Environmental Product Declaration

according to EN 15804+A1 and ISO 14025

GROUND SCREWS:

DIY EXTENDABLE GROUND SCREWS 65x2

DIY FIXED GROUND SCREWS 65x2

SEMI FIXED GROUND SCREWS 76x2

PROFI FIXED GROUND SCREWS 76x3,6, 89x3,6

PRO EXTENDABLE GROUND SCREWS NL 76x3,6

PRO EXTENDABLE GROUND SCREWS PRM 76x5

PRO EXTENDABLE GROUND SCREWS PRM 89x5

SOLAR SCREWS 76x3

Organization:	BAYO.S SE, Ocelářská 1354/35, 19000 Praha 9
Programme operator:	CENIA, Czech Environmental Information Agency
Publication date:	16.06.2022
Valid until:	16.06.2027
Revision:	0

1. GENERAL INFORMATION

Manufacturing company	BAYO.S SE Registration Nº: 01875744 VAT Nº: CZ01875744
Production site	Design and sales office: *Týmlova 229/14, 14000 Praha – Michle, Czech Republic* External manufacturer: *Filák s.r.o.* *Skopalova 2199/20* *750 02, Přerov, Czech Republic*
Address	Ocelářská 1354/35, 190 00 Praha 9 Czech Republic
Contacts	Phone: +420 272 761 943 E-mail: srejma@bayo-s.company Web: https://www.bayo-s.com/

EPD Program	National Environmental Labelling Program. For more information see www.cenia.cz cenia CENIA, Czech Environmental Information Agency, Vršovická 1442/65, Prague 10, 100 10 Czech Republic
Approval date	16.06.2022
Valid until	16.06.2027
PCR identification	EN 15804:2012+A1:2013 Sustainability of construction works – Environmental product declarations (Core rules for the product category of construction products) serves as the Core Product Category Rules (PCR) *The PCR is standardized by CEN*
LCA prepared by	Lubos Nobilis, ECO trend s.r.o., Na Dolinach 128, 140 00 Prague 4, Czech Republic, nobilis@ecotrend.cz

CEN standard EN 15804+A1 serves as the core PCR
Independent verification of the declaration and data, according to EN ISO 14025 **Internal** [X] **External** [ ]
Internal verifier: Jan Šrejma - product and quality manager BAYO.S

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

EPDs within the same product category but from different software may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

About company

BAYO.S SE is the world's leading manufacturer and innovator in the field of ground screws. We have been providing complex services from the development of our own design solutions, through production to installation using our own technology since 2007.

We take an individual professional approach to the foundation of buildings, taking into account the specific conditions of the site and the project specification. By applying the results of tensile tests at the installation site, the design is optimised both structurally and economically.

Continuous development and innovation are translated into a comprehensive system that includes a complex foundation design system, specialized installation and testing technology, expert project preparation and precise execution of the work.

As the world's leading manufacturer, our goal is to deliver top quality products. By continuously improving the design and production of our system, we enable our customers to implement environmentally sustainable projects while maximizing environmental protection.

BAYO.S designs individual products in accordance with valid European standards, in particular EN 1990, EN 1991, EN 1993, EN 1997, EN 1999.

BAYO.S has all its products and processes certified by state-accredited authorized companies with regard to the specific markets where it markets its products.

2. PRODUCT

2.1 Product description

DIY GROUND SCREWS

DIY EXTENDABLE GROUND SCREWS from the pipe 65x2 mm

Ground screws designed for hobby construction: pergolas, gazebos, terraces, garden houses, etc. They are suitable for laying in more difficult conditions due to their variability.

DIY FIXED GROUND SCREWS from the pipe 65x2 mm

Ground screws designed for hobby construction: sheds, fences, children's kits, etc. The screws are suitable for structures with dynamic loads.

SEMI FIXED GROUND SCREWS

SEME GROUND SCREWS from the pipe 76x2,6 mm

Ground screw for medium-sized projects such as industrial fences and gates, urban furniture, traffic signs, large terraces.

The screws are mainly intended for wholesale and trained customers.

PROFI GROUND SCREWS

PROFI FIXED GROUND SCREWS from the pipe 76x3,6 mm

Ground screws for large professional projects such as wooden buildings, storage halls, modules, containers, mobile homes.

The screws are intended for professional machine installation only.

PRO EXTENDABLE GROUND SCREWS NL from the pipe 76x3,6 mm

Ground screws for large professional projects such as wooden buildings, storage halls, modules, containers, mobile homes. For foundation work in more complex conditions where ground leveling is required.

The screws are intended for professional machine installation only.

PRO EXTENDABLE GROUND SCREWS PRM from the pipe 76x5 mm

PRO EXTENDABLE GROUND SCREWS PRM from the pipe 89x5 mm

Ground screws for large professional projects such as wooden buildings, storage halls, modules, containers, mobile homes. For foundation work in more difficult conditions, where it is necessary to deal with ground leveling or for buildings where a higher load-bearing capacity of the foundation is needed.

The screws are intended for professional machine installation only.

SOLAR SCREWS from the pipe 76x3 mm

Ground screws designed specifically for the foundation of large solar power plant projects. Ground screws are designed specifically for anchoring structures to solar panels.

The screws are intended for professional machine installation only.

2.2 Application

DIY GROUND SCREWS

Ground screws designed to be installed in the ground using a hand wrench or 1:20 gear set.

SEMI FIXED GROUND SCREWS

Ground screws designed to be installed in the ground using a hand-held profi wrench or 1:150 gear set.

PROFI GROUND SCREWS

Ground screws designed to be installed in the ground using mechanisation such as an awl or crawler.

SOLAR SCREWS

Ground screws designed to be installed in the ground using mechanisation such as an awl or crawler.

2.3 Technical data

ItemNo	Item name	Weight Kg
DIY EXTENDABLE SCREW pipe 65x2 mm		
51101	SCREW TIP 500	1,87
51102	SCREW TIP 600	2,20
51103	SCREW TIP 700	2,50
51201	EXTENSION 250	1,10
51202	EXTENSION 500	2,00
51301	U-70 TOP	1,10
51302	U-80 TOP	1,10
51303	U-90 TOP	1,10
51304	U-100 TOP	1,20
51305	U-120 TOP	1,30
51306	NUT TOP 3xM8	0,75
51307-M12	HEX TOP M12	1,20
51307-M16	HEX TOP M16	1,20
51308-M12	FLAT TOP M12	0,50
51308-M16	FLAT TOP M16	0,50
51309	L TOP	0,80
51310	T TOP	0,80
51401	CAP 70	0,14
51402	CAP 48	0,13
DIY SCREW pipe 65x2 mm		
52101	SCREW U-80 600	2,80
52102	SCREW U-100 600	2,85
52103	SCREW U-80 750	3,24
52104	SCREW U-100 750	3,30
52105	SCREW U-120 750	3,35
52106	SCREW U-90 750	3,40
52107	SCREW U-110 750	3,50
52201	SCREW NUT-1 M6 60x550 RR	2,20
52202	SCREW NUT-3 M8 600	2,30
52203	SCREW NUT-3 M8 750	2,40
53001	SCREW FENCE 500	1,80
53002	SCREW FENCE 600	2,10
SEMI SCREW		
53111	SCREW NUT-3 M16 76x2,6 800	4,10
53113	SCREW NUT-3 M16 76x2,6 1050	5,40
53114	SCREW NUT-4 M12 66-89x800 W	3,80
53115	SCREW HEX-120 M12 76x2,6x800	4,20
53116	SCREW HEX-120 M12 76x2,6x1050	5,60
PROFI SCREW		
56113	SCREW NUT-3 M16 76x3,6x1250	8,50
56114	SCREW NUT-3 M16 76x3,6x1550	10,50
56115	SCREW NUT-3 M16 76x3,6x2050	14,00

56121	SCREW NUT-4 M16 89x3,6x800	6,20
56122	SCREW NUT-4 M16 89x3,6x1050	8,20
56123	SCREW NUT-4 M16 89x3,6x1250	10,00
56213	SCREW HEX-120 M12 76x3,6x1250	8,90
56214	SCREW HEX-160 M16 76x3,6x1550	12,00
56215	SCREW HEX-160 M16 76x3,6x2050	15,50
56216	SCREW HEX-160 M16 76x3,6x2400	17,70
56217	SCREW HEX-160 M16 76x5x2050	21,80
56225	SCREW HEX-160 M16 89x3,6x2050	17,90
56313	SCREW ROUND-200 M16 76x3,6x1250	10,20
56314	SCREW ROUND-200 M16 76x3,6x1550	12,10
56315	SCREW ROUND-200 M16 76x3,6x2050	15,40
56443	SCREW RIM 76-140x3,6x1300 W	12,30
PROFI EXTENDABLE SCREW		
55100NL	NL SCREW TIP 76x3,6x1050	6,90
55101NL	NL SCREW TIP 76x3,6x1250	8,50
55102NL	NL SCREW TIP 76x3,6x1550	10,50
55103NL	NL SCREW TIP 76x3,6x2050	14,00
55202NL	NL EXTENSION 76x3,6x650	4,90
55203NL	NL EXTENSION 76x3,6x900	6,50
55208NL	NL EXTENSION 76x3,6x1400	9,80
55209NL	NL EXTENSION 76x3,6x1900	13,00
55301NL	NL HEX TOP M16	2,70
55303NL	NL ROUND TOP M16	2,90
57103	PRM SCREW TIP 76x5x1550	14,30
57104	PRM SCREW TIP 76x5x2050	19,00
57202	PRM EXTENSION 76x5x750	6,80
57203	PRM EXTENSION 76x5x1000	9,00
57204	PRM EXTENSION 76x5x1500	13,40
57205	PRM EXTENSION 76x5x2000	17,80
57301	PRM HEX TOP M16 76x5	2,60
57500	PRM COUPLING TO 76x5	1,80
58103	PRM SCREW TIP 89x5x1550	17,00
58104	PRM SCREW TIP 89x5x2050	22,20
58202	PRM EXTENSION 89x5x750	7,90
58203	PRM EXTENSION 89x5x1000	10,40
58204	PRM EXTENSION 89x5x1500	15,50
58205	PRM EXTENSION 89x5x2000	20,70
58301	PRM HEX TOP M16 89x5	2,60
58302	PRM ROUND TOP M16 89x5	2,90
58500	PRM COUPLING TO 89x5	1,70
SOLAR SCREW		
493	SCREW NUT-3 M16 76x3x1250	7,00
494	SCREW NUT-3 M16 76x3x1550	9,00

2.4 Base materials / Ancillary materials

Product does not contain Substance of Very High Concern.

Average products content declaration

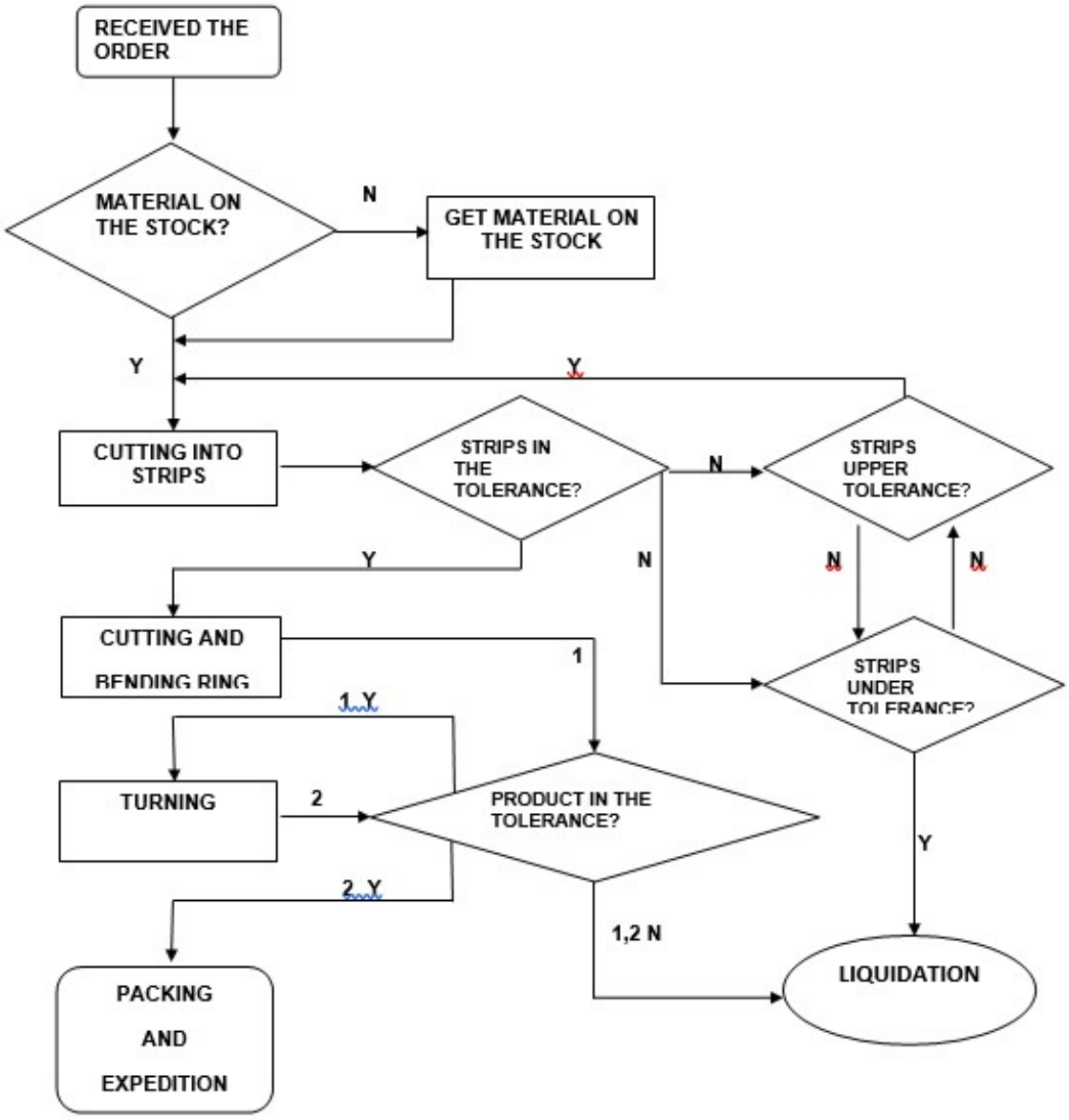
Materials / components	Substances	%
Steel	-	96,5 %
Zinc coat	-	3,5 %

UN CPC Code: 41287, 42190

3. LCA CALCULATION INFORMATION

FUNCTIONAL UNIT / DECLARED UNIT	**Covering 1 kg of each of products** *to find out the results of the individual products, the values in chapt. 4 must be multiplied by their weight* *the results for individual products can be provided by the producer*
SYSTEM BOUNDARIES	Cradle To Gate
REFERENCE SERVICE LIFE (RSL)	*According to the service life of the building / part of building*
CUT-OFF RULES	1% of primary energy and total mass input of the unit process <5% of energy usage and mass for neglected input flows per stage
ALLOCATIONS	Mass allocation of production has been applied for the input materials and energies
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Scope includes manufacture in Czech Republic in 2020
ELECTRICITY PROCESS USED	The gross electricity generation mix of the Czech Republic in 2020 was used
TRANSPORT SCENARIOS	Specific data for transport of raw materials and internal transport were used for calculation of A2 phase. Transport of waste in A3 considers 50 km distance to a hypothetical disposal site. The 16-32 t load EURO5 trucks are considered as vehicles for transport of materials and wastes respectively
DATABASE(S) AND LCA SOFTWARE USED:	Ecoinvent 3.8 database installed in SimaPro 9.3
ADDITIONAL INFORMATION	Further details regarding the certified product are available at the company website https://www.bayo-s.com/
SYSTEM DIAGRAM:	

FLOW CHART 307/B796-FM 6273



Description of the system boundary (X = included in the LCA, MND = Module Not Declared)

Product stage			**Construction stage**		**Use stage**							**End of life stage**				**Benefits and loads beyond the system boundary**
Raw material supply	Transport	Manufacturing	Transport	Construction-Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-recovery
A1	**A 2**	**A 3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	**X**	**X**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
X – module declared ***ND – module not declared***																

4. LCA RESULTS

4.1 Environmental impacts

Impact category	Unit	Total A1 – A3	A1	A2	A3
Abiotic depletion	kg Sb eq	**6.88E-05**	6.81E-05	5.25E-07	1.36E-07
Abiotic depletion (fossil fuels)	MJ	**3.56E+01**	3.01E+01	5.31E+00	1.48E-01
Global warming (GWP100a)	kg CO2 eq	**3.51E+00**	2.94E+00	3.77E-01	1.90E-01
Ozone layer depletion (ODP)	kg CFC-11 eq	**2.31E-07**	1.64E-07	6.62E-08	8.84E-10
Photochemical oxidation	kg C2H4 eq	**1.18E-03**	1.00E-03	1.65E-04	7.78E-06
Acidification	kg SO2 eq	**1.35E-02**	1.12E-02	2.22E-03	8.09E-05
Eutrophication	kg PO4 eq	**6.88E-05**	6.81E-05	5.25E-07	1.36E-07

4.2 Resource use

Parameter	Unit	Total A1 – A3	A1	A2	A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value	**3.18E+00**	2.96E+00	4.60E-02	1.72E-01
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	**3.18E+00**	2.96E+00	4.60E-02	1.72E-01
Use of non- renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value	**4.37E+01**	3.78E+01	5.71E+00	1.95E-01
Use of non- renewable primary energy resources used as raw materials	MJ, net calorific value	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
Total use of non- renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	**4.37E+01**	3.78E+01	5.71E+00	1.95E-01
Use of secondary material	kg	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ, net calorific value	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ, net calorific value	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	**1.16E+00**	1.04E+00	1.16E-02	1.05E-01

4.3 Other environmental information describing waste categories and output flows

Waste categories

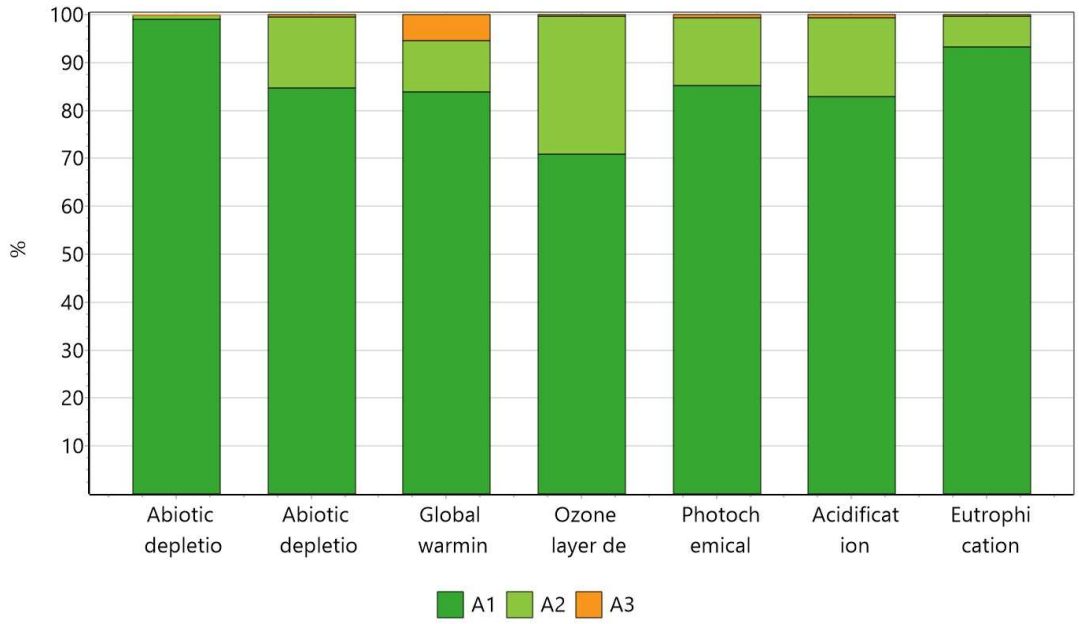
Parameter	Unit	Total A1 – A3	A1	A2	A3
Hazardous waste	kg	7.26E-04	3.60E-04	1.51E-05	3.51E-04
Non-hazardous waste disposed	kg	1.33E+00	1.16E+00	1.02E-01	6.96E-02
Radioactive waste disposed/stored	kg	1.73E-04	1.35E-04	3.71E-05	7.84E-07

Output flows

Waste type	Unit	Total A1 – A3	A1	A2	A3
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ per energy carrier	0.00E+00	0.00E+00	0.00E+00	0.00E+00

5. LCA: INTERPRETATION

The following diagram the following graph shows the share of each phase (A1, A2, A3) in the results in all impact categories:



Method: EPD 15804+A1 V3.07 / EU25 / Characterization
Analyzing 1 p 'BAYO.S';

The comparison shows that phase A1 has the main share in the results of all impact categories. Phase A1 is then of relatively little importance. This is due to the fact that the production of products takes place only by the treatment of intermediate products (steel roles and plates).

6. REFERENCES

1. EN 15804:2012+A1:2013 Sustainability of construction works – Environmental product declaration – Core rules of the product category of construction products
2. ISO 14020: 2000 Environmental labels and declarations - General principles
3. ISO 14025:2006 Environmental labels and declarations – Type III Environmental Declarations – Principles and procedures
4. ISO 14040:2006 Environmental management – Life Cycle Assessment – Principles and framework
5. ISO 14044:2006 Environmental management – Life Cycle Assessment – Requirements and guidelines