Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Stainless Steel Pressed Collars and Tube Clamps

from

Nords International AB

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products from a company, based on average product. Products are listed in appendix A.
EPD registration number:	EPD-IES-0022953
Version date:	2025-10-30
Validity date:	2030-10-30

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	support@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR *2019:14 Construction products (EN 15804+A2) version 2.0.1*
PCR review was conducted by: The Technical Committee of the International EPD System. A full list of members is available on www.environdec.com. The review panel may be contacted via support@environdec.com.
Life Cycle Assessment (LCA)
LCA accountability: Viktor Hakkarainen, CHM Analytics AB Viktor.hakkarainen@chm-analytics.com CHM ANALYTICS
Third-party Verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

☒ **Individual EPD verification without a pre-verified LCA/EPD tool**
Third-party verifier: Kristin Fransson, RISE Research Institutes of Sweden AB
Approved by: International EPD System

☐ **Individual EPD verification with a pre-verified LCA/EPD tool**
Third-party verifier: *<name, and organization of the individual verifier>*
Approved by: International EPD System
or
< name of certification body (including address) >
Accredited by: *< Name of accreditation body & accreditation number, where applicable>*

Pre-verified LCA tool or Pre-verified EPD tool: *<name and version>*
Third-party verifier, accountable for the tool verification: *<name, and organization of the individual verifier>*
Approved by: International EPD System
or
< name of certification body (including address) >
Accredited by: *< Name of accreditation body & accreditation number, where applicable>*

☐ **EPD process certification* without a pre-verified LCA/EPD tool**
Third-party verifier:
< name of certification body (including address) >
Accredited by: *< Name of accreditation body & accreditation number, where applicable>*

☐ **EPD process certification* with a pre-verified LCA/EPD tool**
Third-party verifier:
< name of certification body (including address) >
Accredited by: *< Name of accreditation body & accreditation number, where applicable>*

Pre-verified LCA tool or Pre-verified EPD tool: *<name and version>*
Third-party verifier, accountable for the tool verification:
<name, and organization of the individual verifier>
Approved by: International EPD System
or
< name of certification body (including address) >
Accredited by: *< Name of accreditation body & accreditation number, where applicable>*

☐ **Fully pre-verified EPD tool**
Fully pre-verified EPD tool: *<name and version>*
Third-party verifier, accountable for the tool and EPD verification:
<name, and organization of the individual verifier>
Approved by: International EPD System
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< name of certification body (including address) >
Accredited by: *< Name of accreditation body & accreditation number, where applicable>*

*EPD process certification involves an accredited certification body certifying and periodically auditing the EPD process and conducting external and independent verification of EPDs that are regularly published. More information can be found in the General Programme Instructions on www.envrondec.com.
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: Nords International AB

Contact: Simon Hedberg, +46704963778, simon.hedberg@nordsinternational.com, Prostgårdsvägen 2, SE-65560 Molkom, Sweden

Description of the organisation: Nords Group is Northern Europe's leading manufacturer of threaded fittings, pressed collars and tube clamps in stainless steel. We are also a fast-growing supplier of customized products in stainless steel and other alloys.

Our core competence is CNC machining of stainless steel and other high alloyed materials. Our products can be found in most industrial segments and on all continents.

We have, together with our customers, been part of the industrial development since 1904. We supply high quality products designed for use in corrosive environments where high reliability and long service life is required.

Nords Group consists of three companies; Nords International AB, Sweden, is the mother company, SH-Teksor Oy in Finland and Nords AS in Estonia are subsidiaries.

Our motivated and competent staff meets your current needs and are happy to support you in the development of new solutions. We are proud of our quality, delivery precision and sustainability as we believe it makes a difference both in the short and long term for you as a customer – because quality matters.

Within the group we have an automated and robotized machine park with over 40 high-quality CNC machines, production lines for pressed collars and tube clamps as well as welding machines. Our warehouses in Sweden and Finland ensure fast deliveries on time.

Nords Group delivers products all over the world.

Product-related or management system-related certifications: ISO 9001- and 14001-certificates, AD 2000-Merkblatt W0, PED 2014/68/EU

Name and location of production site:
The company has three manufacturing sites: Nords international AB located in Molkom, Sweden. SH-Teksor Oy in Helsinki, Finland and Nords AS located in Saue, Estonia. As can be seen below, pressed collars and tube clamps are produced only in Molkom.

Nords international AB
Pressed Collars
Tube clamps
Custom made products
Threaded Fittings

SH-Teksor Oy
Custom made products
Threaded Fittings

Nords AS
Custom made products
Threaded fittings
Sockets
Nipples

PRODUCT INFORMATION

The products studied are Pressed Collars & tube clamps. Pressed collars are flange-like rings used to reinforce or seal around pipe opening but can also provide mounting interface for other components. Tube clamps are mechanical fasteners used to hold pipes or tubes in place but can also be used within industrial frameworks to prevent vibration, shifting or damage.

The products are manufactured in many different sizes, which is why a declaration per kg product is used. All products go through similar production processes. The full list of products can be seen in appendix A.

Stainless steel is used due to its favourable mechanical and corrosion-resistant properties, which make it suitable for a wide range of applications across various sectors. It offers excellent durability, structural integrity, and the ability to maintain clean, hygienic surfaces — characteristics that are especially valued in demanding environments such as chemical processing, medical equipment, food handling, and offshore industries. Furthermore, stainless steel is a fully recyclable material, typically remelted at end-of-life to produce new stainless-steel products.

On average in Europe 90% of all steel is recycled at end of lifetime. In Nords production flow 100% of the stainless-steel yield losses are sorted according to steel grade and sold.

CONTENT DECLARATION

The information in the table below represents the composition of material used to produce 1 kg of weighted average pressed collars & tube clamps. The material content is identical to the worst-case product, as the difference stems from losses in A3 and price difference resulting in more emissions allocated to it.

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Hot rolled sheets, EN 1.4432 or EN 1.4404 Stainless steel	1,0	56,1%[1]	0%	0,0
TOTAL	1,0	56,1%	0%	0,0

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/ declared unit
Wood pallet	0,0051	0,5%	0,0025
TOTAL	0,0051	0,5%	0,0025

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO_2.

Hazardous substances from the candidate list of SVHC	EC No.	CAS No.	Mass-% per product or declared unit
None			

All the stainless-steel raw materials used by Nords International in the manufacturing of its products do not contain substances of very high concern (SVHC) as defined and listed per Article 57 and 59 (ECHA candidate list) of the REACH Regulation. There are no Annex XIV substances in the stainless steels used that would require authorization. Additionally, all used stainless steel complies with the restrictions in Annex XVII of the REACH Regulation.

The UN CPC classification for the product is 4129 - Tubes, pipes and hollow profiles of cast-iron and cast-steel and related fittings; tube or pipe fittings of steel other than cast.

The products have the following physical properties:

Property	Value	Comment
Dimensions	14 to 608 mm	
Article type	R-154 & R-171	
Steel grade	EN 1.4432, 1.4404, 1.4307	Modelled in the LCA as 316C Stainless steel

LCA INFORMATION

Declared unit: 1 kg of weighted average pressed collars & tube clamps, at the factory gate.

[1] Post consumer material input is based on inputs of stainless steel to the supplier electric arc furnace, meaning that it is an even mix of iron and alloys (chromium, nickel, manganese & molybdenum).

Reference service life: N/A

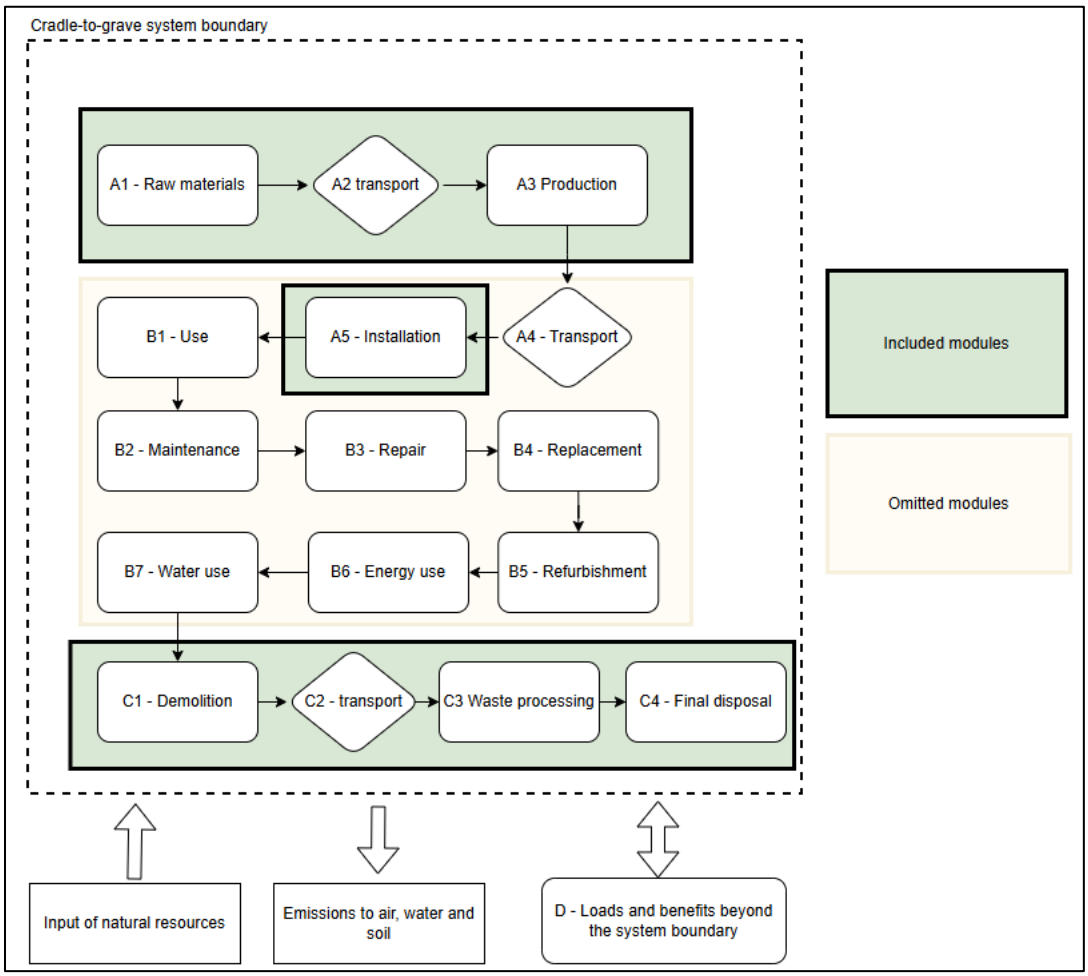
Time representativeness: Data represents the full calendar year 2023.

Geographical scope: Europe

Database(s) and LCA software used: SimaPro 10.2.0.1 using ecoinvent 3.10 – allocation, cut-off, EN 15804 as the database.

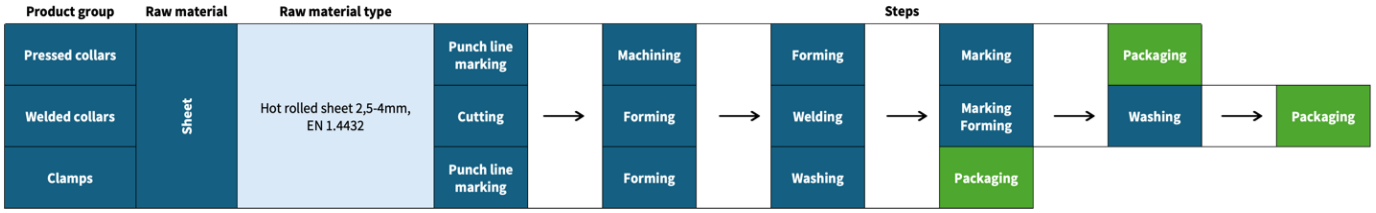
Description of system boundaries:
The studied system is type b) cradle-to-gate with options. (A1-A3, A5, C and D)

Process flow diagram:
Process flow diagram of the product system, divided into the life-cycle stages and modules (or other division of the product life cycle, if defined in the PCR), showing the main processes included and the system boundary of the LCA. The diagram shall make it clear when the end-of-waste state is reached for main input flows of reused/recycled materials and recovered energy, and for output flows of reused/recycled materials and recovered energy exiting the end-of-life stage.



Description of manufacturing:

The figure below presents an overview of the production processes included in the manufacturing.



Pressed collars go through punch line marking, machining, forming and marking before they are packaged.

Welded collars go through cutting, forming, welding, marking/forming and washing before they are packaged.

Clamps go through punch line marking, forming and washing before they are packaged.

When manufacturing pressed collars & tube clamps, some of the input material is removed through machining, which is considered when allocation the impacts occurring in A3.

More information:

Cut-off rule: 1% cut-off rule is applied for input and output flows in the inventory. No cut-offs exceeding this limit have been made.

The following has been excluded:

- Non-stainless steel scrap
- Production of packaging for stainless steel raw materials
- Small auxiliary chemicals

Allocation:

Allocation is performed according to the allocation hierarchy in PCR 2019:14, that is:

1. Allocation shall be avoided, if possible, by dividing the unit process into two or more sub-processes and collecting LCI data for each sub-process. This option shall not be used for joint co-production processes, which ISO 21930 describes as follows: *"…if each of the co-products can be produced without the other(s) or the ratio of the co-products typically varies in normal production, then it is not a joint co-production process. By-products cannot be avoided and processes producing by-products are therefore joint co-production processes."*

2. Allocation shall be based on physical properties (e.g., mass, volume) when (i) there is a relevant underlying physical relationship between the products and co-products, and (ii) the difference in revenue per mass (or per energy unit in case of electricity, heat or similar) from the product and co-products is below 25%. A relevant underlying physical relationship exists when the amounts of inputs and outputs are changed by quantitative changes in the amounts of products or functions delivered by the system.

3. In all other cases, allocation shall be based on economic values of the product and co-products when they leave the unit process.

For these products, prices per kg product varies >25% meaning that economic allocation is applied, the economic allocation for one average product is calculated by:

$$\frac{Average\ weighted\ price\ per\ kg\ material}{\text{Total revenue of sold products}} \bullet \frac{Average\ weighted\ price\ per\ kg\ material}{Average\ weighted\ price\ per\ kg\ material + \text{recycled steel price} \bullet \text{recycled steel per kg product}}$$

The formula accounts for both the price of the product as well as the price and amount of recycled stainless steel from A3.

Electricity mix:
The used electricity in module A3 at Molkom is 100% hydropower certified by a guarantee of origin which has a GWP-GHG of 0,0258 kg CO2,eq/kWh, modelled after the 2024 average Swedish technology mix for hydropower.

Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage					Beyond product life cycle
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal		Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**		**D**
Modules declared	X	X	X	ND	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X		X
Geography	EU	EU	SE		EU								EU	EU	EU	EU		EU
Share of primary data	1,2 %					-	-	-	-	-	-	-	-	-	-	-		-
Variation – products	+62%					-	-	-	-	-	-	-	-	-	-	-		-
Variation – sites	0%					-	-	-	-	-	-	-	-	-	-	-		-

Description of infrastructure

The production and end-of-life processes of infrastructure and capital goods used in the product system are not included within the system boundaries for both foreground and background figures, except background infrastructure for energy related processes.

Description of scenarios:

A5 – Installation

A5 is included only for waste treatments of the used pallet for transporting.

Flow	Kg	Waste treatment
Waste wood	0,0051 kg	Incineration without energy recovery

Due to the low relevance of the energy recovery, it is omitted and calculated as incineration without energy recovery.

C1 – Demolition/deconstruction

No activities are identified in module C1, as the products are expected to be manually deconstructed.

C2 – Transport to waste treatment

Material	Distance (km)	Transport type used in LCA
Steel waste	80, as listed by default values in PCR 2019:14 v 2.0.1	Transport, freight, lorry 16-32 metric ton, EURO6 {RER}|

C3 – Waste pre-processing

100% of the materials are assumed to go through a crushing and sorting process according to values in the table below, regardless of if it ends up being recycled or in landfilled.

flow	KWh	Comment
Fragging of steel	0,0266 MJ per kg	7,4 kWh diesel per tonne, as listed by default values in PCR 2019:14 v 2.0.1

C4 – Final Disposal

Products are assumed to be recycled according to the recycling rates presented PEF recycling factors “R2”. After the recycling streams are separated, the remaining metals are assumed to go to landfill. As 100% scenarios shall be presented when end of life scenarios are mixed, 100% landfill is also included in the results.

Activity	Amount	Comment
Landfill	0,15 kg 1,00 kg in 100% scenario	Remaining metals are recycled, and the recycling impacts fall on the next product system according to the cut-off system model.

D – Potential benefits and loads outside of system boundary

The D module is calculated with a formula originally proposed in EN 15804 and adjusted with a factor for material yield (Y) in PCR:2019:14.

Formula for calculating net benefits and loads for export of secondary materials (recycling of materials):

$$e_1 = \Sigma Y \bullet (M_{MR,out} - M_{MR,in}) \bullet (E_{MR\ after\ EoW\ out} - E_{VM\ Sub\ out} \bullet \frac{Q_{R,out}}{Q_{Sub}})$$

$\mathbf{e_1}$ = Load or benefit from recycling of materials
$\mathbf{E_{MR\ after\ EoW\ out}}$ = Environmental impact from the recycling process
$\mathbf{E_{VM\ Sub\ out}}$ = Environmental impact from the replaced primary material
$\mathbf{M_{MR,In}}$ = Recycled material entering the system that was recycled in a previous system
$\mathbf{M_{MR,out}}$ = Material exiting the system that will be recycled at the EoW point
$\mathbf{Y}$ = Material yield from recycling process, calculated as the fraction between the EoW state and the Point of substitution (M_{EoW}/M_{PoS})
$\mathbf{Q_{R,Out}}$ = Quality of the recycled material
$\mathbf{Q_{Sub}}$ = Quality of the replaced primary material

The following values are used for all material recovery processes:

Expression	Value	Comment
$\mathbf{E_{MR\ after\ EoW\ out}}$	Dataset	Steel, chromium steel 18/8 100% scrap {RER}| steel production, electric, chromium steel 18/8 | EN15804, U As the product is 100% stainless steel, the dataset has been adjusted to not require any additional ferrochrome and ferronickel, and those inputs are exchanged with scrap.
$\mathbf{E_{VM\ Sub\ out}}$	Dataset	Steel, chromium steel 18/8 0% scrap {RER}| steel production, electric, chromium steel 18/8 | EN15804, U The dataset has been adjusted in the following way: "Iron scrap, sorted, pressed {RER}| market for iron scrap, sorted, pressed | EN15804, U" is replaced with "Steel, low-alloyed {RER}| steel production, converter, low-alloyed | EN15804, U". This is to create a dataset that is made out of 100% primary materials and not scrap.
Y_{Steel}	1	R2 values are defined at the recycling plant output and internal losses are therefore included in the M.mr.out value.
$\mathbf{Q_{R,Out}}$	1,0	As the only recycled materials are metals, it is assumed that no quality is lost.
$\mathbf{Q_{Sub}}$	1,0	
$\mathbf{M_{MR.in}}$	0,561	Based on input from supplier EPD. As scrap steel going out of Nords site is used in allocation, it is not regarded

		as M.mr.in, and only the material in the product is included.
$\mathbf{M_{MR.out}}$	0,85	Based on R2 value

Data quality assessment:

Below is a summarized assessment of the data quality.

Data quality criteria	
Precision	• Foreground data for upstream processes are based on a mix of primary information sources, information of general industry practices and statistics provided by steel industry associations. • Foreground data for core processes are based on measured data for flows of energy and material used in the products. • For packaging material and generated waste, the foreground data is based on an average for the specific product group. • Foreground data for transports from suppliers to Nords International was provided by Nords International, while upstream transports to the suppliers were estimated conservatively based on the most likely route. • Background data for material and energy flow are sourced from the Ecoinvent 3.10 database.
Completeness	• Data accounts for all known sub-processes and no flows of material or energy were knowingly omitted. • Background data is sourced from Ecoinvent 3.10 with the documented completeness. • For upstream processes, foreground data were received partly from Nords International and the suppliers and partly based on publicly available information by similar companies or statistics provided by industry associations.
Consistency	• To ensure data consistency, all foreground data were collected with the same level of detail, while background data were sourced from the Ecoinvent 3.10 database. • The data quality for the different life cycles and assumptions made are in accordance with the defined goal and scope. • Differences in data quality, nor regional or temporal differences in the different life cycle stages were identified. • Allocation was performed based on the rules of PCR 2019:14.
Reproducibility	Reproducibility is supported as much as possible through the disclosure of input-output data, dataset choices, and modelling approaches in this report. Based on this information, any third party should be able to approximate the results of this study using the same data and modelling approaches.
Time-related coverage	• Foreground data for the manufacturing covers an entire production year. • Background data from the Ecoinvent 3.10 database are representative of the past 10 years.
Geographical coverage	All foreground data were collected specific to the regions under study and nearly all background data is representative of the European average unless country specific data was available. For the manufacturing (core), data was collected for Nords International in Molkom (Sweden).
Technology coverage	Upstream processes were modelled to be as specific as possible to the technologies or technology mixes under study. For some processes related to the production of the input materials, the Ecoinvent dataset of Metal working, average for chromium steel product manufacturing was adjusted and regionalized when no other applicable dataset existed. It is assumed that the choice of this dataset was conservative.
Validity	The technological and geographical coverage of the chosen data reflects the physical reality of the modelled product systems.

Plausibility	The model has been checked for plausibility for electricity mix used for manufacturing at Nords International in Molkom, Sweden, and the climate impact based for the purchased materials.
Final results of data quality assessment	Data quality as required in ISO 14040 standard series, GPI (version 5.0.1) and PCR 2019:14 Construction products (EN 15804+A2) 2.0.1), is met.

Below is a table declaring the data quality in GWP-GHG for modules A1-A3.

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Upstream production of stainless steel	Database	EPD Owner + Ecoinvent v3.10	2023	Secondary data	0%
Generation of electricity used in manufacturing of product	Database	Nords International + Ecoinvent v3.10	2024	Primary data	1,2%
Transport of steel to manufacturing site	Database	Ecoinvent v3.10	2024	Secondary data	0%
Total share of primary data, of GWP-GHG results for A1-A3					1,2%

Life Cycle Impact Assessment:

The LCIA methodology is chosen in accordance with EN 15804:2012+A2:2019/AC:2021. Characterization factors according to EF 3.1 are selected. The mandatory impact categories are presented below:

Impact Category	Indicator	Unit	Model
Climate Change - Fossil	Global Warming Potential fossil (GWP-fossil)	Kg CO_2 eq. (Carbon dioxide equivalents)	Baseline model of 100 years of the IPCC based on IPCC 2021
Climate Change - Biogenic	Global Warming Potential biogenic (GWP-biogenic)	Kg CO_2 eq. (Carbon dioxide equivalents)	Baseline model of 100 years of the IPCC based on IPCC 2021
Climate Change – Land Use and Land Use Change (LULUC)	Global Warming Potential Land use and land use change (GWP-LULUC)	Kg CO_2 eq. (Carbon dioxide equivalents)	Baseline model of 100 years of the IPCC based on IPCC 2021
Climate Change - Total	Global Warming Potential total (GWP-total)	Kg CO_2 eq. (Carbon dioxide equivalents)	Baseline model of 100 years of the IPCC based on IPCC 2021
Ozone Depletion	Depletion potential of the stratospheric ozone layer (ODP)	Kg CFC 11 eq. (Trichlorofluoromethane equivalents)	Steady-state ODPs, WMO 2014.
Acidification	Acidification potential, Accumulated Exceedance (AP)	Mol H+ eq. (Hydrogen ions equivalents)	Accumulated Exceedance, Seppälä et al. 2006, Posch et al., 2008.
Eutrophication aquatic freshwater	Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater)	Kg P eq. (Phosphorous equivalents)	EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe.
Eutrophication aquatic marine	Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-marine)	Kg N eq. (Nitrogen equivalents)	EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe.
Eutrophication terrestrial	Eutrophication potential, Accumulated Exceedance (EP-Terrestrial)	Mol N eq. (Nitrogen equivalents)	Accumulated Exceedance, Seppälä et al. 2006, Posch et al.
Photochemical ozone formation	Formation potential of tropospheric ozone (POCP)	Kg NMVOC eq. (Non-methane volatile organic compounds equivalents)	LOTOS-EUROS, Van Zelm et al., as applied in ReCiPe.
Depletion of abiotic resources – Minerals and metals	Abiotic depletion potential for non-fossil resources (ADP-minerals & metals)	Kg sb eq. (Antimony equivalents)	CML 2002, Guinée et al., 2002, and van Ooers et al. 2002
Depletion of abiotic resources – Fossil fuels	Abiotic depletion potential for fossil resources (ADP-fossil)	MJ, net calorific value (Megajoules)	CML 2002, Guinée et al., 2002, and van Ooers et al. 2002

Water Use	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	m^3 world eq. Deprived	Available Water Remaining (AWARE) Boulay et al., 2016.

Following are additional indicators that are mandatory to present in the LCA report and optional in an EPD report according to PCR2019:14.

Impact Category	Indicator	Unit	Model
Particulate matter emissions	Potential incidence of disease due to PM emissions (PM)	Disease incidence	SETAP-UNEP, Fantke et al 2016
Ionising radiation, human health	Potential Human exposure efficiency relative to U235 (IRP)	kBq U235 eq. (kiloBecquerel equivalents)	Human health effect model as developed by Dreicer et al. 1995 update by Freischknecht et al., 2000
Ecotoxicity (freshwater)	Potential comparative Toxic Units for ecosystems (ETP-fw)	CTUe (Comparative Toxic Units ecosystems)	UseTox version 2 until the modified USEtox model is available from EC-JRC
Human toxicity, cancer effects	Potential comparative Toxic Units for humans (HTP-c)	CTUh (Comparative Toxic Units humans)	UseTox version 2 until the modified USEtox model is available from EC-JRC
Human toxicity, non-cancer effects	Potential comparative Toxic Units for humans (HTP-nc)	CTUh (Comparative Toxic Units humans)	UseTox version 2 until the modified USEtox model is available from EC-JRC
Land use related impacts/soil quality	Potential Soil Quality index (SQP)	Dimensionless	Soil quality index based on LANCA.

Indicators describing resource use, waste & biogenic content in EN 15804

The following indicators are mandatory indicators in EN15804 that describe waste & resource use. When calculating energy resources, approach B as described in PCR 2019:14 v 2.0.1

Use of resources

Parameter	Unit
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ
Use of renewable primary energy resources used as raw materials	MJ
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ
Use of non-renewable primary energy excluding non- renewable primary energy resources used as raw materials	MJ
Use of non-renewable primary energy resources used as raw materials	MJ
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ
Use of secondary material	kg
Use of renewable secondary fuels	MJ
Use of non-renewable secondary fuels	MJ
Net use of fresh water	m3

Waste production and output flows

Waste production	Unit
Hazardous Waste Disposed	Kg
Non-Hazardous Waste Disposed	Kg
Radioactive Waste Disposed	Kg

Since ecoinvent is used as the main database, the waste management is contained within the system boundaries and no waste generation is reported[2]. This means that the waste is 0 for all modules.

This table presents flows that exit the system boundary that are not waste.

Output Flows	Unit
Components for reuse	kg
Material for recycling	kg
Materials for energy recovery	kg
Exported energy, electricity	MJ
Exported energy, thermal	MJ

Information on biogenic content

Biogenic carbon content	Unit
Biogenic carbon content in product	0 Kg C
Biogenic carbon content in accompanying packaging	0,0026 Kg C
NOTE: 1 kg biogenic carbon is equivalent to 44/12 kg of CO_2.	

[2] A detailed description of this can be read at the bottom of this page: https://www.environdec.com/resources/indicators

Description of worst-case results

Due to every product having a unique price and material yield (internal spillage), having results for each product is not practically achievable. As the none of the products have a dominating share of outgoing revenue, a weighted average is used instead of a representative product.

When calculating the worst-case product amongst the articles, the worst-case can be either the largest share of impacts allocated to it (highest kg price) or the worst yield (most material needed per kg output). As this can be a mix of impacts amongst all LCIA categories, it has been simplified by applying the highest allocation factor and worst yield to a fictive worst-case product.

The results are a percental difference from the declared results.

Impact category	Unit	A-C difference
Climate change - total	kg CO2 eq	+62%
Climate change - Fossil	kg CO2 eq	+61%
Climate change - Biogenic	kg CO2 eq	+54%
Climate change - Land use and LU change	kg CO2 eq	+281%
Ozone depletion	kg CFC11 eq	+64%
Acidification	mol H+ eq	+55%
Eutrophication, freshwater	kg P eq	+57%
Eutrophication, marine	kg N eq	+57%
Eutrophication, terrestrial	mol N eq	+55%
Photochemical ozone formation	kg NMVOC eq	+60%
Resource use, minerals and metals	kg Sb eq	+52%
Resource use, fossils	MJ	+61%
Water use	m3 depriv.	+82%
Particulate matter	disease inc.	+55%
Ionising radiation	kBq U-235 eq	+56%
Ecotoxicity, freshwater	CTUe	+55%
Human toxicity, cancer	CTUh	+54%
Human toxicity, non-cancer	CTUh	+53%
Land use	Pt	+81%
Climate change - GWP-GHG	kg CO2 eq	+62%

ENVIRONMENTAL PERFORMANCE

LCA results of the product(s) - main environmental performance results

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

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Mandatory impact category indicators according to EN 15804

Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	4,0E+00	7,5E-03	0,0E+00	1,2E-02	2,5E-03	4,1E-04	-1,5E+00
GWP-fossil	kg CO_2 eq.	3,9E+00	5,5E-05	0,0E+00	1,2E-02	2,5E-03	4,1E-04	-1,5E+00
GWP-biogenic	kg CO_2 eq.	4,6E-02	7,5E-03	0,0E+00	3,9E-06	3,8E-07	1,4E-07	-1,9E-02
GWP-luluc	kg CO_2 eq.	1,8E-02	6,0E-09	0,0E+00	3,0E-07	8,6E-08	2,0E-08	-8,6E-04
ODP	kg CFC 11 eq.	4,2E-08	6,9E-13	0,0E+00	2,5E-10	3,9E-11	6,0E-12	-8,9E-09
AP	mol H^+ eq.	2,1E-02	7,3E-07	0,0E+00	1,4E-05	2,3E-05	3,7E-06	-7,7E-03
EP-freshwater	kg P eq.	2,1E-04	4,2E-10	0,0E+00	1,0E-08	2,4E-09	1,5E-09	-5,8E-05
EP-marine	kg N eq.	4,2E-03	3,7E-07	0,0E+00	3,1E-06	1,1E-05	1,7E-06	-1,3E-03
EP-terrestrial	mol N eq.	5,2E-02	3,9E-06	0,0E+00	3,4E-05	1,2E-04	1,8E-05	-1,5E-02
POCP	kg NMVOC eq.	1,5E-02	9,7E-07	0,0E+00	3,1E-05	3,6E-05	5,6E-06	-4,7E-03
ADP-minerals&metals*	kg Sb eq.	6,2E-04	2,0E-11	0,0E+00	4,0E-10	1,0E-10	1,6E-11	-3,4E-05
ADP-fossil*	MJ	5,1E+01	4,5E-04	0,0E+00	1,6E-01	3,3E-02	5,2E-03	-1,6E+01
WDP*	m^3	1,5E+00	3,5E-05	0,0E+00	1,7E-04	4,3E-05	7,5E-06	-3,0E-01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption							

** Disclaimer: 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 experienced with the indicator.*

Additional mandatory and voluntary impact category indicators

Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
GWP-GHG[3]	kg CO_2 eq.	3,9E+00	5,5E-05	0,0E+00	1,2E-02	2,5E-03	4,1E-04	-1,5E+00
Particulate matter	disease inc.	3,1E-07	7,1E-12	0,0E+00	7,2E-10	6,7E-10	1,0E-10	-1,2E-07
Ionising radiation	kBq U-235 eq	1,8E-01	1,1E-07	0,0E+00	2,2E-05	2,9E-06	5,5E-07	-2,8E-02
Ecotoxicity, freshwater	CTUe	5,1E+01	5,0E-04	0,0E+00	5,5E-03	1,1E-03	2,5E-04	-3,3E+01
Human toxicity, cancer	CTUh	6,7E-08	2,4E-13	0,0E+00	8,5E-13	1,8E-13	8,9E-14	-1,1E-07
Human toxicity, non-cancer	CTUh	1,1E-07	9,7E-12	0,0E+00	8,1E-11	2,5E-12	5,6E-13	-2,8E-08
Land use	Pt	2,6E+01	3,6E-05	0,0E+00	3,6E-04	7,0E-05	6,2E-03	-4,7E+00

Use of resources

This chapter presents the use of material and energy resources by the product system. Energy indicators are calculated according to approach B as specified in PCR 2019:14 v 2.0.1.

Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
PERE	MJ	1,8E+01	5,2E-06	0,0E+00	5,7E-04	7,4E-05	2,5E-05	-3,6E+00
PERM	MJ	4,0E-01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
PERT	MJ	1,9E+01	5,2E-06	0,0E+00	5,7E-04	7,4E-05	2,5E-05	-3,6E+00
PENRE	MJ	5,1E+01	4,5E-04	0,0E+00	1,6E-01	3,3E-02	5,2E-03	-1,6E+01
PENRM	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
PENRT	MJ	5,1E+01	4,5E-04	0,0E+00	1,6E-01	3,3E-02	5,2E-03	-1,6E+01
SM	kg	7,6E-01	1,7E-08	0,0E+00	8,0E-08	5,9E-08	1,1E-08	2,6E-01
RSF	MJ	1,5E-02	2,1E-09	0,0E+00	7,0E-09	1,2E-08	2,0E-09	-3,3E-04
NRSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
FW	m^3	5,2E-02	8,2E-07	0,0E+00	4,1E-06	1,0E-06	1,8E-07	-1,0E-02

[3] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

Waste indicators

Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
Hazardous Waste Disposed	Kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Non-Hazardous Waste Disposed	Kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Radioactive Waste Disposed	Kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00

Output flow indicators

Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
Components for reuse	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Material for recycling	kg	1,4E-02	7,5E-11	0,0E+00	3,9E-09	8,5E-01	1,5E-10	-1,7E-05
Materials for energy recovery	kg	5,1E-05	5,2E-11	0,0E+00	3,9E-11	4,7E-11	1,8E-11	-2,2E-05
Exported energy, electricity	MJ	9,9E-02	3,2E-08	0,0E+00	8,8E-06	6,2E-07	1,1E-07	-3,3E-03
Exported energy, thermal	MJ	6,6E-02	1,8E-07	0,0E+00	1,5E-05	2,5E-07	4,3E-08	-2,7E-02

Additional LCA results (other environmental performance results) of the product(s)

Additional results for 100% waste treatment scenarios

As stated in PCR 2019:14 v 2.0.1, when having a mix of waste treatment types, the respective 100% scenarios shall be included. The 85 % R2 recycling scenario is regarded as collecting essentially 100% of the material with 15% losses, meaning that only a landfilling scenario needs to be included.

Impact category	Unit	C3	C4	D
Climate change - Total	kg CO2 eq	2,5E-03	2,7E-03	2,9E+00
Climate change - Fossil	kg CO2 eq	2,5E-03	2,7E-03	2,9E+00
Climate change - Biogenic	kg CO2 eq	3,8E-07	9,1E-07	3,8E-02
Climate change - Land use and LU change	kg CO2 eq	8,6E-08	1,3E-07	1,7E-03
Ozone depletion	kg CFC11 eq	3,9E-11	4,0E-11	1,7E-08
Acidification	mol H+ eq	2,3E-05	2,5E-05	1,5E-02
Eutrophication, freshwater	kg P eq	2,4E-09	9,8E-09	1,1E-04
Eutrophication, marine	kg N eq	1,1E-05	1,1E-05	2,5E-03
Eutrophication, terrestrial	mol N eq	1,2E-04	1,2E-04	2,9E-02
Photochemical ozone formation	kg NMVOC eq	3,6E-05	3,7E-05	9,2E-03
Resource use, minerals, and metals	kg Sb eq	1,0E-10	1,1E-10	6,5E-05
Resource use, fossils	MJ	3,3E-02	3,5E-02	3,1E+01
Water use	m3 depriv.	4,3E-05	5,0E-05	5,8E-01
Particulate matter	disease inc.	6,7E-10	7,0E-10	2,4E-07
Ionising radiation	kBq U-235 eq	2,9E-06	3,7E-06	5,5E-02
Ecotoxicity, freshwater	CTUe	1,1E-03	1,6E-03	6,5E+01
Human toxicity, cancer	CTUh	1,8E-13	5,9E-13	2,2E-07
Human toxicity, non-cancer	CTUh	2,5E-12	3,7E-12	5,5E-08
Land use	Pt	7,0E-05	4,1E-02	9,2E+00

ADDITIONAL ENVIRONMENTAL INFORMATION

The climate impact for specific articles from Nords Group can be provided through a ”carbon footprint calculator”. The information can also be provided via mail or on the offer or preferred order documents. We can also summarize the climate impact of your orders for your GHG reporting.

Contact us for more information if you are interested.

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EF	Environmental Footprint
EU	Europe
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
ND	Not Declared

REFERENCES

General Programme Instructions of the International EPD® System. Version 5.0.1

PCR 2019:14 Construction products (EN 15804+A2) version 2.0.1

ISO 14025:2006 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

ISO 14040:2006 Environmental management – Life cycle assessment - Principles and framework.

ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.

Life Cycle Assessment of Stainless Steel Pressed Collars and Tube Clamps By Nords International AB, Viktor Hakkarainen, CHM Analytics AB, 2025

VERSION HISTORY

Original Version of the EPD, 2025-10-30

Appendix A – Included product list

Product group	Product number	Description	Net weight (kg)
D-Collar ISO	FDI3527330	273 x 3/3 H=31 EN 1.4432	1,153
	FDI3527340	273 x 4/4 H=31 EN 1.4432	1,546
	FDI3532340	323,9 x 4/4 H=35 EN 1.4432	1,9
D-Collar ISO (High)	FHI3527330	DH 273 x 3/3 H=70 EN 1.4432	1,981
	FHI3532330	DH 323,9 x 3/3 H=68 EN 1.4432	2,261
D-Collar Metric	FDM3525630	256 x 3/3 H=31 EN 1.4432	1,199
	FDM3540630	406 x 3/3 H=43 EN 1.4432	2,45
	FDM3540840	406,4/408 x 4/4 H=43 EN 1.4432	3,3
	FDM3545840	458 x 4/4 H=45 EN 1.4432	3,8
	FDM3550840	508 x 4/4 H=45 EN 1.4432	4,2
	FDM3560630	606 x 3/3 H=45 EN 1.4432	3,65
	FDM3560840	608 x 4/4 H=45 EN 1.4432	4,85
D-Collar Metric (High)	FHM3525630	DH 256 x 3/3 H=65 EN 1.4432	1,9
	FHM3530630	DH 306 x 3/3 H=55 EN 1.4432	2
	FHM3535630	DH 356 x 3/3 H= 55 EN 1.4432	2,5
	FHM3540840	DH 408 x 4/4 H=65 EN 1.4432	4,2
	FHM3550840	DH 508 x 4/4 H=75 EN 1.4432	5,7
	FHM3560840	DH 608 x 4/4 H=80 EN 1.4432	7,2
P-Collar ISO	FCI3501720	17,2 x 2/2,5 H=7 EN 1.4432	0,023
	FCI3502120	21,3 x 2/3 H=7 EN 1.4432	0,038
	FCI3502620	26,9 x 2/3 H=8 EN 1.4432	0,059
	FCI3502630	26,9 x 3,2/4 H=8 EN 1.4432	0,076
	FCI3503320	33,7 x 2/3 H=10 EN 1.4432	0,077
	FCI3503330	33,7 x 3,2/4 H=10 EN 1.4432	0,101
	FCI3504220	42,4 x 2/3 H=12 EN 1.4432	0,102
	FCI3504230	42,4 x 3,2/4 H=12 EN 1.4432	0,138
	FCI3504820	48,3 x 2/3 H=15 EN 1.4432	0,131
	FCI3504830	48,3 x 3,2/4 H=15 EN 1.4432	0,175
	FCI3506020	60,3 x 2/3 H=20 EN 1.4432	0,177
	FCI3506026	60,3 x 2,6/3 H=20 EN 1.4432	0,179
	FCI3506030	60,3 x 3,2/4 H=20 EN 1.4432	0,234
	FCI3507620	76,1 x 2/3 H=20 EN 1.4432	0,238
	FCI3507626	76,1 x 2,6/3 H=20 EN 1.4432	0,238
	FCI3507630	76,1 x 3,2/4 H=20 EN 1.4432	0,322
	FCI3508820	88,9 x 2/3 H=25 EN 1.4432	0,311
	FCI3508826	88,9 x 2,6/3 H=25 EN 1.4432	0,311
	FCI3508830	88,9 x 3,2/4 H=25 EN 1.4432	0,412
	FCI3511426	114,3 x 2,6/3 H=25 EN 1.4432	0,367
	FCI3511430	114,3 x 3,2/4 H=25 EN 1.4432	0,485

Product group	Product number	Description	Net weight (kg)
	FCI3513926	139,7 x 2,6/3 H=25 EN 1.4432	0,478
	FCI3513930	139,7 x 3,2/4 H=25 EN 1.4432	0,644
	FCI3516826	168,3 x 2,6/3 H=25 EN 1.4432	0,559
	FCI3516840	168,3 x 3,2/5 H=25 EN 1.4432	0,932
	FCI3521930	219,1 x 3,2/4 H=30 EN 1.4432	1,18
P-Collar Metric	FCM3502020	20 x 2/3 H=9 EN 1.4432	0,036
	FCM3502520	25 x 2/3 H=10 EN 1.4432	0,061
	FCM3502820	28 x 2/3 H=12 EN 1.4432	0,084
	FCM3503020	30 x 2/3 H=12 EN 1.4432	0,082
	FCM3503820	38 x 2/3 H=14 EN 1.4432	0,108
	FCM3504420	44,5 x 2/3 H=17 EN 1.4432	0,138
	FCM3505420	54 x 2/3 H=18 EN 1.4432	0,182
	FCM3505730	57 x 3/4 H=18 EN 1.4432	0,243
	FCM3506920	69 x 2/3 H=20 EN 1.4432	0,26
	FCM3507020	70 x 2/3 H=20 EN 1.4432	0,251
	FCM3507130	71 x 3/4 H=20 EN 1.4432	0,347
	FCM3508420	84 x 2/3 H=24 EN 1.4432	0,315
	FCM3508630	86 x 3,2/4 H=24 EN 1.4432	0,435
	FCM3510630	106 x 3,2/4 H=27 EN 1.4432	0,524
	FCM3510840	108 x 4/5 H=27 EN 1.4432	0,644
	FCM3513130	131 x 3/4 H=27 EN 1.4432	0,706
	FCM3515630	156 x 3/4 H=27 EN 1.4432	0,8
	FCM3515840	158 x 4/5 H=27 EN 1.4432	1,022
	FCM3520630	206 x 3/3 H=26 EN 1.4432	0,9
	FCM3520840	208 x 4/4 H=26 EN 1.4432	1,18
R-171 Clamp	FK014017	R-171 14-18 (M6x20) 316L	0,046
	FK018022	R-171 20-22 (M6x20) 316L	0,049
	FK023024	R-171 23-24 (M6x20) 316L	0,051
	FK025028	R-171 25-28 (M6x20) 316L	0,085
	FK030033	R-171 30-33,7 (M6x20) 316L	0,094
	FK035038	R-171 35-38 (M6x20) 316L	0,106
	FK042044	R-171 42,4-44,5 (M6x20) 316L	0,141
	FK0483	R-171 48,3 (M6x20) 316L	0,147
	FK053054	R-171 53-54 (M8x25) 316L	0,24
	FK057060	R-171 57-60,3 (M8x25) 316L	0,261
	FK068070	R-171 68-70 (M8x25) 316L	0,279
	FK073076	R-171 73-76,1 (M8x25) 316L	0,314
	FK082084	R-171 82-84 (M8x25) 316L	0,355
	FK0889	R-171 88,9 (M8x25) 316L	0,355
	FK102106	R-171 102-106 (M10x35) 316L	0,407
	FK1143	R-171 114,3 (M10x35) 316L	0,436

Product group	Product number	Description	Net weight (kg)
	FK127131	R-171 127-131 (M10x35) 316L	0,481
	FK1397	R-171 139,7 (M10x35) 316L	0,52
	FK152156	R-171 152-156 (M10x35) 316L	0,557
	FK1683	R-171 168,3 (M10x35) 316L	0,744
	FK202206	R-171 202-206 (M12x35) 316L	0,92
	FK2191	R-171 219,1 (M12x35) 316L	0,94
	FK252256	R-171 252-256 (M12x50) 316L	1,114
	FK273	R-171 273 (M12x50) 316L	1,08
	FK302306	R-171 302-306 (M16x50) 316L	1,726
	FK3239	R-171 323,9 (M16x50) 316L	1,749
	FK353356	R-171 353-356 (M16x50) 316L	2
	FK404406	R-171 404-406 (M16x50) 316L	2,2
	FK454458	R-171 454-458 (M16x60) 316L	2,35
	FK504508	R-171 504-508 (M16x60) 316L	2,7
	FK606608	R-171 604-608 (M16x60) 316L	3,2

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