- Climate change - land use & land use change (GWP-l)
- Ozone depletion (ODP)
- Acidification (AP)
- Eutrophication freshwater (EP-fw)
- Eutrophication salt water (EP-m)
- Eutrophication land (EP-t)
- Photochemical ozone creation (POCP)
- Depletion of abiotic resources - fossil fuels (ADPF)
- Depletion of abiotic resources - minerals and metals (ADPE)
- Water use (WDP)



Resource management

The models for impact assessment were applied as described in DIN EN 15804-A2.
The following resource use indicators are presented in the EPD:

- Renewable primary energy as energy source (PERE)
- Renewable primary energy for material use (PERM)
- Total use of renewable primary energy (PERT)
- Non-renewable primary energy as energy source (PENRE)
- Renewable primary energy for material use (PENRM)
- Total use of non-renewable primary energy (PENRT)
- Use of secondary materials (SM)
- Use of renewable secondary fuels (RSF)
- Use of non-renewable secondary fuels (NRSF)
- Net use of freshwater resources (FW)



Waste

The waste generated during the production of 1 kg Viega Smartpress press connector and 1 linear metre pipe is evaluated and shown separately for the fractions trade wastes, special wastes and radioactive wastes. Since waste handling is modelled within the system boundaries, the amounts shown refer to the deposited wastes. A portion of the waste indicated is generated during the manufacture of the pre-products.

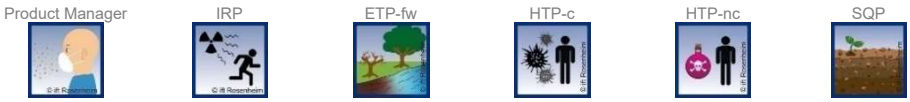
The models for impact assessment were applied as described in DIN EN 15804-A2.
The following waste categories and indicators for output closures are presented in the EPD:

- Disposed hazardous waste (HWD)
- Non-hazardous waste disposed (NHWD)
- Radioactive waste disposed (RWD)
- Components for re-use (CRU)
- Materials for recycling (MFR)
- Materials for energy recovery (MER)
- Exported electrical energy (EEE)
- Exported thermal energy (EET)

Additional environmental impact indicators

The models for impact assessment were applied as described in DIN EN 15804-A2.
The additional impact categories presented in the EPD are as follows:

- Particulate matter emissions (PM)
- Ionizing radiation, human health (IRP)
- Ecotoxicity – freshwater (ETP-fw)
- Human toxicity, carcinogenic effects (HTP-c)
- Human toxicity, non-carcinogenic effects (HTP-nc)
- Impacts associated with land use/soil quality (SQP)



	Results per 1 kg Viega Smartpress press connector														
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Core indicators																
GWP-t	kg CO_2 equivalent	1.93E+01	6.32E-02	6.27E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05E-02	2.91E-02	5.24E-04	-3.95E+00
GWP-f	kg CO_2 equivalent	1.91E+01	6.31E-02	6.15E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05E-02	2.93E-02	5.20E-04	-3.87E+00
GWP-b	kg CO_2 equivalent	2.18E-01	2.20E-05	1.23E-04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.47E-06	-2.59E-04	3.16E-06	-6.37E-02
GWP-l	kg CO_2 equivalent	7.77E-02	3.24E-05	1.18E-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.21E-06	4.25E-05	3.78E-07	-2.37E-02
ODP	kg CFC-11-eq.	4.39E-07	1.07E-09	2.59E-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.72E-10	3.82E-10	1.23E-11	-1.22E-07
AP	mol H^+-eq.	1.86E-01	2.47E-04	1.72E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.47E-05	2.27E-04	5.01E-06	-1.86E-02
EP-fw	kg P-eq.	1.19E-02	5.29E-06	2.77E-07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.52E-07	1.45E-05	1.36E-07	-2.46E-03
EP-m	kg N-eq.	2.29E-02	4.51E-05	1.69E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.68E-05	6.95E-05	1.38E-06	-5.40E-03
EP-t	mol N-eq.	2.22E-01	4.66E-04	5.25E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80E-04	7.61E-04	1.48E-05	-5.04E-02
POCP	kg NMVOC-eq.	7.77E-02	1.72E-04	1.23E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.59E-05	2.91E-04	3.70E-06	-4.68E-02
ADPF*²	MJ	3.37E+02	0.00E+00	5.52E-09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.91E-08	1.49E-06	1.09E-09	-1.77E-03
ADPE*²	kg Sb equivalent	5.68E-03	9.57E-01	1.95E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.54E-01	3.50E-01	1.14E-02	-7.84E+01
WDP*²	m^3 world-eq. deprived	1.16E+02	4.78E-03	1.30E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.74E-04	5.53E-03	6.28E-05	-3.87E+01
Resource management																
PERE	MJ	3.39E+02	1.20E-02	9.74E-04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.94E-03	4.77E-02	1.93E-04	-1.12E+02
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.39E+02	1.20E-02	9.74E-04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.94E-03	4.77E-02	1.93E-04	-1.12E+02
PENRE	MJ	3.37E+02	9.57E-01	1.88E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.54E-01	8.01E-01	3.23E-02	-7.84E+01
PENRM	MJ	6.40E-01	0.00E+00	-1.68E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	-4.51E-01	-2.09E-02	0.00E+00
PENRT	MJ	3.37E+02	9.57E-01	1.95E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.54E-01	3.50E-01	1.14E-02	-7.84E+01
SM	kg	1.70E-01	4.01E-04	8.47E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.48E-05	3.80E-04	4.34E-06	-3.11E-02
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.36E+00	1.31E-04	-1.41E-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.13E-05	1.44E-04	1.14E-05	-7.77E-01
Categories of waste																
HWD	kg	1.97E+00	7.02E-04	3.61E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13E-04	1.03E-03	9.75E-06	-4.57E-01
NHWD	kg	4.34E+01	2.24E-02	1.27E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.62E-03	5.64E-02	2.90E-04	-8.20E+00
RWD	kg	2.00E-03	0.00E+00	1.35E-08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.34E-08	3.73E-07	3.58E-09	-5.76E-04
Output material flows																
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	2.18E-01	0.00E+00	8.99E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20E-06	9.45E-01	7.92E-08	-9.76E-03
MER	kg	9.30E-05	0.00E+00	7.36E-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.52E-09	5.37E-08	3.56E-10	-2.93E-05
EE	MJ	2.17E-01	0.00E+00	7.46E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.76E-05	2.06E-04	1.96E-06	-4.91E-02

Key:
GWP-t – global warming potential - total **GWP-f** – global warming potential fossil fuels **GWP-b** – global warming potential - biogenic **GWP-l** – global warming potential - land use and land use change **ODP** – ozone depletion potential **AP** - acidification potential **EP-fw** - eutrophication potential - aquatic freshwater **EP-m** - eutrophication potential - aquatic marine **EP-t** - feutrophication potential - terrestrial **POCP** - photochemical ozone formation potential **ADPF*²** - abiotic depletion potential – fossil resources **ADPE*²** - abiotic depletion potential - minerals&metals **WDP*²** - Water (user) deprivation potential **PERE** - Use of renewable primary energy **PERM** - use of renewable primary energy resources **PERT** - total use of renewable primary energy resources **PENRE** - use of non-renewable primary energy **PENRM** - use of non-renewable primary energy resources **PENRT** - total use of non-renewable primary energy resources **SM** - use of secondary material **RSF** - use of renewable secondary fuels **NRSF** - use of non-renewable secondary fuels **FW** - net use of fresh water **HWD** - hazardous waste disposed **NHWD** - non-hazardous waste disposed **RWD** - radioactive waste disposed **CRU** - components for re-use **MFR** - materials for recycling **MER** - materials for energy recovery **EE** - exported energy

Results per 1 kg Viega Smartpress press connector															
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Additional environmental impact indicators																
PM	Disease incidence	1.77E-06	6.13E-09	4.82E-09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.08E-09	4.29E-09	7.97E-11	-5.01E-07
IRP*[1]	kBq U235-eq.	6.52E+00	8.69E-04	6.29E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41E-04	1.50E-03	1.49E-05	-1.85E+00
ETP-fw*[2]	CTUe	3.45E+02	5.05E-01	5.60E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.13E-02	2.78E-01	4.94E-03	-9.97E+01
HTP-c*[2]	CTUh	2.93E-08	0.00E+00	2.99E-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.57E-12	4.21E-11	2.92E-13	-7.17E-09
HTP-nc*[2]	CTUh	1.58E-06	2.80E-11	1.10E-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.12E-10	1.71E-09	3.30E-12	-4.06E-07
SQP*[2]	dimensionless	8.59E+01	9.41E-01	1.48E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.55E-01	6.12E-01	2.57E-02	-2.19E+01

Key:
PM – particulate matter emissions potential **IRP*[1]** – ionizing radiation potential – human health **ETP-fw*[2]** - Eco-toxicity potential – freshwater **HTP-c*[2]** - Human toxicity potential – cancer effects **HTP-nc*[2]** - Human toxicity potential – non-cancer effects **SQP*[2]** – soil quality potential

Disclaimers:
*1 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 nor due to radioactive waste disposal in underground facilities. Potential ionising radiation from the soil, from radon and from some building materials is also not measured by this indicator.

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

	Results per 1 linear metre of Viega Smartpress pipe															
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Core indicators																
GWP-t	kg CO_2 equivalent	2.44E+00	2.59E-02	1.79E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.61E-03	1.94E-02	5.82E-05	-6.84E-01
GWP-f	kg CO_2 equivalent	2.43E+00	2.59E-02	1.52E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.60E-03	1.94E-02	5.78E-05	-6.81E-01
GWP-b	kg CO_2 equivalent	4.60E-03	9.01E-06	1.77E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20E-06	-6.11E-05	3.52E-07	-2.35E-03
GWP-l	kg CO_2 equivalent	5.47E-03	1.33E-05	3.15E-07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80E-06	1.39E-05	4.21E-08	-8.04E-04
ODP	kg CFC-11-eq.	2.39E-08	4.37E-10	3.07E-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.94E-11	1.16E-10	1.36E-12	-6.58E-09
AP	mol H^+-eq.	1.36E-02	7.04E-05	3.68E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.58E-05	5.31E-05	4.11E-07	-2.46E-03
EP-fw	kg P-eq.	1.19E-03	2.16E-06	2.37E-07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.93E-07	3.19E-06	1.51E-08	-1.83E-04
EP-m	kg N-eq.	2.14E-03	1.85E-05	5.53E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.79E-06	2.33E-05	1.54E-07	-5.01E-04
EP-t	mol N-eq.	2.26E-02	1.91E-04	1.40E-04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.19E-05	1.52E-04	1.65E-06	-5.13E-03
POCP	kg NMVOC-eq.	8.18E-03	1.01E-04	9.78E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.23E-05	4.78E-05	5.57E-07	-2.08E-03
ADPF*²	MJ	4.41E+01	3.92E-01	1.70E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.32E-02	8.28E-02	1.26E-03	-1.23E+01
ADPE*²	kg Sb equivalent	7.38E-05	0.00E+00	5.32E-09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00E-08	1.95E-07	1.21E-10	-8.74E-07
WDP*²	m^3 world-eq. deprived	6.76E-01	1.96E-03	8.44E-04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.67E-04	2.58E-03	6.98E-06	-1.66E-01
Resource management																
PERE	MJ	8.95E-01	4.93E-03	1.14E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.68E-04	1.05E-02	2.15E-05	-5.97E-01
PERM	MJ	1.14E+00	0.00E+00	-1.14E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.04E+00	4.93E-03	9.34E-04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.68E-04	1.05E-02	2.15E-05	-5.97E-01
PENRE	MJ	3.89E+01	3.92E-01	1.70E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.32E-02	5.29E+00	7.68E-02	-1.23E+01
PENRM	MJ	5.28E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	-5.21E+00	-7.55E-02	0.00E+00
PENRT	MJ	4.41E+01	3.92E-01	1.70E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.32E-02	8.28E-02	1.26E-03	-1.23E+01
SM	kg	2.09E-02	1.64E-04	7.47E-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.23E-05	3.70E-04	4.82E-07	-1.13E-03
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	1.47E-02	5.36E-05	1.25E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.33E-06	5.26E-05	1.27E-06	-2.24E-03
Categories of waste																
HWD	kg	1.61E-01	2.87E-04	5.97E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.90E-05	4.83E-04	1.08E-06	-1.99E-02
NHWD	kg	5.00E+00	9.19E-03	1.07E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25E-03	1.23E-02	3.23E-05	-8.45E-01
RWD	kg	7.39E-05	0.00E+00	1.30E-08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15E-08	1.54E-07	3.98E-10	-1.19E-05
Output material flows																
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	4.26E-02	0.00E+00	8.90E-07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.14E-07	1.77E-01	8.80E-09	-4.13E-04
MER	kg	5.78E-06	0.00E+00	7.04E-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25E-09	4.10E-08	3.96E-11	-2.97E-07
EE	MJ	2.02E-02	0.00E+00	2.98E-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.49E-06	9.92E-05	2.17E-07	-1.51E-03

Key:
GWP-t – global warming potential - total **GWP-f** – global warming potential fossil fuels **GWP-b** – global warming potential - biogenic **GWP-l** – global warming potential - land use and land use change **ODP** – ozone depletion potential **AP** - acidification potential **EP-fw** - eutrophication potential - aquatic freshwater **EP-m** - eutrophication potential - aquatic marine **EP-t** - feutrophication potential - terrestrial **POCP** - photochemical ozone formation potential **ADPF*²** - abiotic depletion potential – fossil resources **ADPE*²** - abiotic depletion potential - minerals&metals **WDP*²** - Water (user) deprivation potential **PERE** - Use of renewable primary energy **PERM** - use of renewable primary energy resources **PERT** - total use of renewable primary energy resources **PENRE** - use of non-renewable primary energy **PENRM** - use of non-renewable primary energy resources **PENRT** - total use of non-renewable primary energy resources **SM** - use of secondary material **RSF** - use of renewable secondary fuels **NRSF** - use of non-renewable secondary fuels **FW** - net use of fresh water **HWD** - hazardous waste disposed **NHWD** - non-hazardous waste disposed **RWD** - radioactive waste disposed **CRU** - components for re-use **MFR** - materials for recycling **MER** - materials for energy recovery **EE** - exported energy

Results per 1 linear metre of Viega Smartpress pipe															
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Additional environmental impact indicators																
PM	Disease incidence	9.53E-08	2.51E-09	1.87E-08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.71E-10	1.13E-09	8.86E-12	-2.24E-08
IRP*1	kBq U235-eq.	2.62E-01	3.56E-04	6.07E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.84E-05	6.08E-04	1.65E-06	-4.88E-02
ETP-fw*2	CTUe	1.22E+01	2.07E-01	3.16E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80E-02	7.94E-02	5.49E-04	-1.33E+00
HTP-c*2	CTUh	2.06E-09	0.00E+00	1.15E-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.57E-12	2.60E-11	3.24E-14	-1.54E-10
HTP-nc*2	CTUh	8.48E-08	1.15E-11	4.98E-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.87E-11	3.02E-10	3.67E-13	-4.21E-09
SQP*2	dimensionless	6.08E+00	3.85E-01	2.03E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.35E-02	1.50E-01	2.86E-03	-8.61E-01

Key:
PM – particulate matter emissions potential **IRP*1** – ionizing radiation potential – human health **ETP-fw*2** - Eco-toxicity potential – freshwater **HTP-c*2** - Human toxicity potential – cancer effects **HTP-nc*2** - Human toxicity potential – non-cancer effects **SQP*2** – soil quality potential

Disclaimers:
*1 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 nor due to radioactive waste disposal in underground facilities. Potential ionising radiation from the soil, from radon and from some building materials is also not measured by this indicator.

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

6.4 Interpretation, LCA presentation and critical review

Evaluation

The environmental impacts of

- Viega Smartpress press connector
- Viega Smartpress pipe

differ considerably from each other. The differences in the environmental impact of the products lie in the various pre-products and raw materials used and in the mass of the pre-products and raw materials used in each case. Increasing the proportion of recycling can reduce these environmental impacts.

The main environmental impact of production is caused by gunmetal. This is to be expected, as these raw materials account for up to over 99 percent depending on the product and the high LCIA values associated with the raw material are the main source of emissions. The pipes are a plastic-aluminium composite. This results in lower values.

Cardboard packaging contributes to the high biogenic environmental values of pipes.

The LCA covers the complete life cycle. As the products do not generate any emissions in the use stage, here the value is 0.00. The replacement was balanced separately in B4 for 1 year as a scenario. Otherwise, there is no environmental impact during the use phase.

Due to the main material gunmetal at press connectors and pipes (aluminum), there are correspondingly high credits at the end of life (depending on the environmental indicator).

The charts below show the allocation of the main environmental impacts.

The values obtained from the LCA calculation are suitable for the certification of buildings.

Diagrams

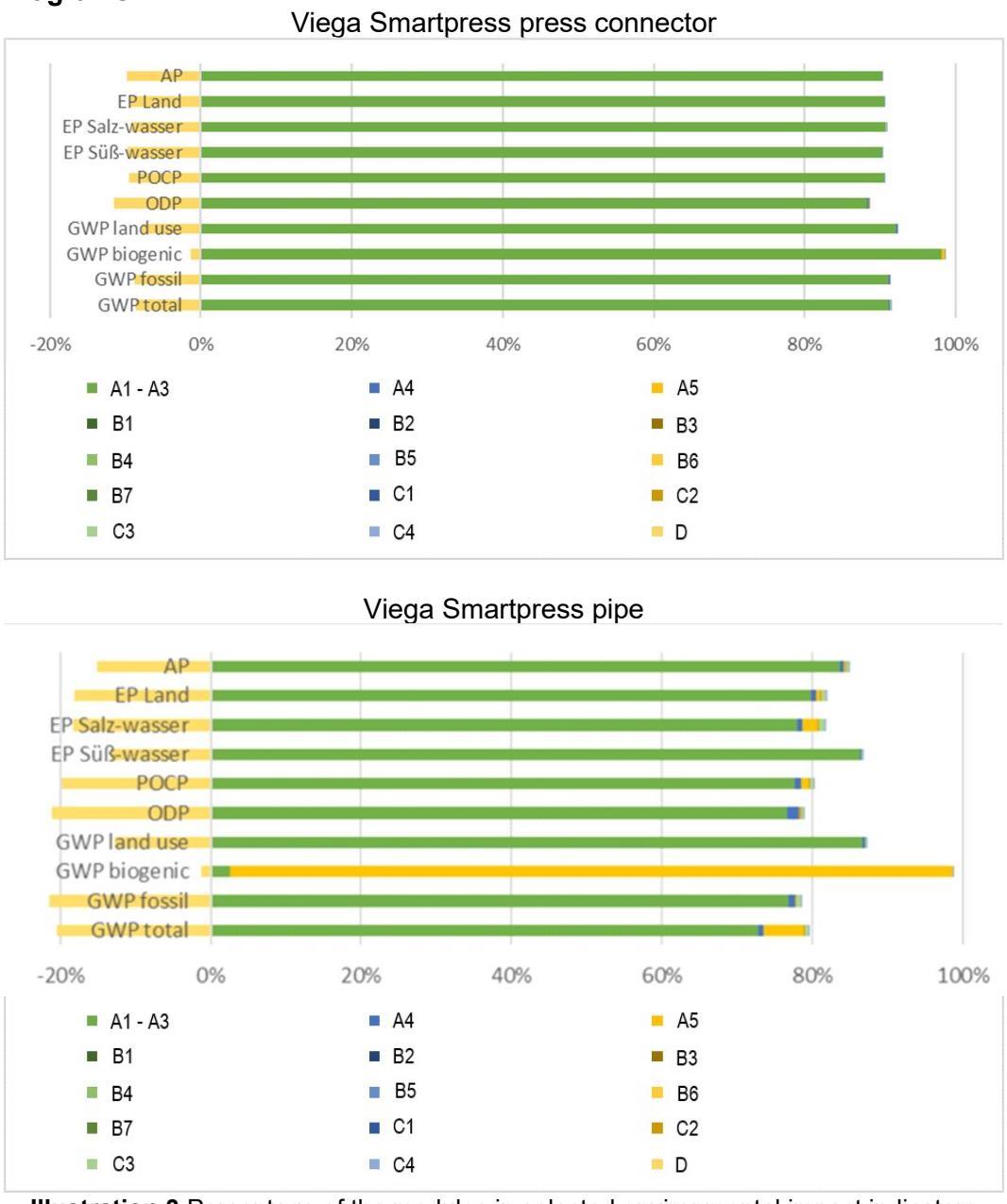


Illustration 3 Percentage of the modules in selected environmental impact indicators

Report

The LCA report underlying this EPD was developed according to the requirements of DIN EN ISO 14040 and DIN EN ISO 14044 as well as DIN EN 15804 and DIN EN ISO 14025. It is deposited with ift Rosenheim. The results and conclusions reported to the target group are complete, correct, without bias and transparent. The results of the study are not designed to be used for comparative statements intended for publication.

Critical review

The critical review of the LCA and of the report took place in the course of verification of the EPD and was carried out by the external auditor Prof. Dr. Eric Brehm.

7 General information regarding the EPD

Comparability

This EPD was prepared in accordance with DIN EN 15804 and is therefore only comparable to those EPDs that also comply with the requirements set out in DIN EN 15804.
Any comparison must refer to the building context and the same boundary conditions of the various life cycle stages.
For comparing EPDs of construction products, the rules set out in DIN EN 15804, Clause 5.3, apply.

The detailed individual results of the products were summarised on the basis of conservative assumptions and differ from the average results. Identification of the product groups and the resulting variations are documented in the background report.

Communication

The communications format of this EPD meets the requirements of EN 15942:2012 and is therefore the basis for B2B communication. Only the nomenclature has been changed according to DIN EN 15804.

Verification

Verification of the Environmental Product Declaration is documented in accordance with the ift "Richtlinie zur Erstellung von Typ III Umweltproduktdeklarationen" (Guidance on preparing Type III Environmental Product Declarations) in accordance with the requirements set out in DIN EN ISO 14025.

This declaration is based on the PCR documents “PCR Part A” PCR-A-0.3:2018 and “Piping systems including connecting and fitting technology” PCR-RS-1.0:2022.

The European standard EN 15804 serves as the core PCR [a)]
Independent verification of the declaration and statement according to EN ISO 14025:2010
Independent third party verifier: [b)] Eric Brehm
[a)] Product category rules [b)] Optional for business-to-business communication Mandatory for business-to-consumer communication (see EN ISO 14025:2010. 9.4).

Revisions of this document

No.	Date	Note	Person in charge	Testing personnel
1	18.12.2023	External verification	Pscherer	Brehm
2	15.02.2024	Formal adaptation	Thiele	--
3	19.02.2024	Formal adaptation	Thiele	--
4	27.05.2024	Revision	Thiele	Brehm
5	15.10.2025	Adjustment Conversion factors	Ludwig	--

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9 Annex A

Description of life cycle scenarios for Viega Smartpress press connectors and pipes

Product stage			Con-struction process stage		Use stage*							End-of-life stage				Benefits and loads beyond system boundaries
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material supply	Transport	production	Transport	Construction/installation process	Use	maintenance	Repair	replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/demolition	Transport	Waste processing	Disposal	Reuse Recovery Recycling potential
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

* For declared B-modules, the calculation of the results is performed taking into account the specified RSL related to one year

Table 6 Overview of applied life cycle stages

The scenarios were calculated taking into account the defined RSL (see 4 Use stage).

The scenarios were furthermore based on the research project “EPDs for transparent building components”. (1)

Note: The standard scenarios selected are presented in bold type. They were also used for calculating the indicators in the summary table.

✓ Included in the LCA
— Not included in the LCA

A4 Transport to construction site

No.	Scenario	Description
A4.1	**National**	**Transport mix 35-53% capacity used[1], approx. 600 km**
A4.2	International/EU country	Transport mix 35-53% capacity used[1], approx. 2,000 km
A4.3	International/Non-EU	Transport mix 35-53% capacity used[1], approx. 15,000 km

[1] Capacity used: utilized loading capacity of the truck

The transport distances shown represent a transport average with the following transport mix. The scenarios include the return transport, if applicable.

Shipping method	Network fleet structure	Share in %		
		A4.1	A4.2	A4.3
Parcel service provider (CEP - Courier-Express- Parcel service)	Van 7.5 – 16 t (Euro 6), diesel, 35% capacity utilization	2	0	0.5
Forwarding agency and own truck fleet	32 - 40 t truck/semitrailer (Euro 6), diesel, 53% capacity utilization	98	90	85
Air freights	Cargo and passenger aircrafts, kerosene	0	9	11
Seagoing vessels/containers	Seagoing/container vessels to receiving port, heavy oil	0	1	3.5

A4 Transport to construction site	Transport weight [kg] per declared unit	Density [kg/m³]	Capacity load factor[2]
Viega Smartpress press connector	1.01	7.90	0.80
Viega Smartpress pipe	0.44	7.90	0.80

[2] Capacity load factor:
= 1 Product completely fills the packaging (without air inclusion)
< 1 Packaging contains unused volume (e.g.: air, filling material)
> 1 Product is packed in compressed form

The scenarios were calculated per kg and can be scaled to the product group using the above masses.

A4 Transport to construction site	Unit	A4.1	A4.2	A4.3
Core indicators				
GWP-t	kg CO_2 equivalent	**6.27E-05**	3.33E-04	2.81E-03
GWP-f	kg CO_2 equivalent	**6.26E-05**	3.33E-04	2.81E-03
GWP-b	kg CO_2 equivalent	**2.18E-08**	8.84E-08	7.09E-07
GWP-l	kg CO_2 equivalent	**3.21E-08**	1.06E-07	7.96E-07
ODP	kg CFC-11-eq.	**1.06E-12**	5.45E-12	4.58E-11
AP	mol H^+-eq.	**1.71E-07**	1.16E-06	1.03E-05
EP-fw	kg P-eq.	**5.24E-09**	1.74E-08	1.31E-07
EP-m	kg N-eq.	**4.47E-08**	3.98E-07	3.63E-06
EP-t	mol N-eq.	**2.45E-07**	1.62E-06	1.42E-05
POCP	kg NMVOC-eq.	**4.62E-07**	4.21E-06	3.85E-05
ADPF	MJ	**9.49E-04**	4.78E-03	4.00E-02
ADPE	kg Sb equivalent	**1.81E-10**	5.55E-10	4.09E-09
WDP	m³ world-eq. deprived	**4.74E-06**	1.66E-05	1.27E-04
Resource management				
PERE	MJ	**1.19E-05**	4.13E-05	3.15E-04
PERM	MJ	**0.00**	0.00	0.00
PERT	MJ	**1.19E-05**	4.13E-05	3.15E-04
PENRE	MJ	**9.49E-04**	4.78E-03	4.00E-02
PENRM	MJ	**0.00**	0.00	0.00
PENRT	MJ	**9.49E-04**	4.78E-03	4.00E-02

SM	kg	**3.98E-07**	1.33E-06	1.00E-05
RSF	MJ	**0.00**	0.00	0.00
NRSF	MJ	**0.00**	0.00	0.00
FW	m^3	**1.30E-07**	4.63E-07	3.54E-06
Categories of waste				
HWD	kg	**6.96E-07**	2.36E-06	1.78E-05
NHWD	kg	**2.23E-05**	7.40E-05	5.57E-04
RWD	kg	**2.05E-10**	7.39E-10	5.69E-09
Output material flows				
CRU	kg	**0.00**	0.00	0.00
MFR	kg	**7.38E-09**	2.84E-08	2.27E-07
MER	kg	**4.16E-11**	1.35E-10	1.02E-09
EE	MJ	**1.68E-07**	5.81E-07	4.41E-06
Additional environmental impact indicators				
PM	Disease incidence	**6.08E-12**	1.94E-11	1.43E-10
IRP	kBq U235-eq.	**8.61E-07**	3.15E-06	2.44E-05
ETPfw	CTUe	**5.01E-04**	2.44E-03	2.02E-02
HTPc	CTUh	**2.78E-14**	9.74E-14	7.45E-13
HTPnc	CTUh	**6.85E-13**	3.61E-12	3.04E-11
SQP	dimensionless	**9.33E-04**	2.92E-03	2.12E-02

A5 Construction/Installation

No.	Scenario	Description
A5.1	**Manual**	**According to the manufacturer. the products are installed with battery-operated pressing pliers (0.0009 kWh/kg, electricity mix (GLO)).**

In case of deviating consumption during installation/assembly of the products which forms part of the site management, they are covered at the building level.

The following quantities of waste materials are produced during installation.

Product group	Waste materials in kg	of which quantities collected for waste recycling (output materials) in kg
Viega Smartpress press connector	0.008	0.029
Viega Smartpress pipe	0.002	0.008

Ancillary materials, consumables, use of water, use of other resources, material losses as well as direct emissions during installation are negligible.

It is assumed that the packaging material in the Module construction / installation is sent to waste handling. Waste is only thermally recycled in line with the conservative approach. Benefits from A5 are specified in module D:

- Electricity replaces electricity mix (GLO, high voltage, market group);
- Thermal energy replaces thermal energy from natural gas (district or industrial, natural gas, RoW).
- Gunmetal recyclate from A5 replaces 100 % copper.
- PE recyclate from A5 replaces 100 % PE.

Transport to the recycling plants is included.

Since this is a single scenario, the results are shown in the relevant summary table.

B1 Use (not relevant)

Refer to Section 4 Use stage - Emissions to the environment.
No emissions are known which may occur during the use stage of the products because press fitting is without contact to air, water and soil.
Since this is a single scenario, the results are shown in the relevant summary table.

B2 Cleaning, maintenance and repair

B2.1 Cleaning (not relevant)

No cleaning is required.

Ancillary materials, consumables, use of energy and water, material losses and waste as well as transport distances during cleaning are negligible.

Since this is a single scenario, the results are shown in the relevant summary table.

B2.2 Maintenance and repair (not relevant)

No maintenance is required.

Ancillary materials, consumables, use of energy and water, waste, material losses and transport distances during maintenance are negligible.

Since this is a single scenario, the results are shown in the relevant summary table.

B3 Repair (not relevant)

No repair of the components of the building part is required.

For updated information refer to the respective instructions for assembly/installation, operation and maintenance from Viega GmbH & Co. KG.

Ancillary materials, consumables, use of energy and water, waste, material losses and transport distances during repair are negligible.

Since this is a single scenario, the results are shown in the relevant summary table.

B4 Exchange/replacement

No.	Scenario	Description
B4.1	**No replacement**	**According to manufacturer, a replacement is not planned.**
B4.2	Normal use and heavy use	One-time replacement after 50 years (RSL)* Energy consumption 0.0009 kWh/kg.

*Assumptions for evaluation of possible environmental impacts; statements made do not constitute any guaranty or warranty of performance.

The statements made in this EPD are only informative to allow evaluation at the building level.

It is assumed that no replacement will be necessary during the 50-year reference service life and the 50-year building service life. The environmental impacts of replacement are due to the product, construction and disposal stages.
The results were based on one year, taking into account the RSL.

For updated information refer to the respective instructions for assembly/installation, operation and maintenance from Viega GmbH & Co. KG.

B4 Exchange/ replacement	Unit	B4.1	B4.2	
			Viega Smartpress press connector	Viega Smartpress pipe
Core indicators				
GWP-t	kg CO_2 equivalent	**0.00**	1.54E+01	1.98E+00
GWP-f	kg CO_2 equivalent	**0.00**	1.52E+01	1.97E+00
GWP-b	kg CO_2 equivalent	**0.00**	1.54E-01	1.29E-02
GWP-l	kg CO_2 equivalent	**0.00**	5.40E-02	1.82E-03
ODP	kg CFC-11-eq.	**0.00**	3.17E-07	1.71E-08
AP	mol H^+-eq.	**0.00**	1.39E-01	1.18E-02
EP-fw	kg P-eq.	**0.00**	9.44E-03	1.06E-03
EP-m	kg N-eq.	**0.00**	1.75E-02	1.79E-03
EP-t	mol N-eq.	**0.00**	1.73E-01	1.89E-02
POCP	kg NMVOC-eq.	**0.00**	5.92E-02	6.58E-03
ADPF	MJ	**0.00**	2.59E+02	3.46E+01
ADPE	kg Sb equivalent	**0.00**	3.92E-03	7.39E-05
WDP	m^3 world-eq. deprived	**0.00**	7.74E+01	5.37E-01
Resource management				
PERE	MJ	**0.00**	2.26E+02	1.52E+00
PERM	MJ	**0.00**	0.00E+00	0.00E+00
PERT	MJ	**0.00**	2.26E+02	1.52E+00
PENRE	MJ	**0.00**	2.59E+02	3.46E+01
PENRM	MJ	**0.00**	-8.67E-17	2.22E-16
PENRT	MJ	**0.00**	2.59E+02	3.46E+01
SM	kg	**0.00**	1.39E-01	2.46E-02
RSF	MJ	**0.00**	0.00E+00	0.00E+00
NRSF	MJ	**0.00**	0.00E+00	0.00E+00
FW	m^3	**0.00**	1.58E+00	1.33E-02
Categories of waste				
HWD	kg	**0.00**	1.51E+00	1.58E-01
NHWD	kg	**0.00**	3.52E+01	4.41E+00
RWD	kg	**0.00**	1.43E-03	6.60E-05
Output material flows				
CRU	kg	**0.00**	0.00E+00	0.00E+00
MFR	kg	**0.00**	1.16E+00	1.35E-01
MER	kg	**0.00**	6.38E-05	2.40E-06
EE	MJ	**0.00**	1.75E-01	1.87E-02
Additional environmental impact indicators				
PM	Disease incidence	**0.00**	1.27E-06	8.02E-08
IRP	kBq U235-eq.	**0.00**	4.67E+00	2.29E-01
ETPfw	CTUe	**0.00**	2.46E+02	1.11E+01
HTPc	CTUh	**0.00**	2.22E-08	2.20E-09
HTPnc	CTUh	**0.00**	1.18E-06	8.23E-08
SQP	dimensionless	**0.00**	6.38E+01	5.26E+00

B5 Improvement/modernisation (not relevant)
According to the manufacturer, the elements are not included in the improvement/modernisation activities for buildings.

For updated information refer to the respective instructions for assembly/installation, operation and maintenance from Viega GmbH & Co. KG.

Ancillary materials, consumables, use of energy and water, material losses, waste as well as transport distances during replacement are negligible.

Since this is a single scenario, the results are shown in the relevant summary table.

B6 Operational energy use (not relevant)
There is no energy used during normal use.

Ancillaries, consumables, water use, material losses, waste materials, transport distances and other scenarios are negligible.

Since this is a single scenario, the results are shown in the relevant summary table.

B7 Operational water use (not relevant)
No water consumption when used as intended. Water consumption for cleaning is specified in Module B2.1.

Ancillaries, consumables, energy use, material losses, waste materials, transport distances and other scenarios are negligible.

Since this is a single scenario, the results are shown in the relevant summary table.

C1 Deconstruction

No.	Scenario	Description
C1	**Deconstruction**	**Connecting technology 99% deconstruction.** **Further deconstruction rates are possible, give adequate reasons.**

No relevant inputs or outputs apply to the scenario selected. Energy consumption during dismantling is not required.

Since this is a single scenario, the results are shown in the relevant summary table.

In case of deviating consumption the removal of the products forms part of site management and is covered at the building level.

C2 Transport

No.	Scenario	Description
C2	**Transport**	**Transport to collection point with >32 t truck (Euro 4), diesel, 29.96 t payload, 53% capacity used, 50 km (1)**

Since this is a single scenario, the results are shown in the relevant summary table.

C3 Waste management

No.	Scenario	Description
C3	Current market situation	**Share for recirculation of materials:** • **(Stainless) Steel 98% in melt** (UBA, 2017) • **Gunmetal 98% in melt** (UBA, 2017) • **Aluminium 98% in melt** (UBA, 2017) • **Plastics 60 % thermal recycling in incineration plants** (Zukunft Bauen, 2017) • **Plastics 40 % recycled** (Zukunft Bauen, 2017) • **Remainder to landfill/disposal**

No electricity consumption for the recycling plant per declared unit was taken into account for waste treatment due to the low proportion and lack of sources.

As the products are placed on the European market, the disposal scenario is based on average European data sets.

The below table presents the disposal processes and their percentage by mass/weight. The calculation is based on the above mentioned shares in percent related to the declared unit of the product system.

C3 Disposal	Unit	Viega Smartpress press connectors	Viega Smartpress pipe
Collection process, collected separately	kg	0.99	0.41
Collection process, collected as mixed construction waste	kg	0.01	0.00
Recovery system, for re-use	kg	0.00	0.00
Recovery system, for recycling	kg	0.95	0.25
Recovery system, for energy recovery	kg	0.01	0.15
Disposal	kg	0.04	0.01

The 100% scenarios differ from the current average recovery shown here (in background report C3.4). The evaluation of each scenario is described in the background report.

Since this is a single scenario, the results are shown in the summary table.

C4 Disposal

No.	Scenario	Description
C4	Disposal	**The non-recordable amounts and losses within the re-use/recycling chain (C1 and C3) are modelled as "disposed" (EU-28).**

The 100% scenarios differ from the current average recovery shown here (in background report C4.4). The evaluation of each scenario is described in the background report.

The consumption in scenario C4 results from physical pre-treatment, waste recycling and management of the disposal site. The benefits obtained here from the substitution of primary material production are allocated to Module D, e.g. electricity and heat from waste incineration.

Since this is a single scenario, the results are shown in the summary table.

D Benefits and loads from beyond the system boundaries		
No.	**Scenario**	**Description**
D	**Recycling potential**	**Stainless steel scrap from C3 excluding the scrap used in A3 replaces 100% of stainless steel; Gunmetal scrap from C3 excluding the scrap used in A3 replaces 100% of gunmetal; Aluminium scrap from C3 excluding the scrap used in A3 replaces 100% of aluminium; Plastic recyclate from C3 excluding the plastics used in A3 replaces 60% of tetrafluoroethylene; Benefits from incineration plant: Electricity replaces electricity mix (GLO), thermal energy replaces thermal energy from natural gas (RoW).**

The values in Module D result from recycling of the packaging material in Module A5 and from deconstruction at the end of service life.

The 100% scenarios differ from the current average recovery shown here (in background report D4). The evaluation of each scenario is described in the background report.

Since this is a single scenario, the results are shown in the summary table.

Annex B

Conversion table for unit weights

Material	System	Product subgroup	Material short text	Designation	Model no.	Dimensions	Item no.	Mass in grams	Mass in kg
248101	Viega Smartpress	Viega Smartpress Fitt.-RG	6711 Adapter with SC 16x3/8 2 1 9	Adapter	6711	16 X 3/8	729523	34	0.034
248111	Viega Smartpress	Viega Smartpress Fitt.-RG	6711 Adapter with SC 16x1/2 2 1 9	Adapter	6711	16 X 1/2	729530	44	0.044
248121	Viega Smartpress	Viega Smartpress Fitt.-RG	6711 Adapter with SC 16x3/4 2 1 9	Adapter	6711	16 X 3/4	729547	63.2	0.063
248131	Viega Smartpress	Viega Smartpress Fitt.-RG	6711 Adapter with SC 20x1/2 2 1 9	Adapter	6711	20 X 1/2	729554	47.48	0.047
248141	Viega Smartpress	Viega Smartpress Fitt.-RG	6711 Adapter with SC 20x3/4 2 1 9	Adapter	6711	20 X 3/4	729561	65.93	0.066
248151	Viega Smartpress	Viega Smartpress Fitt.-RG	6711 Adapter with SC 25x3/4 2 1 9	Adapter	6711	25 X 3/4	729578	76.1	0.076
248161	Viega Smartpress	Viega Smartpress Fitt.-RG	6711 Adapter with SC 25x1 2 1 9	Adapter	6711	25 X 1	729585	119.8	0.12
248171	Viega Smartpress	Viega Smartpress Fitt.-RG	6711 Adapter with SC 32x1 2 1 9	Adapter	6711	32 X 1	729592	140	0.14
248181	Viega Smartpress	Viega Smartpress Fitt.-RG	6712 Adapter with SC 16x1/2 2 1 9	Adapter	6712	16 X 1/2	729608	54	0.054
248191	Viega Smartpress	Viega Smartpress Fitt.-RG	6712 Adapter with SC 16x3/4 2 1 9	Adapter	6712	16 X 3/4	729615	64.2	0.064
248201	Viega Smartpress	Viega Smartpress Fitt.-RG	6712 Adapter with SC 20x1/2 2 1 9	Adapter	6712	20 X 1/2	729622	53.3	0.053
248211	Viega Smartpress	Viega Smartpress Fitt.-RG	6712 Adapter with SC 20x3/4 2 1 9	Adapter	6712	20 X 3/4	729639	63.7	0.064
248221	Viega Smartpress	Viega Smartpress Fitt.-RG	6712 Adapter with SC 25x3/4 2 1 9	Adapter	6712	25 X 3/4	729646	72.5	0.073
248231	Viega Smartpress	Viega Smartpress Fitt.-RG	6712 Adapter with SC 32x1 2 1 9	Adapter	6712	32 X 1	729653	137	0.137
248241	Viega Smartpress	Viega Smartpress Fitt.-RG	6713 Plug-in piece 16x15 2 1 9	Plug-in piece	6713	16 X 15	729660	39.17	0.039
248251	Viega Smartpress	Viega Smartpress Fitt.-RG	6713 Plug-in piece 20x22 2 1 9	Plug-in piece	6713	20 X 22	729677	63.2	0.063
248261	Viega Smartpress	Viega Smartpress Fitt.-RG	6713 Plug-in piece 25x22 2 1 9	Plug-in piece	6713	25 X 22	729684	71.9	0.072
248271	Viega Smartpress	Viega Smartpress Fitt.-RG	6713 Plug-in piece 32x28 2 1 9	Plug-in piece	6713	32 X 28	729691	120	0.12
248281	Viega Smartpress	Viega Smartpress Fitt.-RG	6714 Elbow 90° 16x1/2 2G1 9	Elbow 90°	6714	16 X 1/2	729707	60.5	0.061
248291	Viega Smartpress	Viega Smartpress Fitt.-RG	6714 Elbow 90° 20x1/2 2G1 9	Elbow 90°	6714	20 X 1/2	729714	69	0.069
248301	Viega Smartpress	Viega Smartpress Fitt.-RG	6714 Elbow 90° 20x3/4 2G1 9	Elbow 90°	6714	20 X 3/4	729721	96.8	0.097
248311	Viega Smartpress	Viega Smartpress Fitt.-RG	6714 Elbow 90° 25x3/4 2G1 9	Elbow 90°	6714	25 X 3/4	729738	111.87	0.112
248471	Viega Smartpress	Viega Smartpress Fitt.-RG	6714 Elbow 90° 32x1 2G1 9	Elbow 90°	6714	32 X 1	729745	204	0.204
248481	Viega Smartpress	Viega Smartpress Fitt-Inox	6715 Coupling 16 E 1 9	Coupling	6715	16	729752	24.03	0.024
248491	Viega Smartpress	Viega Smartpress Fitt-Inox	6715 Coupling 20 E 1 9	Coupling	6715	20	729769	28.4	0.028
248501	Viega Smartpress	Viega Smartpress Fitt.-RG	67152 Reducing coupling 20x16 2 1 9	Reducing coupling	67152	20 X 16	729776	37.7	0.038
248511	Viega Smartpress	Viega Smartpress Fitt-Inox	6715 Coupling 25 E 1 9	Coupling	6715	25	729783	42	0.042
248521	Viega Smartpress	Viega Smartpress Fitt.-RG	67152 Reducing coupling 25x16 2 1 9	Reducing coupling	67152	25 X 16	729790	50.5	0.051
248531	Viega Smartpress	Viega Smartpress Fitt.-RG	67152 Reducing coupling 25x20 2 1 9	Reducing coupling	67152	25 X 20	729806	52.71	0.053
248541	Viega Smartpress	Viega Smartpress Fitt-Inox	6715 Coupling 32 E 1 9	Coupling	6715	32	729813	99.7	0.1
248551	Viega Smartpress	Viega Smartpress Fitt.-RG	67152 Reducing coupling 32x20 2 1 9	Reducing coupling	67152	32 X 20	729820	92	0.092
248561	Viega Smartpress	Viega Smartpress Fitt.-RG	67152 Reducing coupling 32x25 2 1 9	Reducing coupling	67152	32 X 25	729837	101.4	0.101
248571	Viega Smartpress	Viega Smartpress Fitt-Inox	6716 Elbow 90° 16 E 1 9	Elbow 90°	6716	16	729844	25.4	0.025
248581	Viega Smartpress	Viega Smartpress Fitt-Inox	6716 Elbow 90° 20 E 1 9	Elbow 90°	6716	20	729851	29.4	0.029
248591	Viega Smartpress	Viega Smartpress Fitt-Inox	6716 Elbow 90° 25 E 1 9	Elbow 90°	6716	25	729868	46	0.046
248601	Viega Smartpress	Viega Smartpress Fitt-Inox	6716 Elbow 90° 32 E 1 9	Elbow 90°	6716	32	729875	104	0.104
248611	Viega Smartpress	Viega Smartpress Fitt.-RG	6717 Tee 16x1/2x16 2G1 9	Tee	6717	16 X 1/2 X 16	729882	72.8	0.073

Material	System	Product subgroup	Material short text	Designation	Model no.	Dimensions	Item no.	Mass in grams	Mass in kg
248621	Viega Smartpress	Viega Smartpress Fitt.-RG	6717 Tee 20x1/2x20 2G1 9	Tee	6717	20 X 1/2 X 20	729899	90.8	0.091
248631	Viega Smartpress	Viega Smartpress Fitt.-RG	6717 Tee 25x3/4x25 2G1 9	Tee	6717	25 X 3/4 X 25	729905	135.9	0.136
248641	Viega Smartpress	Viega Smartpress Fitt.-RG	6717 Tee 32x3/4x32 2G1 9	Tee	6717	32 X 3/4 X 32	729912	218	0.218
248651	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 16x16x16 E 1 9	Tee	6718	16 X 16 X 16	729929	38	0.038
248661	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 16x20x16 E 1 9	Tee	6718	16 X 20X 16	729936	49.5	0.05
248671	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 20x20x20 E 1 9	Tee	6718	20 X 20 X 20	729943	54.2	0.054
248681	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 20x16x20 E 1 9	Tee	6718	20 X 16 X 20	729950	51	0.051
248691	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 20x16x16 E 1 9	Tee	6718	20 X 16 X 16	729967	52	0.052
248701	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 20x20x16 E 1 9	Tee	6718	20 X 20 X 16	729974	53	0.053
248711	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 25x25x25 E 1 9	Tee	6718	25 X 25 X 25	729981	81	0.081
248721	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 25x16x25 E 1 9	Tee	6718	25 X 16 X 25	729998	71.4	0.071
248731	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 25x16x20 E 1 9	Tee	6718	25 X 16 X 20	730000	63	0.063
248741	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 25x20x20 E 1 9	Tee	6718	25 X 20 X 20	730017	71	0.071
248751	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 25x20x25 E 1 9	Tee	6718	25 X 20 X 25	730024	76	0.076
248761	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 25x25x20 E 1 9	Tee	6718	25 X 25 X 20	730031	75.8	0.076
248771	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 25x16x16 E 1 9	Tee	6718	25 X 16 X 16	730048	62	0.062
248781	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 25x25x16 E 1 9	Tee	6718	25 X 25 X 16	730055	70	0.07
248791	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 32x32x32 E 1 9	Tee	6718	32 X 32 X 32	730062	182	0.182
248871	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 32x16x25 E 1 9	Tee	6718	32 X 16 X 25	730079	108	0.108
248881	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 32x16x32 E 1 9	Tee	6718	32 X 16 X 32	730086	136	0.136
248891	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 32x20x25 E 1 9	Tee	6718	32 X 20 X 25	730093	114	0.114
248911	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 32x20x32 E 1 9	Tee	6718	32 X 20 X 32	730109	141.8	0.142
248991	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 32x25x25 E 1 9	Tee	6718	32 X 25 X 25	730116	116	0.116
249001	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 32x25x32 E 1 9	Tee	6718	32 X 25 X 32	730123	147.8	0.148
249011	Viega Smartpress	Viega Smartpress Fitt.-RG	6724 Mounting unit 16x3/8x120 2G1 9	Mounting unit	6724	16 X 3/8 X 120	730130	207.8	0.208
249121	Viega Smartpress	Viega Smartpress Fitt.-RG	6724 Mounting unit 16x1/2x150 2G1 9	Mounting unit	6724	16 X 1/2 X 150	730147	261	0.261
249131	Viega Smartpress	Viega Smartpress Fitt-Inox	6726 Elbow 45° 25 E 1 9	Elbow 45°	6726	25	730154	42	0.042
249141	Viega Smartpress	Viega Smartpress Fitt-Inox	6726 Elbow 45° 32 E 1 9	Elbow 45°	6726	32	730161	100	0.1
249181	Viega Smartpress	Viega Smartpress Fitt.-RG	672001 Connection socket 16x1/2 2G1 9	Connection socket	672001	16 X 1/2	730581	202.4	0.202
249221	Viega Smartpress	Viega Smartpress Fitt.-RG	6763 Union 16x1/2 2 1 9	Union	6763	16 X 1/2	730208	42	0.042
249231	Viega Smartpress	Viega Smartpress Fitt.-RG	6763 Union 16x3/4 2 1 9	Union	6763	16 X 3/4	730215	69.4	0.069
249241	Viega Smartpress	Viega Smartpress Fitt.-RG	6763 Union 20x1/2 2 1 9	Union	6763	20 X 1/2	730222	46.1	0.046
249251	Viega Smartpress	Viega Smartpress Fitt.-RG	6763 Union 20x3/4 2 1 9	Union	6763	20 X 3/4	730239	71.8	0.072
249261	Viega Smartpress	Viega Smartpress Fitt.-RG	6763 Union 25x3/4 2 1 9	Union	6763	25 X 3/4	730246	83.7	0.084
249271	Viega Smartpress	Viega Smartpress Fitt.-RG	6763 Union 32x11/4 2 1 9	Union	6763	32 X 1 1/4	730253	220	0.22
249281	Viega Smartpress	Viega Smartpress Fitt.-RG	6770 Ball valve 16 0 1 9	Ball valve	6770	16	730260	470	0.47
249291	Viega Smartpress	Viega Smartpress Fitt.-RG	6770 Ball valve 20 0 1 9	Ball valve	6770	20	730277	474	0.474
249311	Viega Smartpress	Viega Smartpress Fitt-Inox	6777 Radiator connection elbow 16x15x52x3E 1 9	Radiator connection elbow	6777	SET 16X15X52X350	730291	360	0.36
249321	Viega Smartpress	Viega Smartpress Fitt.-RG	6783 Union 16xM22 2 1 9	Union	6783	16 X M22	730307	57.3	0.057
249331	Viega Smartpress	Viega Smartpress Fitt.-RG	6783 Union 16xM24 2 1 9	Union	6783	16 X M24	730314	64.2	0.064
249341	Viega Smartpress	Viega Smartpress Fitt.-RG	6793 Elbow coupling 16x15 2G1 9	Elbow coupling	6793	16 X 15	730321	49.6	0.05

Material	System	Product subgroup	Material short text	Designation	Model no.	Dimensions	Item no.	Mass in grams	Mass in kg
249351	Viega Smartpress	Viega Smartpress Fitt.-RG	6793 Elbow coupling 20x22 2G1 9	Elbow coupling	6793	20 X 22	730338	83.6	0.084
249361	Viega Smartpress	Viega Smartpress Fitt.-RG	67141 Elbow 90° 16x3/8 2G1 9	Elbow 90°	67141	16 X 3/8	730345	49.15	0.049
249371	Viega Smartpress	Viega Smartpress Fitt.-RG	67141 Elbow 90° 16x1/2 2G1 9	Elbow 90°	67141	16 X 1/2	730352	63.7	0.064
249381	Viega Smartpress	Viega Smartpress Fitt.-RG	67141 Elbow 90° 20x1/2 2 1 9	Elbow 90°	67141	20 X 1/2	730369	72.8	0.073
249391	Viega Smartpress	Viega Smartpress Fitt.-RG	67141 Elbow 90° 20x3/4 2 1 9	Elbow 90°	67141	20 X 3/4	730376	97.2	0.097
249401	Viega Smartpress	Viega Smartpress Fitt.-RG	67141 Elbow 90° 25x3/4 2 1 9	Elbow 90°	67141	25 X 3/4	730383	110	0.11
249411	Viega Smartpress	Viega Smartpress Fitt.-RG	67241 Mounting unit 16x1/2x80/100/150 2G1 9	Mounting unit	67241	16X1/2X80/100/150	730390	234.5	0.235
249421	Viega Smartpress	Viega Smartpress Fitt.-RG	67242 Mounting unit 16x1/2x80/100 2G1 9	Mounting unit	67242	16 X 1/2 X 80/100	730406	207.5	0.208
249431	Viega Smartpress	Viega Smartpress Fitt.-RG	67243 Wall platen-Tee 16x1/2 2G1 9	Wall platen-Tee	67243	16 X 1/2	729509	172	0.172
249441	Viega Smartpress	Viega Smartpress Fitt.-RG	67243 Wall platen-Tee 20x1/2 2G1 9	Wall platen-Tee	67243	20 X 1/2	729516	185	0.185
249451	Viega Smartpress	Viega Smartpress Fitt.-RG	67255 Wall plate 16x1/2 2G1 9	Wall plate	67255	16 X 1/2	729479	94	0.094
249461	Viega Smartpress	Viega Smartpress Fitt.-RG	67255 Wall plate 20x1/2 2G1 9	Wall plate	67255	20 X 1/2	729486	98.3	0.098
249471	Viega Smartpress	Viega Smartpress Fitt.-RG	67255 Wall plate 20x3/4 2G1 9	Wall plate	67255	20 X 3/4	729493	137.4	0.137
249481	Viega Smartpress	Viega Smartpress Fitt.-RG	67257 Double wall plate 16x1/2x16 2G1 9	Double wall plate	67257	16 X 1/2 X 16	730413	169	0.169
249491	Viega Smartpress	Viega Smartpress Fitt.-RG	67257 Double wall plate 20x1/2x20 2G1 9	Double wall plate	67257	20 X 1/2 X 20	730420	190	0.19
249501	Viega Smartpress	Viega Smartpress Fitt.-RG	67257 Double wall plate 25x1/2x25 2G1 9	Double wall plate	67257	25 X 1/2 X 25	730437	220	0.22
249511	Viega Smartpress	Viega Smartpress Fitt.-RG	67264 Tee 1/2x16x16 2G1 9	Tee	67264	1/2 X 16 X 16	730444	82.8	0.083
249571	Viega Smartpress	Viega Smartpress Fitt-Inox	6716 Elbow 90° 40 E 1 9	Elbow 90°	6716	40	731922	176	0.176
249581	Viega Smartpress	Viega Smartpress Fitt-Inox	6716 Elbow 90° 50 E 1 9	Elbow 90°	6716	50	731939	274.5	0.275
249591	Viega Smartpress	Viega Smartpress Fitt-Inox	6716 Elbow 90° 63 E 1 9	Elbow 90°	6716	63	731946	471	0.471
249621	Viega Smartpress	Viega Smartpress Fitt.-RG	6713P Adapter with SC 16x15 2 1 9	Adapter	6713P	16 X 15	730451	37.5	0.038
249631	Viega Smartpress	Viega Smartpress Fitt.-RG	6713P Adapter with SC 20x15 2 1 9	Adapter	6713P	20 X 15	730468	42.6	0.043
249641	Viega Smartpress	Viega Smartpress Fitt.-RG	6713P Adapter with SC 25x22 2 1 9	Adapter with SC	6713P	25 X 22	730475	69.9	0.07
249651	Viega Smartpress	Viega Smartpress Fitt.-RG	6715G Adapter coupling 20x16 2 1 9	Adapter coupling	6715G	20 X 16	730482	32.5	0.033
249661	Viega Smartpress	Viega Smartpress Fitt.-RG	67231 Mounting unit 16x1/2x35/45/50 2G1 9	Mounting unit	67231	16X1/2X35/45/50	730499	246.8	0.247
249671	Viega Smartpress	Viega Smartpress Fitt-Inox	677531 Radiator connection block 16x15 E 1 9	Radiator connection block	677531	16 X 15	730505	509.5	0.51
249681	Viega Smartpress	Viega Smartpress Fitt.-RG	67976 Radiator connection block 16x250 5K1 9	Radiator connection block	67976	16 X 250	730512	259	0.259
249691	Viega Smartpress	Viega Smartpress Fitt.-RG	67977 Radiator connection block 16 5K1 9	Radiator connection block	67977	16	730529	311	0.311
249701	Viega Smartpress	Viega Smartpress Fitt.-RG	6735 Union 16x3/4 2 1 9	Union	6735	16 X 3/4	730598	68.8	0.069
249711	Viega Smartpress	Viega Smartpress Fitt.-RG	6735 Union 20x3/4 2 1 9	Union	6735	20 X 3/4	730604	72	0.072
249721	Viega Smartpress	Viega Smartpress Fitt.-RG	6735 Union 25x3/4 2 1 9	Union	6735	25 X 3/4	730611	76.3	0.076
249731	Viega Smartpress	Viega Smartpress Fitt.-RG	6741 Mounting unit 16x1/2 2G1 9	Mounting unit	6741	16 X 1/2	730628	491	0.491
249741	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 50x25x50 E 1 9	Tee	6718	50 X 25 X 50	731953	283	0.283
249751	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 50x50x50 E 1 9	Tee	6718	50 X 50 X 50	731984	360	0.36
249761	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 40x40x40 E 1 9	Tee	6718	40 X 40 X 40	732752	238	0.238
249771	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 40x25x32 E 1 9	Tee	6718	40 X 25 X 32	732769	189	0.189
249781	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 40x25x40 E 1 9	Tee	6718	40 X 25 X 40	732776	188	0.188
249831	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 40x32x32 E 1 9	Tee	6718	40 X 32 X 32	732783	216	0.216
250141	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 40x32x40 E 1 9	Tee	6718	40 X 32 X 40	732790	221	0.221
250171	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 50x32x50 E 1 9	Tee	6718	50 X 32 X 50	732806	316	0.316
250181	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 50x40x50 E 1 9	Tee	6718	50 X 40 X 50	732813	332	0.332

Material	System	Product subgroup	Material short text	Designation	Model no.	Dimensions	Item no.	Mass in grams	Mass in kg
250261	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 63x63x63 E 1 9	Tee	6718	63 X 63 X 63	732820	601.777	0.602
250271	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 63x25x63 E 1 9	Tee	6718	63 X 25 X 63	732837	450	0.45
250281	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 63x32x63 E 1 9	Tee	6718	63 X 32 X 63	732844	480	0.48
250291	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 63x40x63 E 1 9	Tee	6718	63 X 40 X 63	732851	494.2	0.494
250801	Viega Smartpress	Viega Smartpress Fitt-Inox	6718 Tee 63x50x63 E 1 9	Tee	6718	63 X 50 X 63	732868	532.2	0.532
258711	Viega Smartpress	Viega Smartpress Fitt.-RG	6723 Mounting unit 16x1/2 2G1 9	Mounting unit	6723	16 X 1/2	750152	167.4	0.167
269171	Viega Smartpress	Viega Smartpress Fitt.-RG	6776 Connection elbow 16x12x200 1 1 9	Connection elbow	6776	16 X 12 X 200	753863	104.8	0.105
269341	Viega Smartpress	Viega Smartpress Fitt.-RG	6776 Connection elbow 16x15x200 1 1 9	Connection elbow	6776	16 X 15 X 200	750169	135.7	0.136
269401	Viega Smartpress	Viega Smartpress Fitt.-RG	6776 Connection elbow 16x15x350 1 1 9	Connection elbow	6776	16 X 15 X 350	756079	194.3	0.194
271501	Viega Smartpress	Viega Smartpress Fitt.-RG	6713P Adapter with SC 16x12 2 1 9	Adapter	6713P	16 X 12	753894	32	0.032
272311	Viega Smartpress	Viega Smartpress Fitt.-RG	6713P Adapter with SC 20x22 2 1 9	Adapter	6713P	20 X 22	756086	65	0.065
273351	Viega Smartpress	Viega Smartpress Fitt.-RG	6711 Adapter with SC 40x11/4 2 1 9	Adapter	6711	40 X 1 1/4	733278	263	0.263
273361	Viega Smartpress	Viega Smartpress Fitt.-RG	6711 Adapter with SC 50x11/2 2 1 9	Adapter	6711	50 X 1 1/2	733285	334	0.334
273371	Viega Smartpress	Viega Smartpress Fitt.-RG	6711 Adapter with SC 63x2 2 1 9	Adapter	6711	63 X 2	733292	557	0.557
273461	Viega Smartpress	Viega Smartpress Fitt-Inox	6717 Tee 40x1x40 E 1 9	Tee	6717	40 X 1 X 40	733308	210	0.21
273471	Viega Smartpress	Viega Smartpress Fitt-Inox	6717 Tee 50x1x50 E 1 9	Tee	6717	50 X 1 X 50	733315	303	0.303
273481	Viega Smartpress	Viega Smartpress Fitt-Inox	6717 Tee 63x1x63 E 1 9	Tee	6717	63 X 1 X 63	733322	460	0.46
275461	Viega Smartpress	Viega Smartpress Fitt-Inox	6715 Coupling 40 E 1 9	Coupling	6715	40	733339	148	0.148
275471	Viega Smartpress	Viega Smartpress Fitt.-RG	67152 Reducing coupling 40x32 2 1 9	Reducing coupling	67152	40 X 32	733346	180	0.18
275481	Viega Smartpress	Viega Smartpress Fitt-Inox	6715 Coupling 50 E 1 9	Coupling	6715	50	733353	220	0.22
275491	Viega Smartpress	Viega Smartpress Fitt.-RG	67152 Reducing coupling 50x40 2 1 9	Reducing coupling	67152	50 X 40	733360	254	0.254
275501	Viega Smartpress	Viega Smartpress Fitt-Inox	6715 Coupling 63 E 1 9	Coupling	6715	63	733377	350	0.35
275511	Viega Smartpress	Viega Smartpress Fitt.-RG	67152 Reducing coupling 63x50 2 1 9	Reducing coupling	67152	63 X 50	733384	390	0.39
275541	Viega Smartpress	Viega Smartpress Fitt.-RG	6712 Adapter with SC 40x11/4 2 1 9	Adapter	6712	40 X 1 1/4	733391	239	0.239
275551	Viega Smartpress	Viega Smartpress Fitt.-RG	6712 Adapter with SC 50x11/2 2 1 9	Adapter	6712	50 X 1 1/2	733407	302	0.302
275561	Viega Smartpress	Viega Smartpress Fitt.-RG	6712 Adapter with SC 63x2 2 1 9	Adapter	6712	63 X 2	733414	460	0.46
275601	Viega Smartpress	Viega Smartpress Fitt.-RG	6713 Plug-in piece 40x35 2 1 9	Plug-in piece	6713	40 X 35	733421	199.5	0.2
275611	Viega Smartpress	Viega Smartpress Fitt.-RG	6713 Plug-in piece 50x42 2 1 9	Plug-in piece	6713	50 X 42	733438	289	0.289
275621	Viega Smartpress	Viega Smartpress Fitt.-RG	6763 Union 40x11/4 2 1 9	Union	6763	40 X 1 1/4	733445	268	0.268
275631	Viega Smartpress	Viega Smartpress Fitt.-RG	6763 Union 40x11/2 2 1 9	Union	6763	40 X 1 1/2	733452	252	0.252
275651	Viega Smartpress	Viega Smartpress Fitt.-RG	6763 Union 50x13/4 2 1 9	Union	6763	50 X 1 3/4	733469	315	0.315
275661	Viega Smartpress	Viega Smartpress Fitt.-RG	6763 Union 50x23/8 2 1 9	Union	6763	50 X 2 3/8	733476	448	0.448
275681	Viega Smartpress	Viega Smartpress Fitt.-RG	6763 Union 63x23/8 2 1 9	Union	6763	63 X 2 3/8	733483	515	0.515
275791	Viega Smartpress	Viega Smartpress Fitt-Inox	6726 Elbow 45° 40 E 1 9	Elbow 45°	6726	40	733995	154	0.154
275801	Viega Smartpress	Viega Smartpress Fitt-Inox	6726 Elbow 45° 50 E 1 9	Elbow 45°	6726	50	734008	248	0.248
275821	Viega Smartpress	Viega Smartpress Fitt-Inox	6726 Elbow 45° 63 E 1 9	Elbow 45°	6726	63	734015	422	0.422
281801	Viega Smartpress	Viega Smartpress Fitt.-RG	6734 Manifold 3/4x16-2 0 1 9	Manifold	6734	3/4 X 16-2	747404	350	0.35
281811	Viega Smartpress	Viega Smartpress Fitt.-RG	6734 Manifold 3/4x16-3 0 1 9	Manifold	6734	3/4 X 16-3	747411	490	0.49
281821	Viega Smartpress	Viega Smartpress Fitt.-RG	6734 Manifold 3/4x16-4 0 1 9	Manifold	6734	3/4 X 16-4	747428	562	0.562
291381	Viega Smartpress	Viega Smartpress Fitt.-RG	67245 Mounting unit 16x1/2 2 1 9	Mounting unit	67245	16 X 1/2	759933	447	0.447
601001	Viega Smartpress	Viega Smartpress Fitt.-RG	6725 Wall plate 16x1/2x70 2G1 9	Wall plate	6725	16 X 1/2 X 70	783921	150	0.15

Material	System	Product subgroup	Material short text	Designation	Model no.	Dimensions	Item no.	Mass in grams	Mass in kg
601851	Viega Smartpress	Viega Smartpress Fitt.-RG	67118 Adapter with SC 16 2 1 9	Adapter	67118	16	776985	67	0.067
601861	Viega Smartpress	Viega Smartpress Fitt.-RG	67168 Elbow with SC 16x1/2 2G1 9	Elbow with SC	67168	16 X 1/2	776992	84	0.084
601911	Viega Smartpress	Viega Smartpress Fitt.-RG	67188 Tee with SC 16x1/2x16 2G1 9	Tee with SC	67188	16 X 1/2 X 16	777005	107.4	0.107
601921	Viega Smartpress	Viega Smartpress Fitt.-RG	67188 Tee with SC 20x1/2x20 2G1 9	Tee with SC	67188	20 X 1/2 X 20	777012	118	0.118
602431	Viega Smartpress	Viega Smartpress Fitt.-RG	672578 Connection piece with SC 25x25x1/2G1 9	Connection piece with SC	672578	25 X 25 X 1/2	796778	206	0.206

Conversion table for length weights

Material	System	Material short text	Designation:	Model no.	Dimensions	Item no.	Mass in grams	Mass in kg	Conversion factor
243552	Smartpress	6709 VIEGA SMARTPRESS G-R. 20X2.35KS 9	Viega Smartpress G-R.	6709	20 X 2.3	730635	146.068	0.146	0.429
243562	Smartpress	6709 VIEGA SMARTPRESS G-R. 20X2.35KS 9	Viega Smartpress G-R.	6709	20 X 2.3	730642	146.068	0.146	0.429
243572	Smartpress	6709 VIEGA SMARTPRESS G-R. 25X2.85KS 9	Viega Smartpress G-R.	6709	25 X 2.8	730659	236.132	0.236	0.694
243582	Smartpress	6709 VIEGA SMARTPRESS G-R. 32X3.25KS 9	Viega Smartpress G-R.	6709	32 X 3.2	730666	339.286	0.339	0.997
243652	Smartpress	67031 VIEGA SMARTPRESS G-R. 20X2.35KS 9	Viega Smartpress G-R.	67031	20 X 2.3	730673	146.068	0.146	0.429
243662	Smartpress	67031 VIEGA SMARTPRESS G-R. 25X2.85KS 9	Viega Smartpress G-R.	67031	25 X 2.8	730680	236.132	0.236	0.694
243672	Smartpress	67031 VIEGA SMARTPRESS G-R. 32X3.25KS 9	Viega Smartpress G-R.	67031	32 X 3.2	730697	339.286	0.339	0.997
243682	Smartpress	67091 VIEGA SMARTPRESS G-R. 20X2.35KS 9	Viega Smartpress G-R.	67091	20 X 2.3	730703	215.068	0.215	0.632
243692	Smartpress	67091 VIEGA SMARTPRESS G-R. 25X2.85KS 9	Viega Smartpress G-R.	67091	25 X 2.8	730710	361.132	0.361	1.062
522343	Smartpress	4703 VIEGASMARTPRESS/PEXFITPRO-PI5KB 9	ViegaSmartpress/ PexfitPro-R.	K4705	32 X 3.2	817954	360	0.36	1.059
312971	Smartpress	47054 VIEGASMARTPRESS/PEXFITPRO-PI5KC 9	ViegaSmartpress/ PexfitPro-R.	4703	63 X 4.5	588069	724.498	0.724498	2.131
360933	Smartpress	47054 VIEGASMARTPRESS/PEXFITPRO-PI5KC 9	ViegaSmartpress/ PexfitPro-R.	47054	16 X 2.0	830755	205.863	0.205863	0.605
360943	Smartpress	47054 VIEGASMARTPRESS/PEXFITPRO-PI5KC 9	ViegaSmartpress/ PexfitPro-R.	47054	20 X 2.3	830762	257.712	0.257712	0.758
360953	Smartpress	4705 VIEGASMARTPRESS/PEXFITPRO-PI5KB 9	ViegaSmartpress/ PexfitPro-R.	47054	25 X 2.8	830779	387.324	0.387324	1.139
368021	Smartpress	4705 VIEGASMARTPRESS/PEXFITPRO-PI5KB 9	ViegaSmartpress/ PexfitPro-R.	4705	16 X 2.0	607210	124.156	0.124156	0.365
368041	Smartpress	4705 VIEGASMARTPRESS/PEXFITPRO-PI5KB 9	ViegaSmartpress/ PexfitPro-R.	4705	20 X 2.3	607234	165.366	0.165366	0.486
368051	Smartpress	4703 VIEGASMARTPRESS/PEXFITPRO-PI5KB 9	ViegaSmartpress/ PexfitPro-R.	4705	25 X 2.8	607241	274.883	0.274883	0.808
368061	Smartpress	4703 VIEGASMARTPRESS/PEXFITPRO-PI5KB 9	ViegaSmartpress/ PexfitPro-R.	4703	16 X 2.0	607258	136.179	0.136179	0.401
368081	Smartpress	4703 VIEGASMARTPRESS/PEXFITPRO-PI5KB 9	ViegaSmartpress/ PexfitPro-R.	4703	20 X 2.3	607272	201.721	0.201721	0.593
368091	Smartpress	4704 VIEGASMARTPRESS/PEXFITPRO-PI5KA 9	ViegaSmartpress/ PexfitPro-R.	4703	25 X 2.8	607289	305.77	0.30577	0.899
368111	Smartpress	4704 VIEGASMARTPRESS/PEXFITPRO-PI5KA 9	ViegaSmartpress/ PexfitPro-R.	4704	16 X 2.0	607302	201.35	0.20135	0.592
368131	Smartpress	4704 VIEGASMARTPRESS/PEXFITPRO-PI5KA 9	ViegaSmartpress/ PexfitPro-R.	4704	20 X 2.3	607326	246.914	0.246914	0.726
368151	Smartpress	47056 VIEGASMARTPRESS/PEXFITPRO-PI5KK 9	ViegaSmartpress/ PexfitPro-R.	4704	25 X 2.8	761455	404.846	0.404846	1.191
368193	Smartpress	47055 VIEGASMARTPRESS/PEXFITPRO-PI5KK 9	ViegaSmartpress/ PexfitPro-R.	47056	25 X 2.8	607388	362.539	0.362539	1.066
368216	Smartpress	47055 VIEGASMARTPRESS/PEXFITPRO-PI5KK 9	ViegaSmartpress/ PexfitPro-R.	47055	16 X 2.0 X 75M	734060	169.861	0.169861	0.500

Material	System	Material short text	Designation:	Model no.	Dimensions	Item no.	Mass in grams	Mass in kg	Conversion factor
368226	Smartpress	47056 VIEGASMARTPRESS/PEXFITPRO-PI5KK 9	ViegaSmartpress/ PexfitPro-R.	47055	20 X 2.3 X 75M	734077	214.93	0.21493	0.632
368356	Smartpress	47056 VIEGASMARTPRESS/PEXFITPRO-PI5KL 9	ViegaSmartpress/ PexfitPro-R.	47056	32 X 3.2	761202	478.137	0.478137	1.406
368605	Smartpress	47056 VIEGASMARTPRESS/PEXFITPRO-PI5KL 9	ViegaSmartpress/ PexfitPro-R.	47056	25 X 2.8	784805	354.249	0.354249	1.042
368615	Smartpress	47055 VIEGASMARTPRESS/PEXFITPRO-PI5KL 9	ViegaSmartpress/ PexfitPro-R.	47056	32 X 3.2	784812	478.137	0.478137	1.406
368775	Smartpress	47055 VIEGASMARTPRESS/PEXFITPRO-PI5KL 9	ViegaSmartpress/ PexfitPro-R.	47055	16 X 2.0	751401	169.861	0.169861	0.500
368815	Smartpress	470501 VIEGASMARTPRESS/PEXFITPRO-PI5KB 9	ViegaSmartpress/ PexfitPro-R.	47055	20 X 2.3	751418	214.93	0.21493	0.632
369481	Smartpress	470501 VIEGASMARTPRESS/PEXFITPRO-PI5KB 9	ViegaSmartpress/ PexfitPro-R.	470501	16 X 2.0 X 25M	751425	120.066	0.120066	0.353
369501	Smartpress	4705 VIEGASMARTPRESS/PEXFITPRO-PI5KB 9	ViegaSmartpress/ PexfitPro-R.	470501	16 X 2.0 X 50M	751432	116.18	0.11618	0.342
406692	Smartpress	K4705 V.SMARTPR./PEXFITPRO-P. 32X35KB 9	ViegaSmartpress/ PexfitPro-R.	4705	32 X 3.2	699208	392.286	0.392286	1.154
599876	Smartpress	47041 VIEGASMARTPRESS/PEXFITPRO-PI5KK 9	ViegaSmartpress/ PexfitPro-R.	47041	16 X 2.0	691455	201.35	0.20135	0.592
599885	Smartpress	47041 VIEGASMARTPRESS/PEXFITPRO-PI5KL 9	ViegaSmartpress/ PexfitPro-R.	47041	16 X 2.0	691462	201.267	0.201267	0.592
599896	Smartpress	47041 VIEGASMARTPRESS/PEXFITPRO-PI5KK 9	ViegaSmartpress/ PexfitPro-R.	47041	20 X 2.3	691479	246.955	0.246955	0.726
599905	Smartpress	47041 VIEGASMARTPRESS/PEXFITPRO-PI5KL 9	ViegaSmartpress/ PexfitPro-R.	47041	20 X 2.3	691486	246.84	0.24684	0.726
682351	Smartpress	4708 VIEGASMARTPRESS/PEXFITPRO-PI5JB 9	ViegaSmartpress/ PexfitPro-R.	4708	16 X 2.0 PERT	662585	120.63	0.12063	0.355
682361	Smartpress	4708 VIEGASMARTPRESS/PEXFITPRO-PI5JB 9	ViegaSmartpress/ PexfitPro-R.	4708	20 X 2.3 PERT	662592	165.593	0.165593	0.487
682371	Smartpress	47081 VIEGASMARTPRESS/PEXFITPRO-PI5JA 9	ViegaSmartpress/ PexfitPro-R.	47081	16 X 2.0 PERT	662608	202.15	0.20215	0.595
682391	Smartpress	47085 VIEGASMARTPRESS/PEXFITPRO-PI5 K 9	ViegaSmartpress/ PexfitPro-R.	47085	16 X 2.0 PERT	662622	170.721	0.170721	0.502
682401	Smartpress	47085 VIEGASMARTPRESS/PEXFITPRO-PI5 K 9	ViegaSmartpress/ PexfitPro-R.	47085	20 X 2.3 PERT	662639	215.157	0.215157	0.633
682652	Smartpress	47088 VIEGASMARTPRESS/PEXFITPRO-PI5JB 9	ViegaSmartpress/ PexfitPro-R.	47088	16 X 2.0 PERT	778958	118.275	0.118275	0.348

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Notes
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