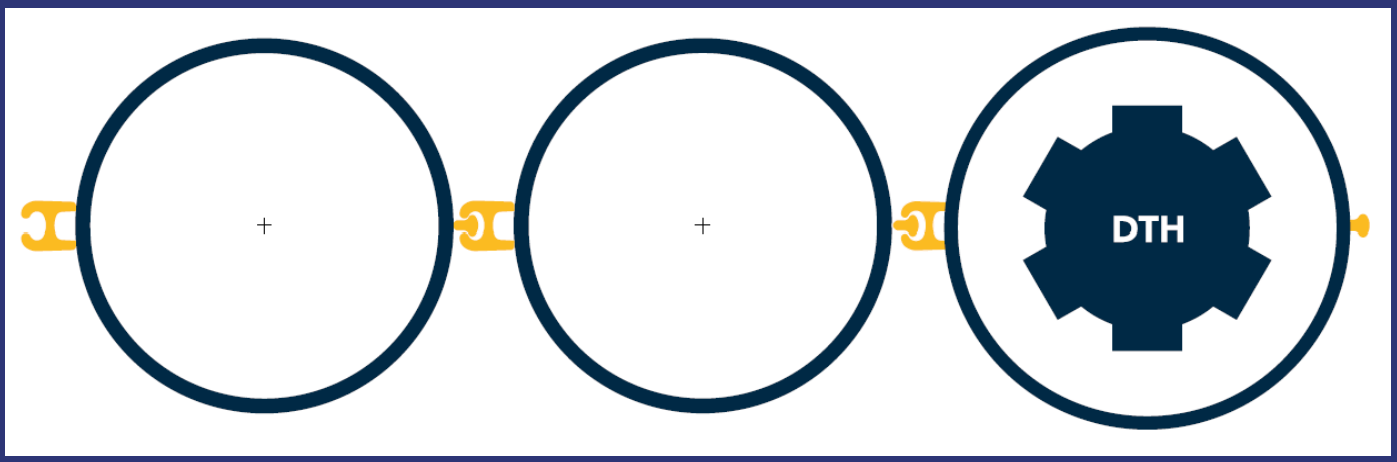
MEEVER & MEEVER

Environmental
Product
Declaration

According to EN15804+A2

This declaration is for:
Pipe Wall

Provided by:
Meever & Meever



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COMPANY INFORMATION

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PRODUCT

Pipe Wall

DECLARED UNIT / FUNCTIONAL UNIT

1 Mass (t)

DESCRIPTION OF PRODUCT

A steel pipe retaining wall solutions consisting of steel pipes with welded-on steel interlocks.

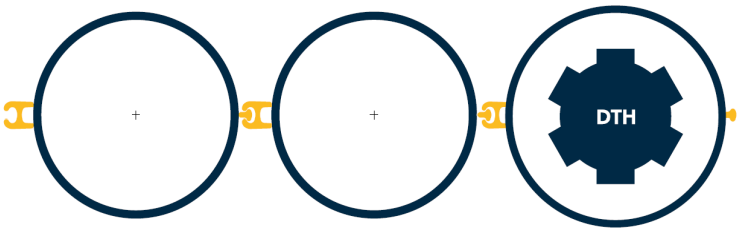
MRPI® REGISTRATION

1.1.00843.2025

DATE OF THIS ISSUE

3-6-2025

VISUAL PRODUCT



EXPIRY DATE

3-6-2030

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Mantijn van Leeuwen, Nibe. The LCA study has been done by Martijn Blaak, EcoReview. The certificate is based on an LCA-dossier according to EN15804+A2. It is verified according to the 'MRPI®-EPD verification protocol November 2020.v4.0'. EPDs of construction products may not be comparable if they do not comply with EN15804+A2. Declaration of SVHC that are listed on the 'Candidate list of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

PROGRAM OPERATOR

Stichting MRPI®

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MORE INFORMATION

www.meever.nl

Ing. L. L. Oosterveen MSc. MBA Managing Director MRPI	DEMONSTRATION OF VERIFICATION CEN standard EN15804 serves as the core PCR [1]
	Independent verification of the declaration an data according to EN15804+A2 Internal: External: X
	Third party verifier: Mantijn van Leeuwen, Nibe
	[1] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION (PART 1)

The Meever & Meever Pipe-Wall is a robust steel retaining wall system composed of tubular steel pipes with welded interlocks. Designed to resist bothhorizontal and vertical forces, the system is widely used in deep foundation applications, including civil and maritime infrastructure works. The Pipe-Wall is typically installed using a down-the-hole (DTH) drilling hammer.

Production Process
Production generally begins with the manufacturing of steel pipes in accordance with EN10219-1 and EN10219-2 standards. Steel interlocks—male on one side and female on the other—are welded along the entire length of the pipes using automated welding systems compliant with EN 1090 (Execution Class 2 or 3). Interlocks are produced in S355 or S430 steel grades.

Condition of Delivery
Meever & Meever supplies the Pipe-Wall system in pre-assembled format, with interlocks fully welded and the product ready for on-site installation. Standard pipe diameters range from Ø 219.1 mm to Ø 406.4 mm, with other dimensions available on request. Pipe lengths typically include 6 m, 12 m, and 18 m sections. Available steel grades include S355J2H and S460MH, with S500 and S550 upon request. Interlock spacing is standardized at 64 mm, with options for 75 mm, 88 mm, and 100 mm.

The reference service life of the Pipe-Wall is set at 100 years, consistent with long-term applications in permanent foundation systems.

Component (> 1%)	(%)
Steel Pipes	78%
Steel Male interlock	11%
Steel Female interlock	11%

SCOPE AND TYPE

This Environmental Product Declaration (EPD) has been prepared for the Pipe-Wall system manufactured and sold by Meever & Meever. The scope of the EPD is from cradle to gate with options (modules A1–A4, C1–C4 and D), following the requirements of EN 15804+A2 and ISO 14025. The following specifications apply:

The manufacturing of the Pipe-Wall (including welding of steel locks onto steel pipes) takes place at German Pipe Works GmbH in Aschersleben, Germany.

The product is primarily applied within Europe, in civil engineering and infrastructure projects. Utrecht Central is used as a reference location for transport modelling in accordance with the NMD methodology.

The end-of-life treatment of the product is assumed to take place in Europe. This includes 91% recycling and 9% landfill (in-ground remains), based on current market practice.

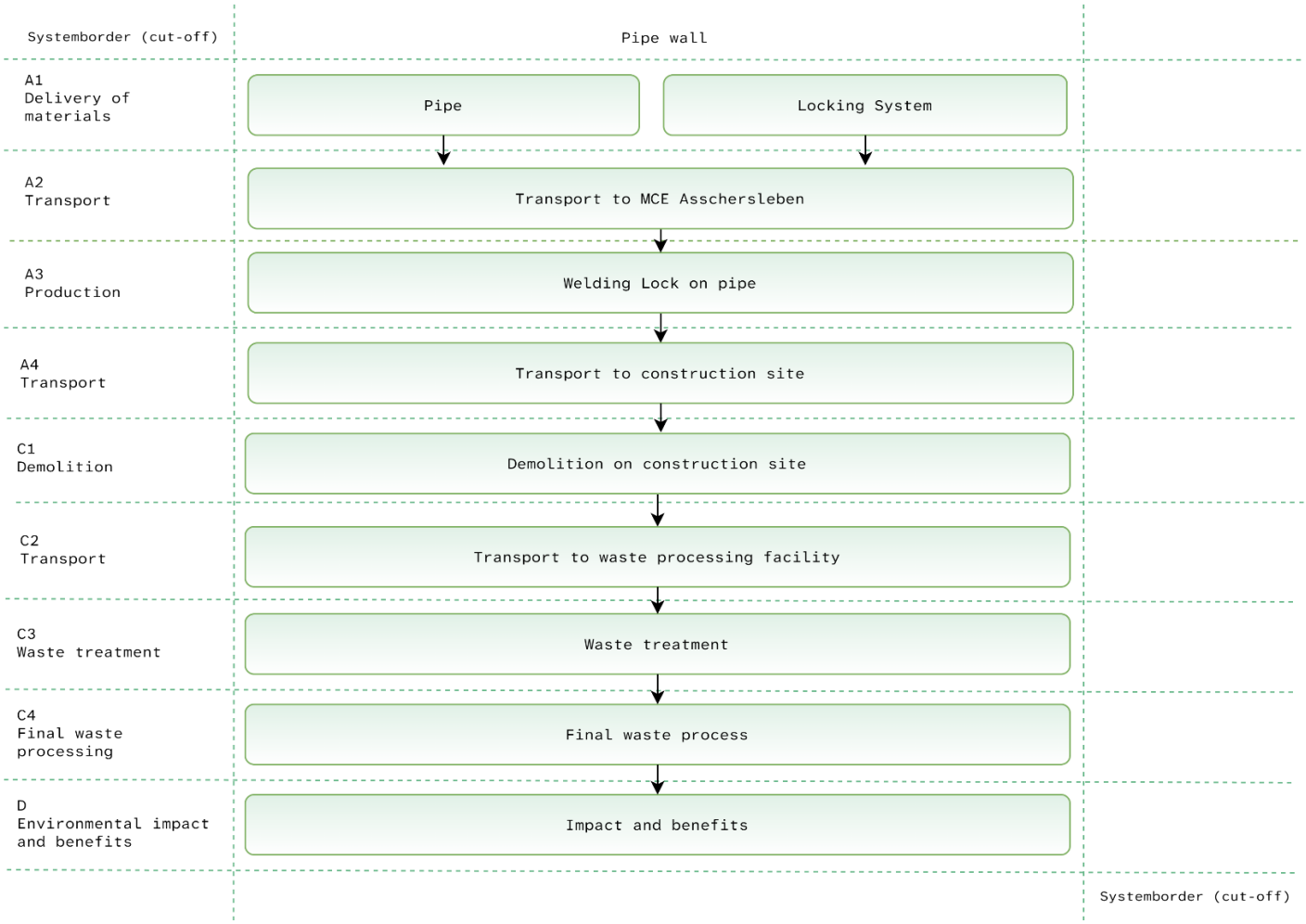
All background data is sourced from Ecoinvent version 3.9.1.

The study was conducted using SimaPro version 9.5.1.

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport gate to site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse - Recovery - Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
x	x	x	x	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x

X = Modules Assessed

ND = Not Declared


Systemborder (cut-off)
Pipe wall
A1
Delivery of materials
Pipe
Locking System
A2
Transport
Transport to MCE Asschersleben
A3
Production
Welding Lock on pipe
A4
Transport
Transport to construction site
C1
Demolition
Demolition on construction site
C2
Transport
Transport to waste processing facility
C3
Waste treatment
Waste treatment
C4
Final waste processing
Final waste process
D
Environmental impact and benefits
Impact and benefits
Systemborder (cut-off)

ENVIRONMENTAL IMPACT per functional unit or declared unit (core indicators A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	0,00E+00	0,00E+00	0,00E+00	2,70E+03	5,49E+01	ND	ND	ND	ND	ND	ND	ND	ND	1,13E+02	4,69E+00	2,42E+01	5,72E-01	-6,69E+02
GWP-fossil	kg CO2 eq.	0,00E+00	0,00E+00	0,00E+00	2,69E+03	5,48E+01	ND	ND	ND	ND	ND	ND	ND	ND	1,13E+02	4,68E+00	2,42E+01	5,70E-01	-6,79E+02
GWP-biogenic	kg CO2 eq.	0,00E+00	0,00E+00	0,00E+00	3,72E+00	7,27E-02	ND	ND	ND	ND	ND	ND	ND	ND	2,60E-02	6,20E-03	0,00E+00	1,23E-03	9,54E+00
GWP-luluc	kg CO2 eq.	0,00E+00	0,00E+00	0,00E+00	8,83E+00	1,57E-02	ND	ND	ND	ND	ND	ND	ND	ND	1,28E-02	1,34E-03	3,49E-02	3,35E-04	2,10E-01
ODP	kg CFC11 eq.	0,00E+00	0,00E+00	0,00E+00	5,62E-05	1,19E-06	ND	ND	ND	ND	ND	ND	ND	ND	1,80E-06	1,01E-07	3,74E-07	1,58E-08	-2,37E-05
AP	mol H+ eq.	0,00E+00	0,00E+00	0,00E+00	1,02E+01	1,26E-01	ND	ND	ND	ND	ND	ND	ND	ND	1,05E+00	1,08E-02	2,64E-01	4,12E-03	-2,02E+00
EP-fresh water	kg PO4 eq.	0,00E+00	0,00E+00	0,00E+00	1,88E-01	3,30E-04	ND	ND	ND	ND	ND	ND	ND	ND	4,09E-04	2,81E-05	1,08E-03	5,33E-06	3,73E-02
EP-marine	kg N eq.	0,00E+00	0,00E+00	0,00E+00	2,24E+00	3,65E-02	ND	ND	ND	ND	ND	ND	ND	ND	4,86E-01	3,11E-03	6,02E-02	1,57E-03	-3,89E-01
EP-terrestrial	mol N eq.	0,00E+00	0,00E+00	0,00E+00	2,49E+01	3,84E-01	ND	ND	ND	ND	ND	ND	ND	ND	5,29E+00	3,28E-02	6,88E-01	1,70E-02	-6,48E+00
POCP	kg NMVOC eq.	0,00E+00	0,00E+00	0,00E+00	1,21E+01	2,13E-01	ND	ND	ND	ND	ND	ND	ND	ND	1,57E+00	1,81E-02	2,06E-01	5,90E-03	-4,56E+00
ADP-minerals & metals	kg Sb eq.	0,00E+00	0,00E+00	0,00E+00	5,99E-03	8,63E-05	ND	ND	ND	ND	ND	ND	ND	ND	3,96E-05	7,37E-06	1,45E-03	7,59E-07	1,64E-03
ADP-fossil	MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	2,91E+04	7,81E+02	ND	ND	ND	ND	ND	ND	ND	ND	1,48E+03	6,67E+01	3,20E+02	1,36E+01	-5,81E+03
WDP	m3 world eq. Deprived	0,00E+00	0,00E+00	0,00E+00	1,21E+03	4,01E+00	ND	ND	ND	ND	ND	ND	ND	ND	3,97E+00	3,43E-01	4,40E+00	6,11E-01	7,53E+01

GWP-total = Global Warming Potential total

GWP-fossil = Global Warming Potential fossil fuels

GWP-biogenic = Global Warming Potential biogenictotal

GWP-luluc = Global Warming Potential land use and land use change

ODP = Depletion potential of the stratospheric ozone layer

AP = Acidification Potential, Accumulated Exceedence

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 Exceedence

POCP = Formation potential of tropospheric ozone photochemical oxidants

ADP-minerals & metals = Abiotic Depletion Potential for non-fossil resources [1]

ADP-fossil = Abiotic Depletion for fossil resources potential [1]

WDP = Water (user) deprivation potential, deprivation-weighted water consumption [1]

Disclaimer [1]:

- 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.

ENVIRONMENTAL IMPACT per functional unit or declared unit (additional indicators A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease inci-dence	0,00E+00	0,00E+00	0,00E+00	1,78E-04	3,34E-06	ND	ND	ND	ND	ND	ND	ND	ND	2,93E-05	2,85E-07	3,44E-06	8,77E-08	-6,45E-05
IRP	kBq U235 eq.	0,00E+00	0,00E+00	0,00E+00	4,91E+01	2,97E-01	ND	ND	ND	ND	ND	ND	ND	ND	3,04E-01	2,53E-02	8,51E-01	3,60E-03	1,23E+01
ETP-fw	CTUe	0,00E+00	0,00E+00	0,00E+00	1,17E+04	3,68E+02	ND	ND	ND	ND	ND	ND	ND	ND	7,09E+02	3,14E+01	2,04E+02	6,68E+00	5,09E+03
HTP-c	CTUh	0,00E+00	0,00E+00	0,00E+00	1,32E-05	1,64E-08	ND	ND	ND	ND	ND	ND	ND	ND	3,47E-08	1,40E-09	3,60E-08	2,33E-10	7,66E-06
HTP-nc	CTUh	0,00E+00	0,00E+00	0,00E+00	2,62E-05	4,65E-07	ND	ND	ND	ND	ND	ND	ND	ND	2,41E-07	3,97E-08	1,74E-06	6,60E-09	5,14E-05
SQP	-	0,00E+00	0,00E+00	0,00E+00	8,39E+03	8,15E+02	ND	ND	ND	ND	ND	ND	ND	ND	1,00E+02	6,96E+01	5,68E+02	2,71E+01	-9,31E+02

PM = Potential incidence of disease due to PM emissions

IRP = Potential Human exposure efficiency relative to U235 [1]

ETP-fw = Potential Comparative Toxic Unit for ecosystems [2]

HTP-c = Potential Comparative Toxic Unit for humans [2]

HTP-nc = Potential Comparative Toxic Unit for humans, non-cancer [2]

SQP = Potential soil quality index [2]

Disclaimer [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.

Disclaimer [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.

OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit (A1 en A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	0,00E+00	0,00E+00	0,00E+00	2,23E-01	4,89E-03	ND	ND	ND	ND	ND	ND	ND	ND	9,99E-03	4,18E-04	1,77E-03	7,22E-05	-1,17E-01
NHWD	kg	0,00E+00	0,00E+00	0,00E+00	6,51E+02	7,07E+01	ND	ND	ND	ND	ND	ND	ND	ND	2,12E+00	6,04E+00	9,64E+00	9,00E+01	1,33E+02
RWD	kg	0,00E+00	0,00E+00	0,00E+00	3,57E-02	1,84E-04	ND	ND	ND	ND	ND	ND	ND	ND	1,63E-04	1,57E-05	6,48E-04	2,01E-06	8,77E-03
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	3,80E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	9,10E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD = Hazardous Waste Disposed
NHWD = Non Hazardous Waste Disposed
RWD = Radioactive Waste Disposed
CRU = Components for reuse
MFR = Materials for recycling
MER = Materials for energy recovery
EEE = Exported Electrical Energy
ETE = Exported Thermal Energy

RESOURCE USE per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	0,00E+00	0,00E+00	0,00E+00	1,80E+03	8,54E+00	ND	ND	ND	ND	ND	ND	ND	ND	8,45E+00	7,29E-01	4,96E+01	1,15E-01	2,66E+02
PENRE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	0,00E+00	0,00E+00	0,00E+00	2,94E+04	8,31E+02	ND	ND	ND	ND	ND	ND	ND	ND	1,48E+03	7,09E+01	3,39E+02	1,45E+01	-5,81E+03
SM	kg	0,00E+00	0,00E+00	0,00E+00	2,14E+02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NSRF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	0,00E+00	0,00E+00	0,00E+00	3,22E+01	1,19E-01	ND	ND	ND	ND	ND	ND	ND	ND	1,34E-01	1,02E-02	1,60E-01	1,45E-02	4,38E+00

PERE = Use of renewable energy excluding renewable primary energy resources
PERM = Use of renewable energy resources used as raw materials
PERT = Total use of renewable primary energy resources
PENRE = Use of non-renewable primary energy resources excluding non-renewable energy resources used as raw materials
PENRM = Use of non-renewable primary energy resources used as raw materials
PENRT = Total use of non-renewable primary energy resources
SM = Use of secondary materials
RSF = Use of renewable secondary fuels
NSRF = Use of non-renewable secondary fuels
FW = Use of net fresh water

BIOGENIC CARBON CONTENT per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
BBCpr	kg C	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
BCCpa	kg C	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

BCCpr = Biogenic carbon content in product
BCCpa = Biogenic carbon content in packaging

CALCULATION RULES (PART 1)

This study follows the modular structure of EN 15804+A2 and ISO 14044. The declared unit is 1 metric ton (1000 kg) of Pipe-Wall. All lifecycle stages from raw material extraction through end-of-life (modules A1–A4, C1–C4, D) are included. Modules A5 and B1–B7 are not declared (MND). The functional unit is based on 1 linear meter of pipe-wall (406.4 mm diameter, 12.5 mm wall thickness) and scaled to 1 ton for reporting consistency. No significant input or output flows have been deliberately excluded.

Primary data was collected from Meever & Meever and German Pipe Works GmbH for the year 2024, covering production inputs, electricity use, welding operations, transport, and end-of-life scenarios. Background data was sourced from the Ecoinvent 3.9.1 database. Data quality is considered “good” to “very good” for all records in terms of time, geography, and technology representativeness, as assessed per EN 15804+A2 Annex E.

All primary data used in this study refers to the calendar year 2024. Background data (Ecoinvent v3.9.1) reflects datasets published and updated as of July 2024. No economic or mass allocations were necessary within the main product system. Recycling allocation for Module D follows the substitution approach, consistent with EN 15804+A2 and the World Steel Association guidance. Module D emissions and credits are based on the proportion of primary steel (78.7%) and regional sourcing (EU vs. RoW) as reported by Meever & Meever.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION (PART 1)

Description of processes within A1–A3 (Production Stage)
A1 – Raw material supply:
Includes the extraction and processing of steel for both pipes and interlocks. Primary and secondary steel routes are considered using average European and global datasets from Ecoinvent 3.9.1.

A2 – Transport:
Transport of steel pipes and locks to the manufacturing site by truck. Distances are based on realistic European supply routes.

A3 – Manufacturing:
Includes welding of interlocks to pipes, minor energy use for factory operations (electricity and propane), and steel working. Material losses and waste treatment are included.

Description of scenarios for modules beyond A1–A3:

A4 – Transport to construction site:
A fixed distance of 533 km from Aschersleben to Utrecht Central is assumed, modeled using EURO 6 diesel truck transport.

C1 – Deconstruction:
Dismantling by crane is modeled with 0.3116 hours of diesel excavator use per meter of Pipe-Wall, based on scaling from a representative NMD category 3 report.

C2 – Transport to EoL processing:
91% of the product is transported for recycling over a distance of 50 km, modeled with truck transport.

C3 – Waste processing:
91% of the steel is processed through sorting and pressing of iron scrap, based on Ecoinvent 3.9.1 data.

C4 – Disposal:
9% of the product is assumed to remain in the ground. This is modeled using a landfill scenario for inert steel waste.

D – Module D (recovery):
Benefits for recycled steel are modeled over the net amount of primary steel input.

DECLARATION OF SVHC

The product does not contain SVHC.