Type III Environmental Product Declaration No. 483/2023

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Seamless steel pipes

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Basic information

This declaration is the Type III Environmental Product Declaration (EPD) based on EN 15804+A2 and verified according to ISO 14025 by an external auditor. It contains the information on the impacts of the declared construction materials on the environment and their aspects verified by the independent body according to ISO 14025. Basically, comparison or evaluation of EPD data is possible only if all the compared data were created according to EN 15804+A2.

Life cycle analysis (LCA): A1-A3, C1-C4and D modules in accordance with EN 15804
(Cradle-to-Gate with options)

Product standard: EN 10210-1, 2 and Table 2

The year of preparing the EPD: 2023

Service Life: Depending on the application scenario

PCR: ITB-PCR A

Declared unit: 1 ton

Reasons for performing LCA: B2B

Representativeness: Poland, 2023

MANUFACTURER

Fig. 1. The view of Alchemia S.A. Oddział Walcownia Rur Batory in Chorzów

Alchemia S.A. is a Capital Group operating in the sector of niche steel products: seamless pipes and tubes, forged products, forged-rolled and rolled products. The company debuted on the stock exchange 19 May, 1998. Alchemia SA was established in 2005 thanks to the takeover of Huta Batory's assets. In the following years, Alchemia SA grew thanks to the acquisition of Batory Research Laboratory and Batory Serwis in 2006. In 2007, they were joined by Huta Bankowa and Kuźnia Batory. In 2011, there were next milestones in the history of the Group, needed to become independent from the whims of the market - purchase of the Rurexpol pipe manufacturer in Częstochowa and Walcownia Rur Andrzej in Zawadzkie. In 2013, Huta Batory, Rurexpol and Walcownia Rur Andrzej entered the structures of Alchemia S.A as Plants and later as Branches. The name Huta Batory was changed to the Walcownia Rur Batory Branch in Chorzów (Poland).

Walcownia Rur Batory (WBR) is one of Europe's major producers of top quality large diameter seamless steel pipes (range: from 219 mm to 508 mm, covered bt this EPD). The largest Clients are from the energy, chemistry as well as oil and gas sectors. The steelworks has supplied pipes for the construction of power plants in Madagascar and Tusimice in the Czech Republic, energy facilities in India as well as solar power plants in Spain. Walcownia Rur Batory is one of few mills in the world manufacturing special purpose steel in P91 type used in energy sector. Producer uses a complex technology of rolling in a few month long production cycle in order to comply with the most stringent requirements. Before the final product is allowed on the market, it has to undergo thorough laboratory tests that exclude the possibility of potential faults. 70% of the products is exported. Thanks to VAD (an appliance used in vacuum degassing of steel) Walcownia Rur Batory is the producer of over 600 kinds of high quality steel, which are used in energy, machining, tool and defense industry. Walcownia Rur Batory specializes in hot and cold work tool steel, spring steels, heat-resistant steels, stainless steels, high speed steels, bearing steels.

Walcownia Rur Andrzej (WRA) is a manufacturer of hot-rolled seamless steel pipes (covered by this EPD) with small diameters from 21.3 mm to 114.3mm and thicknesses from 2.0 to 10mm. They are used in the construction, energy, chemical, petrochemical, machine building, shipbuilding and gas industries. WRA Laboratories offers analysis of the chemical composition of steels and cast irons, metallographic testing, and mechanical and technological testing. The laboratory holds numerous recognitions, including those of the Polish Register of Shipping, Lloyd's Register of Shipping, and the Office of Technical Inspection.

PRODUCTS DESCRIPTION

Seamless steel pipes and tubes (WRB) with diameters ranging from 219 mm to 508 mm are produced in hot pilger rolling process – Fig. 2. Characteristic of the products, including types of tubes and their dimensions is presented in Table 1. Information regarding materials used for the production process are listed in Table 1. Structural tubes are used in such structures as: buildings, bridges, breezeways, roofs, stadiums, steel constructions, as well as in the machining sector, e.g. as machined elements, including hydraulic cylinders for the mining industry and hydraulic slave servo. The structural tubes conform to PN-EN 10210-1,2 standards which is marked by CE. In the offer are : tubes for shipbuilding, tubes for support structures, pipes for air and gas system, pipes for water supply and central heating system, construction pipes.

Fig. 2. The view of seamless steel tube produced by Alchemia S.A. Oddział Walcownia Rur Batory in Chorzów

Table 1 Pipe dimensions from Oddział Walcownia Rur Batory in Chorzów

Outside diameter (mm)	Wall thickness (mm)			
	Wired, marine	Structural, of specific use	Tubes for machining	Boiler TC1 (I°)
219.1	7.1 ÷ 36	7.1 ÷ 36	10.0 ÷ 40	7.1 ÷ 40
244.5	7.1 ÷ 40	7.1 ÷ 40	10.0 ÷ 40	7.1 ÷ 40
273	7.1 ÷ 40	7.1 ÷ 40	10.0 ÷ 65	7.1 ÷ 40
298.5	7.1 ÷ 40	7.1 ÷ 40	10.0 ÷ 65	7.1 ÷ 40
323.9	7.1 ÷ 45	7.1 ÷ 45	10.0 ÷ 65	7.1 ÷ 40
355.6	8.0 ÷ 45	8.0 ÷ 45	10.0 ÷ 60	7.1 ÷ 45
368.0	10.0 ÷ 40	10.0 ÷ 40	10.0 ÷ 40	8.0 ÷ 45
406.4	8.8 ÷ 45	8.8 ÷ 45	11.0 ÷ 60	10.0 ÷ 40
419.0	11.0 ÷ 40	11.0 ÷ 40	11.0 ÷ 40	11.0 ÷ 40
457	9.5 ÷ 45	10.0 ÷ 45	12.5 ÷ 60	10.0 ÷ 45
508	9.5 ÷ 45	11.0 ÷ 45	14.2 ÷ 60	11.0 ÷ 45

Characteristic of the products, including types of tubes and their dimensions produced in WRA plant is presented in Table 2.

Table 2 Pipe dimensions from Oddział Walcowania Rur Andrzej in Zawadzkie

Outside diameter (mm)	**21.3 – 114.3**
Wall thickness (mm)	2.0 – 10.0
Lengths (m)	4.0 – 14.0

Product's applications types are:

- line pipes for construction of gas, oil and fuel transmission grids (flammable media); water, steam, hot water, compressed air pipelines; industrial installations in steel mills, refineries, power plants, combined heat and power plants and large industrial plants;
- tubes for shipbuilding;
- structural tubes for light constructions; industrial, commercial and sports halls, airports, stadiums, wind farms, offshore structures; in construction of roads, bridges, footbridges, e.g. as load-bearing elements, culverts under roads, poles of tram traction, road lighting poles; thick-walled construction pipes are used for the manufacture of machine elements such as sleeves, rings, shafts and axles, e.g. in the railways, engineering industry and also for

hardening and thermal improvement of servo (also telescopic), housings, cylinders for the mining industry;
- pipes for production of rolls, drums, e.g. in the paper (printing rolls) and automotive (drums for dynamometers) industries;
- boiler tubes (unalloyed and alloyed) for the use in the energy industry, e.g. for boiler elements (walls, collectors), superheaters and power pipelines;
- pipes for operation at elevated and reduced temperatures as elements of pipelines and operating devices;
- casing pipes for the oil and gas industry as well as water extraction (deep wells);
- pipes for transportation of filling and brine in coal and salt mines.

The product types are shown in Table 3.

Table 3 Description of steel grades used for production of tubes

Type of pipe	Type of steel	Regulation
Structural tubes for chip forming	10, 20, 35, 45, 55 18G2A R35, R45, R55	BN-85/0648-83
Casing pipe with conical calyx and smooth end	R55, R65	BN-75/0648-60
Boiler tubes	K10, K18, 16M 19G2, 19G2FA 19G2MFA, 15HM, 10H2M, 13HMF St35.8, St45.8, 15Mo3 13CrMo44,10CrMo9 10, 14MoV6 3 T12, T22 13CrMo4-5 , 14MoV6-3 10CrMo9-10, 15NiCuMoNb5-6-4 X10CrMoVNb9-1 H9AMFNB P91, P1, P11, P22, P5, P12 P235GH, P265GH, 16Mo3 15128.5	PN-H-74252 BN-84/0648-81 PN-H-74252 DIN 17175 DIN 17175 ASTM A213 PN-EN 10216-2 PN-EN 10216-2 ZN-HB-001 ASTM A335 PN-EN 10216-2 ČSN 415128
Structural tubes and line pipes	R, R35, R45, R55, R65 L245GA, L290GA, L360GA L245NB, L290NB, L360NB, L415NB 18G2A 10, 20, 35, 45, 10, 20A, 35, 45A 18G2A, 38HA 15H, 20H, 30H, 38HA, 40H 32HA St37.0, St44.0, St52.0 A106B, A106B sel, A , B A, B, C A192 A1, C 1, 6 S195T PN-EN 39 PN-EN 10224 1, 6 TUE 220A E235,E275,E275K2,E355,E355K2,E420J2,34CrMo4,42CrMo4 C45E S235JRH, S275J0H, S275J2H, S355J0H, S355J2H, S275NH, S275NLH, S355NH, S355NLH, S355K2H, S355NH, S420NH, S420NLH,S460NH,S460NLH B(L245), X42(L290), X46 (L290), X52(L360), X56 (L390), X60 (L415), X65 (L450) B(L245), X42(L290), X46(L320), X52(L360), X56(L390), X60(L415), X65(L450)	PN-80/H-74219 PN-EN 10208-1 PN-EN 10208-2 BN-86/0648-77 PN-H-74248 DIN 1629 ASTM A106 ASTM A53 ASTM A 106 ASTM A192 ASTM A210 ASTM A334 EN 10255 S235GT L235,L275,L355 ASTM A333 NFA49-112 - 87 EN10297-1 PN-EN 10210 API-5L PSL1 EN ISO 3183 PSL1

	BN(L245N), X42N(L290N), X46N(L320N), X52N(L360N), X56N(L390N)	API-5L PSL2
	BN(L245N), X42N(L290N), X46N(L320N), X52N(L360N), X56N(L390N), X60N(L415N) BNE(L245NE), X42NE(L290NE), X52NE(L360NE), X60NE(L415NE)	EN ISO 3183 PSL2
	P195TR1, P235TR1, P265TR1 P195TR2, P235TR2, P265TR2 P275NL1, P275NL2, P355N, P355NH P355NL1, P355NL2, P460N, P460NH, P460NL1, P460NL2 P215NL, P265NL	PN-EN 10216-1 PN-EN 10216-3 PN-EN 10216-4
Plain-end coupling stock	H-40 , J55 K55 , N80, 20G2AV	ISO 11960 API - 5CT

All additional technical information about the product is available on the manufacturer's website.

LIFE CYCLE ASSESSMENT (LCA) – general rules applied

Unit

The declared unit is 1 ton of product of Seamless steel pipes (produced in WRB and WRA plants, Poland).

System boundary

Modules A1-A3, C1-C4 and D are taken into consideration in the LCA. The declaration is therefore from "cradle to gate – with options". Energy and water consumption, emissions as well as information on generated wastes were inventoried and were included in the calculation. It can be assumed that the total sum of omitted processes does not exceed 5% of all impact categories. In accordance with EN 15804+A2, machines and facilities (capital goods) required for the production as well as transportation of employees were not included in LCA.

Allocation

The allocation rules used for this EPD are based on general ITB PCR A (v1.6. 2023). Production of seamless steel pipes and tubes is a line process in one factory of Alchemia S.A. Oddział Walcownia Rur Batory in Chorzów and Oddział Walcownia Rur Andrzej in Zawadzkie. Allocation was done on product mass basis. The environmental impacts calculated and presented in EPD from two plants are a weighted average based. All impacts from raw materials extraction are allocated in A1 module of the EPD (including materials and energy consumption, transportation, emissions and wastes resulting from the production of steel ingots). 99.8% of impacts from line production of Alchemia S.A. plants were inventoried and allocated to steel pipes and tubes production. Municipal waste and waste water of whole factory were allocated to module A3. Energy supply was inventoried for whole production process. Emissions in the factory are measured and were allocated to module A3.

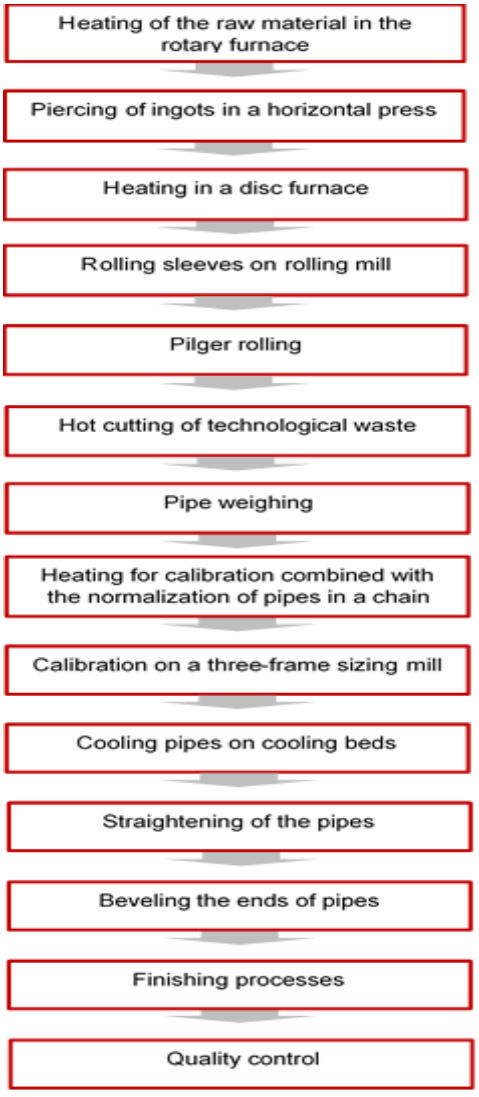

Fig. 3. A production scheme of seamless steel pipes and tubes in Alchemia S.A.

System limits

The life cycle analysis (LCA) of the declared products covers: product stage – modules A1-A3, end of life – modules C1-C4 and benefits and loads beyond the system boundary – module D (cradle-to-gate with options) in accordance with EN 15804+A2 and ITB PCR A.All raw materials submitted for the formulations and production data were taken into consideration. In the assessment, all available data from production have been considered, i.e. all raw materials/elements used as per formulation process, utilized thermal energy for heating, and electric power consumption. Thus, material and energy flows contributing less than 1 % of mass or energy have been considered. It can be assumed that the total sum of neglected processes does not exceed 1 % of energy usage and mass per modules A or D. Machines and facilities required during production are neglected.

Modules A1 and A2: *Raw materials supply and transport*

Main utilized steel ingots came from Alchemia S.A. Stalownia Batory while the other originate from external suppliers. The chemical components such as lubricant, lacquer, paints and ancillary items come from local Polish manufacturers. Data on transport of the different products to the manufacturing plants is collected and modelled for factory by assessor. Means of transport include trucks and Polish and European fuel averages are applied. More detailed information is available in the respective manufacturer's documentation (e.g. product data sheets).

Module A3: *Production*

The production/formulation Seamless steel pipes is done by Oddział Walcownia Rur Batory in Chorzów and Oddział Walcowania Rur Andrzej in Zawadzkie. Seamless steel pipes and tubes are produced in continuous process using hot pilger rolling method (see Figure 3 and 4). In this method the raw material is heated in the rotary furnace and then subjected to piercing in a horizontal press (after earlier removal of scale). Such obtained rolling sleeve are placed on rolling mill followed by pilgrim mill in order to obtain a tube or a pipe with a desirable diameter. Afterwards the tube or the pipe undergoes shaping treatments such as heating for calibration combined with the normalization in a chain furnace, calibration on a three-frame sizing mill, cooling on cooling beds, straightening on a straightening machine, visual inspection and marking on the first inspection, waste cutting and finishing treatments such as hydro test, beveling the ends of pipes, control of dimensions and surface condition.

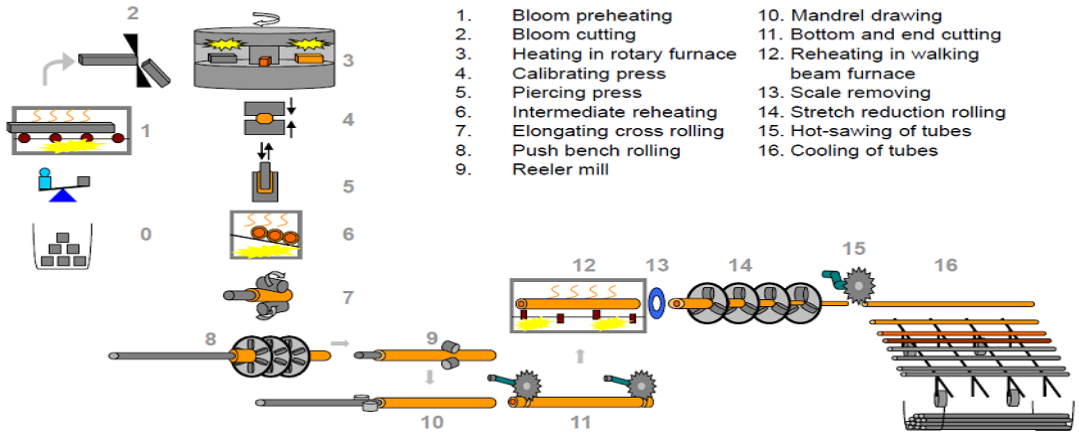

Fig.4. Manufacturing process scheme

Modules *C and D: End-of-life (EOL)*

For the end-of-life of the pipes it is assumed that the product is dismantled, and the totality of the components are collected. Two per cent of the materials are mixed with the dismantling waste and ninety-eight per cent is separated and sent to recycling (new steel production). Benefits and loads beyond the system boundary were calculated using a net scrap formulation proposed by World Steel

Association in life cycle inventory methodology report (2017), where the net scrap is determined as a difference between the amount of steel recycled at end-of-life and the scrap input from previous product life cycle.

Data collection period

The data for manufacture of the declared products refer to period between 01.01.2022 – 31.12.2022 (1 year). The life cycle assessments were prepared for Poland and Europe as reference area.

Data quality

The data selected for LCA originate from ITB-LCI questionnaires completed by Alchemia S.A. (2 manufacturing plants) and verified via data audit. No data collected is older than five years and no generic datasets used are older than ten years. The representativeness, completeness, reliability, and consistency is judged as good. The bactonround data for the processes come from the following resources database Ecoinvent v.3.9.1 (ingots, billets, natural gas, oil, grease, phophatherm, steel strip, wires, welding electrodes, welding wire, varnish, solvent, paint, gases, wood primers). Specific (LCI) data quality analysis was a part of the input data verification.

Assumptions and estimates

The impacts of the representative products were aggregated using weighted average.

Calculation rules

LCA was performed using ITB-LCA tool developed in accordance with EN15804+A2. Emission of greenhouse gases was calculated using the IPCC 2013 GWP method with a 100-year horizon. Emission of acidifying substances, Emission of substances to water contributing to oxygen depletion, Emission of gases that contribute to the creation of ground-level ozone, Abiotic depletion, and ozone depletion emissions where all calculated with the CML-IA baseline method

Additional information

Polish electricity (Eocinvent v.3.9.1 supplemented by actual national Kobize data) emission factor used is 0.704 kg CO_2/kWh. As a general rule, no particular environmental or health protection measures other than those specified by law are necessary.

Health aspects

Some member states require special documentation on VOC emissions into indoor air for specific areas of application. This documentation, as well as documentation for voluntary VOC labelling, has to be provided by Alchemia S.A. separately. Does not contain CFC, HCFC, does not emit TVOC, MDI, ammonia, formaldehyde; does not affect the ozone layer.

LIFE CYCLE ASSESSMENT (LCA) – Results

Declared unit

The declaration refers to declared unit (DU) – 1 ton of Seamless steel pipes produced in Poland. The following life cycle modules (Table 4) were included in the analysis. The following tables 5-8 show the environmental impacts of the life cycle of selected modules (A1-A3, C1-C4+D).

Table 4 System boundaries for the environmental characteristic of the product.

Environmental assessment information (MD – Module Declared, MND – Module Not Declared, INA – Indicator Not Assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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**
MD	**MD**	**MD**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MD**	**MND**	**MD**	**MD**	**MD**	**MD**	**MD**

Table 5 Life cycle assessment (LCA) results of the product – environmental impacts (DU: 1 ton)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential	eq. ton CO_2	1.73E+03	1.14E+01	7.08E+02	2.45E+03	2.00E+01	1.67E+01	3.34E+00	1.06E-01	-1.86E+03
Greenhouse potential - fossil	eq. ton CO_2	1.73E+03	1.13E+01	7.02E+02	2.44E+03	2.00E+01	1.66E+01	3.34E+00	1.05E-01	-1.88E+03
Greenhouse potential - biogenic	eq. ton CO_2	-3.45E+00	3.87E-02	6.00E+00	2.59E+00	1.80E-02	5.68E-02	2.86E-03	2.68E-04	-2.08E+01
Global warming potential - land use and land use change	eq. ton CO_2	1.11E+00	4.45E-03	7.94E-02	1.20E+00	1.98E-03	6.52E-03	3.30E-04	9.94E-05	-2.98E-01
Stratospheric ozone depletion potential	eq. ton CFC 11	7.64E-05	2.62E-06	2.88E-05	1.08E-04	4.25E-06	3.85E-06	7.08E-07	4.26E-08	-7.30E-05
Soil and water acidification potential	eq. mol H+	7.41E+00	4.60E-02	3.25E+00	1.07E+01	9.99E-02	6.75E-02	1.67E-02	9.90E-04	-7.68E+00
Eutrophication potential - freshwater	eq. ton P	8.79E-01	7.62E-04	5.17E-01	1.40E+00	6.26E-04	1.12E-03	1.03E-04	9.81E-06	-8.01E-01
Eutrophication potential - seawater	eq. ton N	1.59E+00	1.39E-02	5.37E-01	2.14E+00	3.89E-02	2.04E-02	6.48E-03	3.45E-04	-1.68E+00
Eutrophication potential - terrestrial	eq. mol N	1.67E+01	1.51E-01	4.16E+00	2.11E+01	4.26E-01	2.22E-01	7.10E-02	3.77E-03	-1.84E+01
Potential for photochemical ozone synthesis	eq. ton NMVOC	7.46E+00	4.64E-02	1.26E+00	8.77E+00	1.20E-01	6.80E-02	2.01E-02	1.10E-03	-9.39E+00
Potential for depletion of abiotic resources - non-fossil resources	eq. ton Sb	2.43E-02	4.02E-05	5.97E-04	2.50E-02	1.01E-05	5.89E-05	1.73E-06	2.42E-07	-3.58E-02
Abiotic depletion potential - fossil fuels	MJ	1.79E+04	1.68E+02	7.85E+03	2.59E+04	2.67E+02	2.47E+02	4.45E+01	2.89E+00	-1.63E+04
Water deprivation potential	eq. m^3	5.08E+02	7.78E-01	1.10E+02	6.19E+02	7.18E-01	1.14E+00	1.19E-01	9.16E-03	-3.39E+02

Table 6 Life cycle assessment (LCA) results of the product – additional impacts indicators (DU: 1 ton)

Indicator	Unit	A1-A3	C1-C4	D
Particulate matter	disease incidence	INA	INA	INA
Potential human exposure efficiency relative to U235	eg. kBq U235	INA	INA	INA
Potential comparative toxic unit for ecosystems	CTUe	INA	INA	INA
Potential comparative toxic unit for humans (cancer effects)	CTUh	INA	INA	INA
Potential comparative toxic unit for humans (non-cancer effects)	CTUh	INA	INA	INA
Potential soil quality index	dimensionless	INA	INA	INA

Table 7 Life cycle assessment (LCA) results of the the product - the resource use (DU: 1 ton)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1.83E+03	2.41E+00	3.42E+02	2.17E+03	1.53E+00	3.54E+00	2.56E-01	2.51E-02	-1.37E+03
Consumption of renewable primary energy resources used as raw materials	MJ	9.17E+01	0.00E+00	0.00E+00	9.17E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.26E-01
Total consumption of renewable primary energy resources	MJ	1.92E+03	2.41E+00	3.42E+02	2.26E+03	1.53E+00	3.54E+00	2.56E-01	2.51E-02	-1.37E+03
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1.80E+04	1.68E+02	8.48E+03	2.66E+04	2.67E+02	2.47E+02	4.82E+01	2.89E+00	-1.63E+04
Consumption of non-renewable primary energy resources used as raw materials	MJ	5.73E+00	0.00E+00	0.00E+00	5.73E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.86E-03
Total consumption of non-renewable primary energy resources	MJ	1.80E+04	1.68E+02	8.48E+03	2.66E+04	2.67E+02	2.47E+02	4.82E+01	2.89E+00	-1.63E+04
Consumption of secondary materials	ton	4.32E+02	5.64E-02	6.87E-01	4.32E+02	1.05E-01	8.27E-02	1.74E-02	6.07E-04	1.09E+03
Consumption of renew. secondary fuels	MJ	4.24E-01	6.21E-04	2.76E-03	4.27E-01	3.42E-04	9.11E-04	5.70E-05	1.59E-05	-1.73E-01
Consumption of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net consumption of freshwater	m^3	1.20E+01	2.12E-02	4.91E+00	1.70E+01	1.62E-02	3.10E-02	8.00E-04	3.16E-03	-3.92E+00

Table 8 Life cycle assessment (LCA) results of the product – waste categories (DU: 1 ton)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste	ton	1.67E+00	1.89E-01	1.74E+00	3.61E+00	3.58E-01	2.77E-01	1.24E-04	3.07E-03	-6.28E+02
Non-hazardous waste	ton	7.82E+02	3.35E+00	3.24E+01	8.17E+02	2.51E+00	4.92E+00	6.06E-02	4.32E-02	-3.07E+03
Radioactive waste	ton	1.44E+00	1.16E-03	4.67E-03	1.45E+00	3.58E-01	1.70E-03	3.15E-04	1.92E-05	-7.40E-03
Components for re-use	ton	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	ton	1.41E+01	5.21E-04	4.20E+02	4.34E+02	3.56E-04	7.64E-04	9.80E+05	5.78E-06	-1.05E-01
Materials for energy recovery	ton	1.91E-02	4.21E-06	1.36E-02	3.27E-02	5.70E-06	6.18E-06	9.50E-07	6.85E-08	-1.10E-02
Exported Energy	MJ	2.95E+01	1.87E-01	1.56E+01	4.53E+01	1.17E+00	2.74E-01	1.95E-01	0.00E+00	-2.12E+01

Verification

The process of verification of this EPD is in accordance with ISO 14025 and ISO 21930. After verification, this EPD is valid for a 5-year-period. EPD does not have to be recalculated after 5 years, if the underlying data have not changed significantly.

The basis for LCA analysis was EN 15804 and ITB PCR A
Independent verification corresponding to ISO 14025 (sub clause 8.1.3.) ☒ external ☐ internal
External verification of EPD: Halina Prejzner, PhD. Eng. LCI audit and verification: Michał Chwedaczuk, M.Sc. Eng LCA, LCI audit and input data verification: Michał Piasecki, PhD., D.Sc., Eng.

Note 1: The declaration owner has the sole ownership, liability, and responsibility for the for the information provided and contained in EPD. Declarations of construction products may not be comparable if they do not comply with EN 15804+A2. For further information about comparability, see EN 15804+A2 and ISO 14025.

Note 2: Note: ITB is a public Research Organization and Notified Body (EC Reg. no 1488) to the European Commission and to other Member States of the European Union designated for the tasks concerning the assessment of building products' performance. ITB acts as the independent, third-party verification organization (ISO 17025/17065/17029). ITB-EPD program is recognized and registered member of The European Platform - Association of EPD program operators and ITB-EPD declarations are registered and stored in the international ECO-PORTAL.

Normative references

- ITB PCR A General Product Category Rules for Construction Products (2023)
- ISO 14025:2006, Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services
- ISO 14044:2006 Environmental management – Life cycle assessment – Requirements and guidelines
- ISO 15686-1:2011 Buildings and constructed assets – Service life planning – Part 1: General principles and framework
- ISO 15686-8:2008 Buildings and constructed assets – Service life planning – Part 8: Reference service life and service-life estimation
- EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
- ISO 14067:2018 Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
- PN-EN 15942:2012 Sustainability of construction works – Environmental product declarations – Communication format business-to-business
- KOBiZE Wskaźniki emisyjności CO_2, SO_2, NO_x, CO i pyłu całkowitego dla energii elektrycznej, grudzień 2022
- https://ecoinvent.org/

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CERTIFICATE № 483/2023
of TYPE III ENVIRONMENTAL DECLARATION

Products:

Seamless steel pipes and tubes

Manufacturer:

ALCHEMIA S.A.

ul. Aleje Jerozolimskie 92, 00-807 Warszawa, Poland

confirms the correctness of the data included in the development of
Type III Environmental Declaration and accordance with the requirements of the standard

EN 15804+A2

Sustainability of construction works.
Environmental product declarations.
Core rules for the product category of construction products.

This certificate, issued on 31st October 2023 is valid for 5 years
or until amendment of mentioned Environmental Declaration

Head of the Thermal Physic, Acoustics and Environment Department
Agnieszka Winkler-Skalna, PhD

INSTYTUT TECHNIKI BUDOWLANEJ

Deputy Director
for Research and Innovation
Krzysztof Kuczyński, PhD

Warsaw, October 2023