ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Frese Flow and Pressure Control Valves
Vexve Denmark | Frese A/S

EPD HUB, HUB-5534
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Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Vexve Denmark | Frese A/S
Address	Sorøvej 8, DK-4200 Slagelse
Contact details	dk.info@vexve.com
Website	www.frese.eu, www.vexve.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Manufactured product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Anne Damm, Vexve Denmark | Frese A/S
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Sarah Curpen, as authorized verifier acting for EPD HUB Limited

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Frese Flow and Pressure Control Valves
Additional labels	This EPD covers: (OPTIMA Compact DN10 - DN 50), (OPTIMA Compact Veriflow-series DN10 - DN50), (SIGMA Compact-series DN15 - DN50), (PV Compact-series DN15 - DN50, PV-SIGMA), (Compact and PV-SIGMA Compact Spectrum-series), (Frese DPRV (Differential pressure relief valve)), (Frese STBV FODRV Range DN15-DN50), (Frese STBV VODRV DN15-DN50), (PV Compact Spectrum-series DN15-DN50), (Frese COMBIFLOW 6-way), (Frese OPTIMIZER 6-way) and (All Frese Bypass unit MODULA types)
Product reference	Reference product is: SIGMA Compact DN15 F/F Low P/T (53-2202)
Place(s) of raw material origin	Asia and Europe
Place of production	Denmark, Slagelse
Place(s) of installation and use	Global
Period for data	Calendar year 2024
Averaging in EPD	Multiple products and multiple factories
Variation in GWP-fossil for A1-A3 (%)	-10% |-7,4% |+42%
GTIN (Global Trade Item Number)	5705564052001
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	11,4

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
Mass of packaging	0,15817 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	7,09
GWP-total, A1-A3 ($kgCO_2e$)	6,98
Secondary material, inputs (%)	7,35
Secondary material, outputs (%)	55
Total energy use, A1-A3 (kWh)	22,1
Net freshwater use, A1-A3 (m^3)	0,13

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Vexve – Inspired by Your Flow

Vexve aims to be the leading provider of mission-critical valve solutions in the transition to a low-carbon future.

At Vexve Denmark, we develop and manufacture dynamic valves and innovative, energy-efficient solutions for hydronic systems in buildings and industrial applications, marine systems and district energy networks. Our technologies optimise energy use and enhance overall system performance.

With more than 80 years of experience under the Frese name, we are proud to be part of the Vexve Group. Together, we work to become the leading provider of mission-critical valve technologies in the shift towards a lower-carbon future.

We supply more than 70 countries and employ over 900 people across modern production facilities in Finland, the Czech Republic, Germany, China and Denmark.

Our mission is to advance energy efficiency – through deep technical expertise, reliable partnerships and solutions that make a real difference.

PRODUCT DESCRIPTION

Product description:

The Frese control and balancing valve range is a family of hydronic products that keep water-based heating and cooling systems stable, energy efficient and easy to operate in all types of applications. The group includes pressure independent control valves, 6-way PICVs for change-over applications, prefabricated bypass units, dynamic flow limiting valves, differential pressure control valves and manual balancing valves. Together, they regulate flow, keep differential pressure within a defined range and allow accurate balancing of branches and terminal units, so that every coil, fan coil or air handling unit receives exactly the flow it needs under changing load conditions.

The products are designed for closed water and water/glycol HVAC systems and are installed in risers, branches and at terminals in both constant and variable flow networks. Pressure independent control valves combine control and automatic flow limitation in one body and can be equipped with electronic actuators for room or building management system control. 6-way PICVs provide heating and cooling changeover control to one terminal unit using a single valve and actuator, reducing component count and simplifying pipework. Bypass units integrate isolating valves, measuring points and connections for PICVs or flow limiting valves in compact assemblies to speed up installation and commissioning.

Dynamic flow limiting valves and differential pressure control valves stabilize the hydraulic conditions in zones and branches, while manual balancing valves and metering stations are used for fine tuning and documentation of flows during commissioning and service. The valves are mainly metallic bodies with elastomer and polymer sealing elements and, for motorized versions, electronic actuators with housing in metal and plastic. In this EPD the entire group is treated as one product family representing typical material composition, function and service conditions for modern hydronic control and balancing valves. The environmental impacts of the actuator itself are not included in this EPD.

Product application:

Find the “Application Guide” on the frontpage on our website: www.frese.eu.

Technical Characteristics:

Dimension: DN15-DN50

Pressure class: PN16 and PN25

Product standards:

Find “Certificates and Declarations of Conformity on our website, under “Technical info” @ www.frese.eu.

Physical properties of the product:

The valves in this group primarily consist of Brass which ranges from 85% - 95%. Other parts of the valves consist of rubber parts made of EPDM or HNBR and plastic parts made of generic components such as ABS, PPS, PA6 and SEPS.

Further information can be found at: www.frese.eu **and** www.vexve.com

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	91,12%	Asia and Europe
Minerals	0	
Fossil materials	8,88%	Asia and Europe
Bio-based materials	0	

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate.

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0,063

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg
Mass per declared unit	1 kg
Functional unit	-
Reference service life	-

SUBSTANCES, REACH - VERY HIGH CONCERN

Substances of very high concern	EC	CAS
Lead: The brass used for the valves contains lead. For every 1 kg of brass, approximately 2% (0.02 kg) is lead.	231-100-4	7439-92-1

Where applicable, the articles covered by this EPD that contain SVHC above 0,1% (w/w) are registered in the ECHA SCIP database. SCIP numbers are available on our website www.frese.eu.

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Not declared = ND.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The valve consists of an average of 90% brass. Other materials include stainless steel, various plastics (SEPS, PPS, PA6, ABS), and rubber components (HNBR, EPDM).

The manufacturing process includes brass extrusion and machining. Metal scrap (brass and stainless steel) generated during production is sent directly from the factory to authorized recycling facilities. Plastic and rubber waste is either incinerated for energy recovery or landfilled. Additional manufacturing steps include product testing and packaging. Electricity is consumed during machining operations and for electric forklifts. Heating is delivered by District heating. A location-based approach is used in modelling the electricity mix utilized in the factory. Oils and silicone grease are used for lubrication and cooling during metalworking. Pneumatic air and water are used for pressure testing and cleaning of newly machined valve housings.

Transport data is based on actual distances between each component supplier and the factory. Production losses and manufacturing waste consist of metal scrap from brass and steel processing. This scrap is sent to authorized recycling facilities, with transport distances defined as the distance between the manufacturing site and the recycling recipient.

Packaging materials include wooden EUR pallets, cardboard boxes, and plastic film. Ancillary materials used in production include cutting fluid and water. Wastewater is collected by a waste management company due to contamination with oil. Oil is mixed with water and remains on metal shavings and parts that are washed.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The transport distance from manufacturer to the installation site is calculated as an average of all kilometers traveled to deliver the valves to customers during 2024. The calculation relies on relative annual sales percentages combined with actual distances in kilometers.
The scope of sales in 2024 was global, and the chosen transport method was lorries. We assume full truckloads, meaning the vehicle capacity utilization factor is set to one. Yes, it can vary, but since transportation emissions only play a minor role in the overall environmental impact, those variations are considered negligible. Nothing gets lost during transport because the packaging is secure, and even nested packaging assumes full volume utilization.

The installation process is normally carried out using hand tools or handheld equipment with minimal energy use, therefore the resources required for A5 installation are considered negligible in this assessment.

During installation waste is generated from packaging, and it falls into four material types: cardboard, paper, plastic, and wood. According to EUROSTAT cardboard, paper and plastic are mostly recycled, while wooden pallets are mostly landfilled (but typically reused).

PRODUCT USE AND MAINTENANCE (B1-B7)

The life expectancy for our valves is approximately 15 years, with a warranty period of 5 years.

Frese Flow and Pressure Control Valves do not need maintenance, repair or refurbishment. The use phase is not relevant for the life cycle emissions of this product and is therefore not accounted for in the assessment.

Air, soil, and water impacts during the use phase have not been studied.

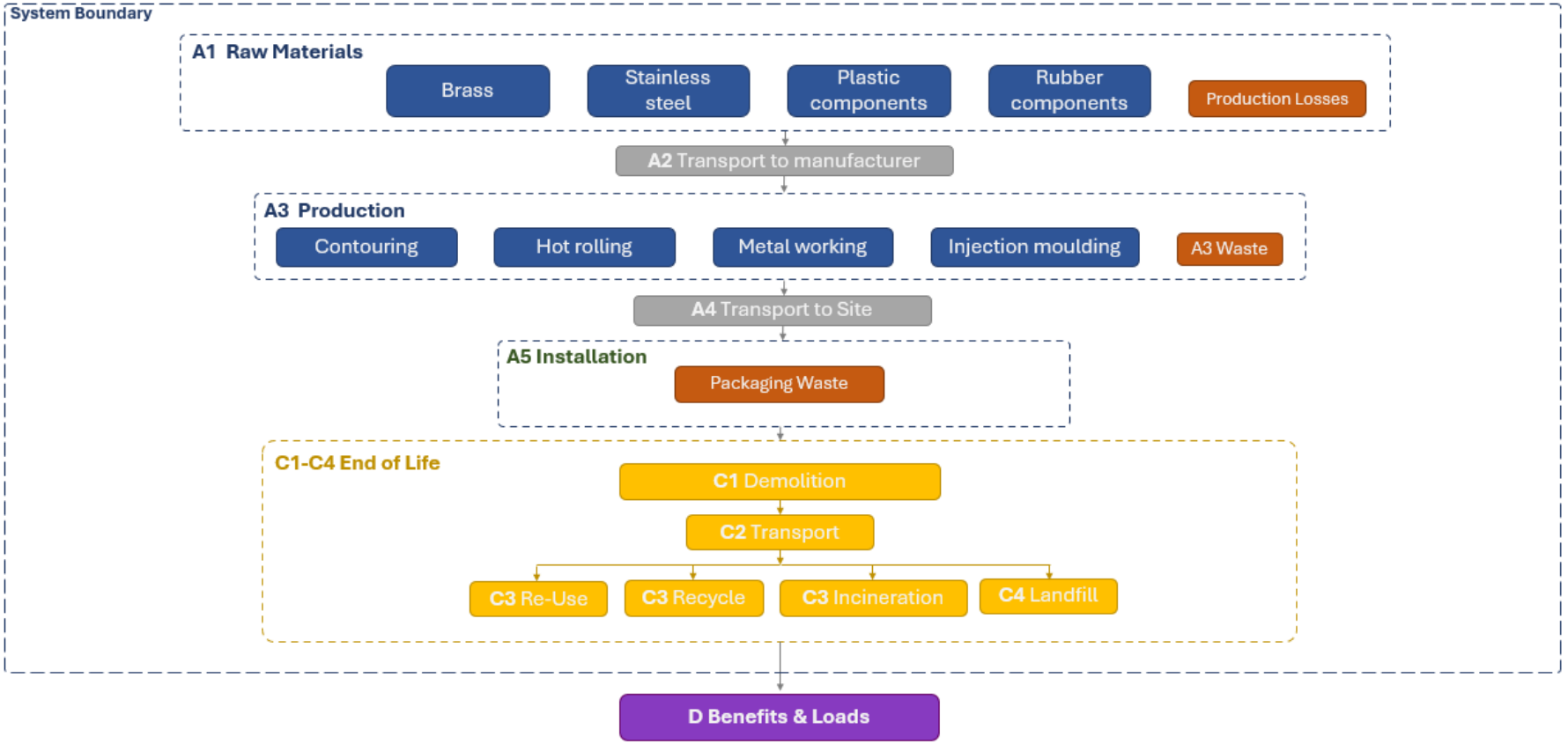
PRODUCT END OF LIFE (C1-C4, D)

Disassembly is typically done with hand tools or handheld equipment, using so little energy that the resources needed for this step (C1) are considered negligible in the assessment. At the end of life, the product is assumed to be sent to the nearest waste handling site, with an estimated transportation distance of 20 km (C2).

In module C3 energy and resource are used for sorting and processing brass, stainless steel, rubber, plastics, and composite materials for recycling and incineration with energy recovery at an efficiency greater than 60%. Waste that is incinerated without energy recovery or landfilled is included in module C4. 95% of steel is recycled, while 60% of brass is recycled; the remaining 5% steel and 40% brass, respectively, are landfilled according to internationalcopper.org. 73% of rubber and plastic component waste is incinerated with energy recovery, and 27% is landfilled according to plasticseurope.org.

Due to the material and energy recovery potential of parts in the product and its packaging, recycled raw materials lead to avoided virgin material production. Additionally, energy recovered from incineration of waste replaces electricity and heat that would otherwise come from primary sources. Benefits and loads from incineration and recycling in module C are included in module D. The benefits and loads of waste packaging in A5 and waste packaging in A3 are also included in module D.

SYSTEM DIAGRAM



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

This LCA study includes the provision of all materials, transportation, energy and emission flows, and end of life processing of the product. All industrial processes from raw material acquisition and pre-processing, production, product distribution and installation and end-of-life management are included.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No Allocation
Packaging material	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products and multiple factories
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	-10% |-7,4% |+42%

Frese Flow and Pressure Control Valve, SIGMA Compact F/F DN15 Low P/T 53-2202, has been selected as the representative valve. It has been chosen because it's one of the best-selling valves and is closest to the general average mass of the group. Most of the material and components that 53-2202 comprise of are the same for the other products in this group.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD System Verification v3.2.3. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

Additionally, the EPD Generator also uses ProBas as a source of environmental data. ProBas is a life cycle inventory database developed by the German Environment Agency (UBA) and provides detailed LCI data for materials and processes. The database supports life cycle assessment in accordance with ISO 14040 and ISO 14044.

References for installation waste (A5) are taken from EUROSTAT [env_waspac] - Eurostat *"Packaging waste by waste management operations"* (2021).

End-of-Life recycling rate references are sourced from:

Worldstainless.org Recycling - worldstainless *"The global life cycle of stainless steels"* (2019) reporting that 95% of stainless steel is recycled.

Internationalcopper.org Recycling - copperalliance *"Copper recycling"* (2016) reporting that approximately 60% of copper alloys, such as brass are recycled.

Plasticseurope.org Building & construction - Plastics Europe *"Overview of Plastic Waste from Building and Construction by Polymer and by Recycling, Energy Recovery and Disposal"* (2018) reporting that approximately 73% of plastic and rubber waste is treated via incineration with energy recovery.

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	6,22E+00	5,41E-01	2,14E-01	6,98E+00	8,82E-02	2,43E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,14E-03	2,20E-01	4,51E-03	-2,46E+00
GWP – fossil	kg CO_2e	6,11E+00	5,41E-01	4,41E-01	7,09E+00	8,82E-02	5,59E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,14E-03	2,20E-01	4,51E-03	-2,43E+00
GWP – biogenic	kg CO_2e	9,05E-02	1,11E-04	-2,29E-01	-1,38E-01	1,85E-05	2,38E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,51E-07	-4,59E-05	-2,25E-06	-2,63E-02
GWP – LULUC	kg CO_2e	2,57E-02	2,07E-04	1,48E-03	2,74E-02	3,33E-05	4,46E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,05E-07	1,85E-05	1,47E-06	-6,19E-03
Ozone depletion pot.	kg $CFC\text{-}_{11}e$	2,19E-07	1,07E-08	9,80E-09	2,39E-07	1,77E-09	4,49E-11	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,31E-11	2,23E-10	7,22E-11	-2,62E-08
Acidification potential	mol H^+e	2,29E-01	2,36E-03	1,94E-03	2,33E-01	3,19E-04	2,19E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,91E-06	1,88E-04	1,80E-05	-2,14E-01
EP-freshwater[2)]	kg Pe	8,63E-03	3,57E-05	2,62E-04	8,92E-03	5,90E-06	1,25E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,44E-07	8,62E-06	2,15E-07	-1,70E-02
EP-marine	kg Ne	1,47E-02	7,39E-04	5,16E-04	1,59E-02	1,05E-04	3,42E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,35E-06	4,68E-05	5,70E-05	-1,07E-02
EP-terrestrial	mol Ne	2,00E-01	8,07E-03	5,43E-03	2,13E-01	1,14E-03	7,69E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,56E-05	5,23E-04	7,46E-05	-1,51E-01
POCP ("smog")[3)]	kg NMVOCe	6,06E-02	3,24E-03	1,55E-03	6,54E-02	4,86E-04	2,65E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,13E-05	1,50E-04	2,71E-05	-4,20E-02
ADP-minerals & metals[4)]	kg Sbe	1,32E-03	1,45E-06	5,35E-06	1,33E-03	2,41E-07	2,56E-08	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,92E-09	8,95E-07	4,20E-09	-3,01E-03
ADP-fossil resources	MJ	5,44E+01	7,79E+00	6,00E+00	6,82E+01	1,27E+00	4,42E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,10E-02	2,06E-01	6,13E-02	-3,23E+01
Water use[5)]	m^3e depr.	2,21E+00	3,92E-02	3,34E-01	2,58E+00	6,49E-03	1,60E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,59E-04	1,35E-02	1,91E-04	-2,39E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1,05E-06	5,22E-08	1,63E-08	1,12E-06	8,68E-09	3,00E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,13E-10	2,37E-09	4,07E-10	-4,39E-07
Ionizing radiation[6]	kBq U235e	4,31E-01	9,16E-03	7,48E-02	5,15E-01	1,52E-03	2,74E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,74E-05	7,63E-04	4,12E-05	-3,45E-01
Ecotoxicity (freshwater)	CTUe	1,04E+03	9,06E-01	1,57E+01	1,05E+03	1,50E-01	1,29E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,66E-03	4,41E-01	8,86E-02	-3,03E+02
Human toxicity, cancer	CTUh	4,59E-07	9,02E-11	2,43E-10	4,60E-07	1,46E-11	3,48E-12	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,53E-13	1,43E-11	6,84E-13	-2,27E-08
Human tox. non-cancer	CTUh	1,95E-06	4,94E-09	6,27E-09	1,96E-06	8,21E-10	1,86E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,02E-11	8,23E-10	6,39E-11	-2,25E-06
SQP[7]	-	3,26E+03	7,58E+00	3,21E+01	3,30E+03	1,27E+00	4,22E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,13E-02	3,44E-01	1,23E-01	-7,01E+01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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 ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8]	MJ	8,17E+00	1,24E-01	6,31E+00	1,46E+01	2,06E-02	-2,43E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,05E-04	2,92E-02	6,34E-04	-9,88E+00
Renew. PER as material	MJ	4,18E-04	0,00E+00	2,37E+00	2,37E+00	0,00E+00	-2,37E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-3,05E-04	-1,13E-04	2,32E-01
Total use of renew. PER	MJ	8,17E+00	1,24E-01	8,68E+00	1,70E+01	2,06E-02	-4,80E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,05E-04	2,89E-02	5,21E-04	-9,65E+00
Non-re. PER as energy	MJ	5,18E+01	7,79E+00	5,32E+00	6,49E+01	1,27E+00	5,74E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,10E-02	-1,56E+00	-8,18E-01	-3,23E+01
Non-re. PER as material	MJ	2,64E+00	0,00E+00	1,18E-01	2,76E+00	0,00E+00	-1,18E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-1,93E+00	-7,13E-01	1,64E-01
Total use of non-re. PER	MJ	5,44E+01	7,79E+00	5,44E+00	6,77E+01	1,27E+00	-1,12E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,10E-02	-3,49E+00	-1,53E+00	-3,22E+01
Secondary materials	kg	7,35E-02	3,38E-03	5,75E-03	8,26E-02	5,52E-04	6,80E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,34E-05	2,36E-04	1,61E-05	3,16E-01
Renew. secondary fuels	MJ	2,39E-03	4,12E-05	2,80E-02	3,04E-02	6,88E-06	4,10E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,69E-07	1,03E-05	3,28E-07	-7,38E-04
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,16E-01	1,13E-03	8,74E-03	1,26E-01	1,87E-04	-8,85E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,58E-06	2,74E-04	-3,21E-05	-1,02E-01

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	7,22E-01	1,12E-02	2,18E-02	7,55E-01	1,84E-03	7,38E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,49E-05	7,74E-03	7,19E-05	-8,66E-01
Non-hazardous waste	kg	3,88E+01	2,22E-01	1,52E+00	4,05E+01	3,67E-02	1,84E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,99E-04	1,13E-01	1,22E-01	-5,58E+01
Radioactive waste	kg	1,09E-04	2,27E-06	1,75E-05	1,29E-04	3,77E-07	6,97E-08	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,26E-09	1,90E-07	1,01E-08	-9,04E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	1,60E-02	1,60E-02	0,00E+00	1,05E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	5,50E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	1,51E-02	1,51E-02	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,30E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	6,50E-01	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,40E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	2,75E-01	0,00E+00	0,00E+00
Exported energy –	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,55E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	3,75E-01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	6,16E+00	5,38E-01	4,41E-01	7,13E+00	8,76E-02	1,72E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,13E-03	2,20E-01	4,39E-03	-2,43E+00
Ozone depletion Pot.	kg CFC_{-11}e	1,88E-07	8,55E-09	8,56E-09	2,05E-07	1,41E-09	3,69E-11	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,43E-11	1,86E-10	5,74E-11	-2,20E-08
Acidification	kg SO_2e	1,99E-01	1,82E-03	1,51E-03	2,02E-01	2,43E-04	1,65E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,24E-06	1,49E-04	1,33E-05	-1,88E-01
Eutrophication	kg PO_4^3e	1,01E-02	3,81E-04	1,10E-03	1,16E-02	5,71E-05	1,95E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,33E-06	2,40E-05	6,32E-06	-8,42E-03
POCP (“smog”)	kg C_2H_4e	8,51E-03	1,46E-04	1,24E-04	8,78E-03	2,15E-05	4,04E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,93E-07	8,97E-06	1,55E-06	-7,78E-03
ADP-elements	kg Sbe	1,32E-03	1,42E-06	5,27E-06	1,33E-03	2,35E-07	2,50E-08	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,78E-09	8,87E-07	4,11E-09	-3,01E-03
ADP-fossil	MJ	4,69E+01	7,63E+00	4,87E+00	5,94E+01	1,25E+00	3,95E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,04E-02	1,94E-01	6,07E-02	-2,72E+01

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	6,13E+00	5,41E-01	4,43E-01	7,12E+00	8,82E-02	5,59E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,14E-03	2,20E-01	4,51E-03	-2,44E+00

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO2 is set to zero.

SCENARIO DUCOMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

1. Market for electricity, low voltage, Denmark, Ecoinvent, 0.19 kgCO2e/kWh

2. Heat and power co-generation, natural gas, 1MW electrical, lean burn, Denmark, Ecoinvent, 0.0291 kgCO2e/MJ

Transport scenario documentation - A4 (Transport resources)

1. Transport, freight, lorry >32 metric ton, EURO5, 699,55 km

2. Transport, freight, sea, container ship, 109,45 km

Scenario parameter	Value
Capacity utilization (including empty return) %	• Lorry 50%
Bulk density of transported products (kg/m³)	0,000286 m³
Volume capacity utilization factor	• Lorry = 1

Installation scenario documentation - A5 (Installation waste)

Scenario information	Value	
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	Wood packaging	0,05250
	Paper/Cardboard packaging	0,10472
	Plastic packaging	0,00095

Output materials (**specified by type**) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (**specified by route**) / kg		Wood packaging	Paper / Cardboard	Plastic packaging
	Recycling	0,01680	0,08691	0,00038
	Energy recovery	0,01575	0,00838	0,00035
	Disposal	0,01995	0,00943	0,00022

End-of-Life scenario documentation - C1-C4 (Data source)

Scenario information	Value
Collection process – kg collected separately	1 kg
Collection process – kg collected with mixed waste	0 kg
Recovery process – kg for re-use	0 kg
Recovery process – kg for recycling	0,5505 kg
Recovery process – kg for energy recovery	0,0648 kg
Disposal (total) – kg for final deposition	0,3847 kg
Scenario assumptions e.g. transportation	Transportation is estimated to be 20 km to the closest waste handling site from client location. By > 32-ton lorry (Euro 5)

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Sarah Curpen, as authorized verifier acting for EPD HUB Limited

25.02.2026

ANNEX

Number	Name and Group	Weight (kg)	GTIN
OPTIMA Compact DN10-DN50			
53-1300	OPTIMA Compact DN10 M/M Low 2,5	0.346	5705564049247
53-1302	OPTIMA Compact DN15 M/M Low 2,5	0.366	5705564049261
53-1304	OPTIMA Compact DN15 M/M High 2,5	0.366	5705564049285
53-1305	OPTIMA Compact DN15 M/M High 5	0.367	5705564055439
53-1306	OPTIMA Compact DN15 M/M High 5.5	0.367	5705564101723
53-1308	OPTIMA Compact DN20 M/M High 5	0.404	5705564049322
53-1309	OPTIMA Compact DN10 M/M Low 5	0.347	5705564050328
53-1310	OPTIMA Compact DN15 M/M Low 5	0.367	5705564050335
53-1311	OPTIMA Compact DN20 M/M 5.5	0.403	5705564055330
53-1312	OPTIMA Compact DN20 M/M High 2.5	0.404	5705564050359
53-1313	OPTIMA Compact DN25L M/M	1.054	5705564052186
53-1314	OPTIMA Compact DN32 M/M	1.236	5705564052193
53-1315	OPTIMA Compact DN20 M/M Low 5	0.404	5705564104922
53-1317	OPTIMA Compact DN25 M/M 5.5	0.51	5705564055354
53-1319	OPTIMA Compact DN25 F/F 5.5	0.545	5705564055361
53-1320	OPTIMA Compact DN10 M/M Low 2.5 P/T	0.446	5705564049339
53-1322	OPTIMA Compact DN15 M/M Low 2.5 P/T	0.465	5705564049353
53-1324	OPTIMA Compact DN15 M/M High 2.5 P/T	0.466	5705564049377
53-1325	OPTIMA Compact DN15 M/M High 5 P/T	0.466	5705564053039
53-1326	OPTIMA Compact DN15 M/M High 5,5 P/T	0.453	5705564101730
53-1328	OPTIMA Compact DN20 M/M High 5 P/T	0.504	5705564049414
53-1329	OPTIMA Compact DN10 M/M Low 5 P/T	0.447	5705564050366
53-1330	OPTIMA Compact DN15 M/M Low 5 P/T	0.466	5705564050373
53-1331	OPTIMA Compact DN20 M/M 5.5 P/T	0.503	5705564055378
53-1332	OPTIMA Compact DN20 M/M High 2.5 P/T	0.503	5705564050397
53-1333	OPTIMA Compact DN25L M/M P/T	1.195	5705564052209
53-1334	OPTIMA Compact DN32 M/M P/T	1.308	5705564052216
53-1335	OPTIMA Compact DN20 M/M Low 5 P/T	0.491	5705564104939
53-1337	OPTIMA Compact DN25 M/M 5.5 P/T	0.614	5705564055385
53-1338	OPTIMA Compact DN20 F/F 5.5 P/T	0.551	5705564055392
53-1339	OPTIMA Compact DN25 F/F 5.5 P/T	0.62	5705564055408
53-1340	OPTIMA Compact DN20 F/F Low 5 P/T	0.54	5705564104854
53-1341	OPTIMA Compact DN20 F/F Low 5	0.454	5705564104915

Number	Name and Group	Weight (kg)	GTIN
53-1342	OPTIMA Compact DN15 F/F Low 2.5	0.412	5705564049421
53-1344	OPTIMA Compact DN15 F/F High 2.5	0.412	5705564049445
53-1345	OPTIMA Compact DN15 F/F High 5	0.413	5705564052179
53-1346	OPTIMA Compact DN15 F/F High 5.5	0.413	5705564101709
53-1348	OPTIMA Compact DN20 F/F High 5	0.454	5705564049483
53-1350	OPTIMA Compact DN15 F/F Low 5	0.413	5705564050403
53-1352	OPTIMA Compact DN20 F/F High 2.5	0.453	5705564050427
53-1353	OPTIMA Compact DN25L F/F	1.099	5705564052223
53-1354	OPTIMA Compact DN32 F/F	1.234	5705564052230
53-1362	OPTIMA Compact DN15 F/F Low 2.5 P/T	0.512	5705564049490
53-1364	OPTIMA Compact DN15 F/F High 2.5 P/T	0.514	5705564049513
53-1365	OPTIMA Compact DN15 F/F High 5 P/T	0.512	5705564052001
53-1366	OPTIMA Compact DN15 F/F High 5,5 P/T	0.5	5705564101716
53-1368	OPTIMA Compact DN20 F/F High 5 P/T	0.553	5705564049551
53-1370	OPTIMA Compact DN15 F/F Low 5 P/T	0.513	5705564050434
53-1372	OPTIMA Compact DN20 F/F High 2.5 P/T	0.552	5705564050458
53-1373	OPTIMA Compact DN25L F/F P/T	1.17	5705564052247
53-1374	OPTIMA Compact DN32 F/F P/T	1.307	5705564052254

Number	Name and Group	Weight (kg)	GTIN
53-1375-01	OPTIMA Compact DN40 F/F P/T w/actuator	4.97	5705564052681
53-1376-01	OPTIMA Compact DN50 F/F P/T w/actuator	5.4	5705564052698
OPTIMA Compact VerifLow-series, DN10-DN50			
53-5320	OPTIMA VerifLow DN10 M/M Low 2,5	0.449	5705564081193
53-5322	OPTIMA VerifLow DN15 M/M Low 2,5	0.468	5705564081216
53-5324	OPTIMA VerifLow DN15 M/M High 2,5	0.468	5705564081230
53-5325	OPTIMA VerifLow DN15 M/M High 5	0.468	5705564081254
53-5326	OPTIMA VerifLow DN15 M/M High 5.5	0.468	5705564101747
53-5328	OPTIMA VerifLow DN20 M/M High 5	0.505	5705564081278
53-5329	OPTIMA VerifLow DN10 M/M Low 5	0.449	5705564081292
53-5330	OPTIMA VerifLow DN15 M/M Low 5	0.468	5705564081315
53-5331	OPTIMA VerifLow DN20 M/M 5,5	0.505	5705564081339
53-5332	OPTIMA VerifLow DN20 M/M High 2.5	0.506	5705564081353
53-5333	OPTIMA VerifLow DN25L M/M	1.16	5705564081377
53-5334	OPTIMA VerifLow DN32 M/M	1.305	5705564081391
53-5335	OPTIMA VerifLow DN20 M/M Low 5	0.506	5705564104953
53-5337	OPTIMA VerifLow DN25 M/M 5,5	0.616	5705564081414
53-5338	OPTIMA VerifLow DN20 F/F 5,5	0.553	5705564081438

Number	Name and Group	Weight (kg)	GTIN
53-5339	OPTIMA VerifLow DN25 F/F 5,5	0.649	5705564081452
53-5340	OPTIMA VerifLow DN20 F/F Low 5	0.554	5705564104861
53-5362	OPTIMA VerifLow DN15 F/F Low 2,5	0.515	5705564081476
53-5364	OPTIMA VerifLow DN15 F/F High 2,5	0.515	5705564081490
53-5365	OPTIMA VerifLow DN15 F/F High 5	0.514	5705564081506
53-5366	OPTIMA VerifLow DN15 F/F High 5,5	0.514	5705564101754
53-5368	OPTIMA VerifLow DN20 F/F High 5	0.554	5705564081537
53-5370	OPTIMA VerifLow DN15 F/F Low 5	0.515	5705564081551
53-5372	OPTIMA VerifLow DN20 F/F High 2.5	0.554	5705564081575
53-5373	OPTIMA VerifLow DN25L F/F	1.174	5705564081599
53-5374	OPTIMA VerifLow DN32 F/F	1.304	5705564081612
53-5378	OPTIMA VerifLow DN40 F/F DZR	3.641	5705564081650
53-5379	OPTIMA VerifLow DN50 F/F DZR	4.15	5705564081674
Frese SIGMA Compact-series DN15-DN50			
53-2200	SIGMA Compact F/F DN15 Low P/T	0.483	5705564053855
53-2201	SIGMA Compact F/F DN15 High P/T	0.484	5705564053862
53-2202	SIGMA Compact F/F DN15 Low P/T	0,521	5705564053879
53-2203	SIGMA Compact F/F DN20 High P/T	0.522	5705564053886
53-2205	SIGMA Compact F/F DN32 P/T	1.028	5705564053909
53-2206	SIGMA Compact F/F DN40 P/T	2.558	5705564053916

Number	Name and Group	Weight (kg)	GTIN
53-2207	SIGMA Compact F/F DN50 P/T	2.886	5705564053923
53-2208	SIGMA Compact F/F DN25 Low P/T	0.692	5705564054425
53-2209	SIGMA Compact F/F DN25 High P/T	0.691	5705564055279
53-2220	SIGMA Compact F/F DN15 Low P/T/Drain	0.539	5705564054432
53-2221	SIGMA Compact F/F DN15 High P/T/Drain	0.539	5705564054449
53-2222	SIGMA Compact F/F DN20 Low P/T/Drain	0.577	5705564054456
53-2223	SIGMA Compact F/F DN20 High P/T/Drain	0.577	5705564054463
53-2225	SIGMA Compact F/F DN32 P/T/Drain	1.084	5705564054487
53-2226	SIGMA Compact F/F DN40 P/T/Drain	2.613	5705564054494
53-2227	SIGMA Compact F/F DN50 P/T/Drain	2.941	5705564054500
53-2228	SIGMA Compact F/F DN25 Low P/T/Drain	0.749	5705564054517
53-2229	SIGMA Compact F/F DN25 High P/T/Drain	0.748	5705564056023
PV Compact-series DN15-DN50			
53-3200	PV Compact DN15 (5-30 kPa) 1/4"	0.474	5705564052148
53-3201	PV Compact DN15 (20-60 kPa) 1/4"	0.477	5705564052155
53-3202	PV Compact DN15 (5-30 kPa) 1/2"	0.524	5705564052124
53-3203	PV Compact DN15 (20-60 kPa) 1/2"	0.527	5705564052131
53-3204	PV Compact DN15 F/F (5-30 kPa) PT	0.692	5705564053220

Number	Name and Group	Weight (kg)	GTIN
53-3205	PV Compact DN15 F/F (20-60 kPa) PT	0.695	5705564053237
53-3206	PV Compact DN20 F/F (5-30 kPa) PT	0.732	5705564053244
53-3207	PV Compact DN20 F/F (20-60 kPa) PT	0.735	5705564053251
53-3208	PV Compact DN25 F/F (5-30 kPa) PT	0.833	5705564057846
53-3210	PV Compact DN25L F/F (5-30 kPa) PT	1.532	5705564053404
53-3211	PV Compact DN25L F/F (20-80 kPa) PT	1.551	5705564053527
53-3214	PV Compact DN32 F/F (20-80 kPa) PT	1.687	5705564053534
53-3216	PV Compact DN40 F/F (20-80 kPa) PT	3.288	5705564053930
53-3218	PV Compact DN50 F/F (20-80 kPa) PT	3.721	5705564054319
53-3242	PV Compact DN15 F/F (5-30 kPa) PT/Drain	0.749	5705564053268
53-3243	PV Compact DN15 F/F (20-60 kPa) PT/Drain	0.752	5705564053275
53-3244	PV Compact DN20 F/F (5-30 kPa) PT/Drain	0.789	5705564053282
53-3245	PV Compact DN20 F/F (20-60 kPa) PT/Drain	0.792	5705564053299
53-3246	PV Compact DN25L F/F (5-30 kPa) PT/Drain	1.589	5705564053794
53-3247	PV Compact DN25L F/F (20-80 kPa) PT/Drain	1.608	5705564054340
53-3248	PV Compact DN32 F/F (20-80 kPa) PT/Drain	1.745	5705564053640
53-3249	PV Compact DN40 F/F (20-80 kPa) PT/Drain	3.345	5705564054333

Number	Name and Group	Weight (kg)	GTIN
53-3250	PV Compact DN50 F/F (20-80 kPa) PT/Drain	3.779	5705564054326
53-3251	PV Compact DN25 F/F (5-30 kPa) PT/Drain	0.891	5705564057839
PV-SIGMA Compact and PV-SIGMA Compact, Spectrum- series			
53-3260	PV SIGMA Comp. DN15 Lo (5-30 kPa) PT/Drain	1.585	5705564053282
53-3261	PV SIGMA Comp. DN15 Hi (20-60 kPa) PT/Drain	1.588	5705564055569
53-3262	PV SIGMA Comp. DN20 Lo (5-30 kPa) PT/Drain	1.728	5705564055576
53-3263	PV SIGMA Comp. DN20 Hi (20-60 kPa) PT/Drain	1.731	5705564055583
53-3264	PV SIGMA Comp. DN25 Lo F/F(5-30 kPa) PT/Drain	2.046	5705564055590
53-3265	PV SIGMA Comp. DN25 Hi F/F(20-80 kPa) PT/Drain	2.801	5705564055606
53-3266	PV SIGMA Compact DN32 F/F (20-80 kPa) PT/Drain	4.075	5705564055613
53-3267	PV SIGMA Compact DN40 F/F (20-80 kPa) PT/Drain	7.484	5705564055620
53-3268	PV SIGMA Compact DN50 F/F (20-80 kPa) PT/Drain	9.212	5705564055637
53-3270	PV Spectrum SIGMA DN15 Low F/F (5-30 kPa) PT/Drain	1.577	5705564090355
53-3271	PV Spectrum SIGMA DN15 Hi F/F (20-60 kPa) PT/Drain	1.58	5705564090362
53-3272	PV Spectrum SIGMA DN20 Lo F/F (5-30 kPa) PT/Drain	1.721	5705564090379

Number	Name and Group	Weight (kg)	GTIN
53-3273	PV Spectrum SIGMA DN20 Hi F/F (20-60 kPa) PT/Drain	1.723	5705564090386
53-3274	PV Spectrum SIGMA DN25 Lo F/F (5-30 kPa) PT/Drain	2.038	5705564090393
53-3275	PV Spectrum SIGMA DN25 Hi F/F (20-80 kPa) PT/Drain	2.782	5705564090409
53-3276	PV Spectrum SIGMA DN32 F/F (20-80 kPa) PT/Drain	4.013	5705564090416
53-3277	PV Spectrum SIGMA DN40 F/F (20-80 kPa) PT/Drain	7.477	5705564090423
53-3278	PV Spectrum SIGMA DN50 F/F (20-80 kPa) PT/Drain	9.207	5705564090430
Frese DPRV (Differential pressure relief valve)			
48-0075	Pressure Relief Valve DPRV DN15	0.275	5705564059925
48-0076	Pressure Relief Valve DPRV DN20	0.385	5705564059932
48-0077	Pressure Relief Valve DPRV DN25	0.549	5705564059949
48-0078	Pressure Relief Valve DPRV DN32	0.759	5705564063335
Frese STBV Range (Fixed Orifice Double Regulating Valve) DN15-DN50			
53-2170	DN15 ULF DZR THREADED FODRV PN25	0.49	5705564052780
53-2171	DN15 LF DZR THREADED FODRV PN25	0.49	5705564052797
53-2172	DN15 DZR THREADED FODRV PN25	0.49	5705564052803
53-2173	DN20 DZR THREADED FODRV PN25	0.58	5705564052810
53-2174	DN25 DZR THREADED FODRV PN25	0.84	5705564052827
53-2175	DN32 DZR THREADED FODRV PN25	1	5705564052834
53-2176	DN40 DZR THREADED FODRV PN25	1.2	5705564052841
53-2177	DN50 DZR THREADED FODRV PN25	1.9	5705564052766
Frese STBV VODRV (Variable Orifice Double Regulating Valve) DN15-DN50			
53-2560	VODRV F/F DN15 DZR PN25	0.493	5705564075673
53-2561	VODRV F/F DN20 DZR PN25	0.566	5705564075680
53-2562	VODRV F/F DN25 DZR PN25	0.822	5705564075703
53-2563	VODRV F/F DN32 DZR PN25	1.041	5705564075697
53-2564	VODRV F/F DN40 DZR PN25	1.238	5705564075710
53-2565	VODRV F/F DN50 DZR PN25	1.733	5705564075727
PV Compact Spectrum-series DN15-DN50			
53-3400	PV Compact SP DN15 (5-30 kPa) 1/4"	0.486	5705564088475
53-3401	PV Compact SP DN15 (20-60 kPa) 1/4"	0.489	5705564088482
53-3402	PV Compact SP DN15 (5-30 kPa) 1/2"	0.536	5705564088499
53-3403	PV Compact SP DN15 (20-60 kPa) 1/2"	0.539	5705564088505
53-3404	PV Compact SP DN15 F/F (5-30 kPa) PT	0.69	5705564088512
53-3405	PV Compact SP DN15 F/F (20-60 kPa) PT	0.693	5705564088529
53-3406	PV Compact SP DN20 F/F (5-30 kPa) PT	0.731	5705564088536
53-3407	PV Compact SP DN20 F/F (20-60 kPa) PT	0.733	5705564088543
53-3408	PV Compact SP DN25 F/F (5-30 kPa) PT	0.832	5705564088550

Number	Name and Group	Weight (kg)	GTIN
53-3410	PV Compact SP DN25L F/F (5-30 kPa) PT	1.557	5705564088567
53-3411	PV Compact SP DN25L F/F (20-80 kPa) PT	1.576	5705564088574
53-3414	PV Compact SP DN32 F/F (20-80 kPa) PT	1.712	5705564088581
53-3416	PV Compact SP DN40 F/F (20-80 kPa) PT	3.298	5705564088598
53-3418	PV Compact SP DN50 F/F (20-80 kPa) PT	3.732	5705564088604
53-3442	PV Compact SP DN15 F/F (5-30 kPa) PT/Drain	0.754	5705564088611
53-3443	PV Compact SP DN15 F/F (20-60 kPa) PT/Drain	0.757	5705564088628
53-3444	PV Compact SP DN20 F/F (5-30 kPa) PT/Drain	0.795	5705564088635
53-3445	PV Compact SP DN20 F/F (20-60 kPa) PT/Drain	0.797	5705564088642
53-3446	PV Compact SP DN25L F/F (5-30 kPa) PT/Drain	1.621	5705564088659
53-3447	PV Compact SP DN25L F/F (20-80 kPa) PT/Drain	1.64	5705564088666
53-3448	PV Compact SP DN32 F/F (20-80 kPa) PT/Drain	1.776	5705564088673
53-3449	PV Compact SP DN40 F/F (20-80 kPa) PT/Drain	3.362	5705564088680
53-3450	PV Compact SP DN50 F/F (20-80 kPa) PT/Drain	3.796	5705564088697
53-3451	PV Compact SP DN25 F/F (5-30 kPa) PT/Drain	0.896	5705564088703

Number	Name and Group	Weight (kg)	GTIN
Frese COMBIFLOW 6-way			
53-1839	Frese COMBIFLOW 6-way PICV DN15 LF	1.951	5705564073204
53-1844	Frese COMBIFLOW 6-way PICV DN15	2.129	5705564071262
53-1845	Frese COMBIFLOW 6-way PICV DN20	3.744	5705564071255
Frese OPTIMIZER 6-way			
53-1846	Frese OPTIMIZER 6-way DN15 LF w/couplings	2.202	5705564062666
53-1847	Frese OPTIMIZER 6-way DN15 HF w/couplings	2.202	5705564062659
53-1848	Frese OPTIMIZER 6-way DN20 w/couplings	4.091	5705564062642
53-1849	Frese OPTIMIZER 6-way DN25 w/couplings	4.908	5705564062673
53-1854	Frese OPTIMIZER 6-way DN15 Low w/o couplings	1.805	5705564061133
53-1855	Frese OPTIMIZER 6-way DN15 High w/o couplings	1.805	5705564061140
53-1856	Frese OPTIMIZER 6-way DN20 w/o couplings	3.289	5705564061157
53-1857	Frese OPTIMIZER 6-way DN25 w/o couplings	3.907	5705564061164
Frese Bypass Unit MODULA (Weight varies depending on configuration)			
587-19-1-H-C	MODULA DN15 RH 80mm Comp/STR/PT/Drain w/cap/EXT	2,160	5705564062802
587-29-1-H-C	MODULA DN20 RH 80mm Comp/STR/PT/Drain w/cap/EXT	2,601	5705564062857

Number	Name and Group	Weight (kg)	GTIN
58V-39-1-H-D_	MODULA DN25 RH 80mm VF/STR/PT/Drain w/Cap /EXT	3.783	5705564087904
58X-XX-X-X-X-X	Frese MODULA Bypass Unit DN15-25	Weight varies	-
597X-X-X-X-XX-X	Frese MODULA Direct Mount DN15, Bypass Unit	Weight varies	-
61XX-X-X-X-X	Frese MODULA Direct-series DN15, Direct Mount Bypass Unit	Weight varies	-
60X-X1-XX-A	Frese MODULA Pro-series DN15-DN25, Bypass Unit	Weight varies	-
55X-FX-X-H-D	Frese MODULA Pro-series DN32, Bypass Unit	Weight varies	-
58X-150-X-X-X	Frese MODULA One-series DN15, Bypass Unit	Weight varies	-