LB MINERALS
lasselsbergergroup

EPD – Environmental Product Declaration

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

Milled Chamotte Mixtures (Chamotte Component)

from **LB MINERALS, s.r.o.**

Programme:	Czech Environmental Information Agency (CENIA) www.cenia.cz, "National programme of environmental labelling" – CZ
Programme operator:	CENIA, Czech Environmental Information Agency, Executive Body of NPEZ Agency
Publication date:	2025-12-04
Valid until:	2030-12-03

GENERAL INFORMATION

Programme information

Accountabilities for PCR, LCA and independent, third-party verification

STANDARD

This EPD is carried out according to ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021.

LIFE CYCLE ASSESSMENT (LCA)

LCA accountability: Dr.-Ing. Hana Brunhoferová,
Ing. et Ing. Tatiana Trecáková, Ph.D., prof. Ing. Vladimír Kočí, Ph.D. MBA,
Šárecká 1962/5, 16000 Prague 6, Czech Republic, www.lcastudio.cz

THIRD-PARTY VERIFICATION

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

EPD verification by individual verifier

Third-party verifier: prof. Ing. Silvia Vilčeková, Ph.D., SILCERT, s.r.o.

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 registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same 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 equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

COMPANY INFORMATION

OWNER OF THE EPD: **LB MINERALS, s.r.o.**

CONTACT: Jitka Erbenová, ESG coordinator, jitka.erbenova@lb-minerals.cz

DESCRIPTION OF THE ORGANISATION:

LB MINERALS, s.r.o. is a leading company operating in the field of mining, treatment and processing of mineral raw materials in the Czech Republic. It is part of the multinational LASSELSBERGER Group GmbH and is one of the most important suppliers of raw materials to customers in Central Europe, employing approximately 720 employees.

LB MINERALS, s.r.o. is mainly engaged in mining, treatment and processing of kaolin, clay, feldspar, aggregates and sands. It also ensures the production and sale of its other products, such as filter diatomaceous earth and cat litter and sorbents and milled feldspar mixtures (hard component) and milled chamotte mixtures (chamotte component). The company currently manages 44 mining areas within the Czech Republic, and thanks to this it can offer its customers a wide range of raw materials usable in many industrial sectors.

LB MINERALS, s.r.o. ensures the supply of raw materials not only to external customers but also for the production of sister companies LASSELSBERGER, s.r.o. (production of floor tiles and wall tiles) and LB Cemix, s.r.o. (production of building materials, dry mortar mixtures).

The company emphasizes the quality of its raw materials, innovation in processing and optimization of the use of natural resources to maintain its market leadership and contribute to sustainable development.

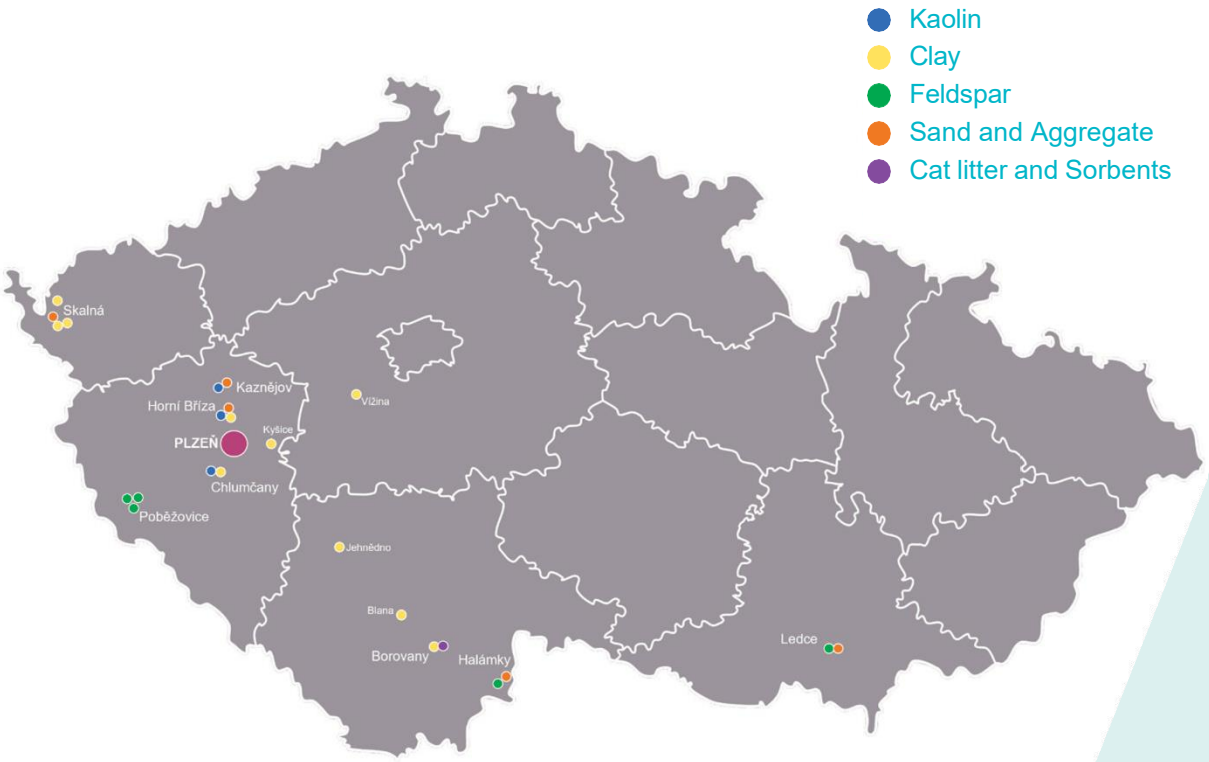
PRODUCT-RELATED OR MANAGEMENT SYSTEM-RELATED CERTIFICATIONS:

ISO 14001:2015, ISO 9001:2015 and ISO 50001:2018.

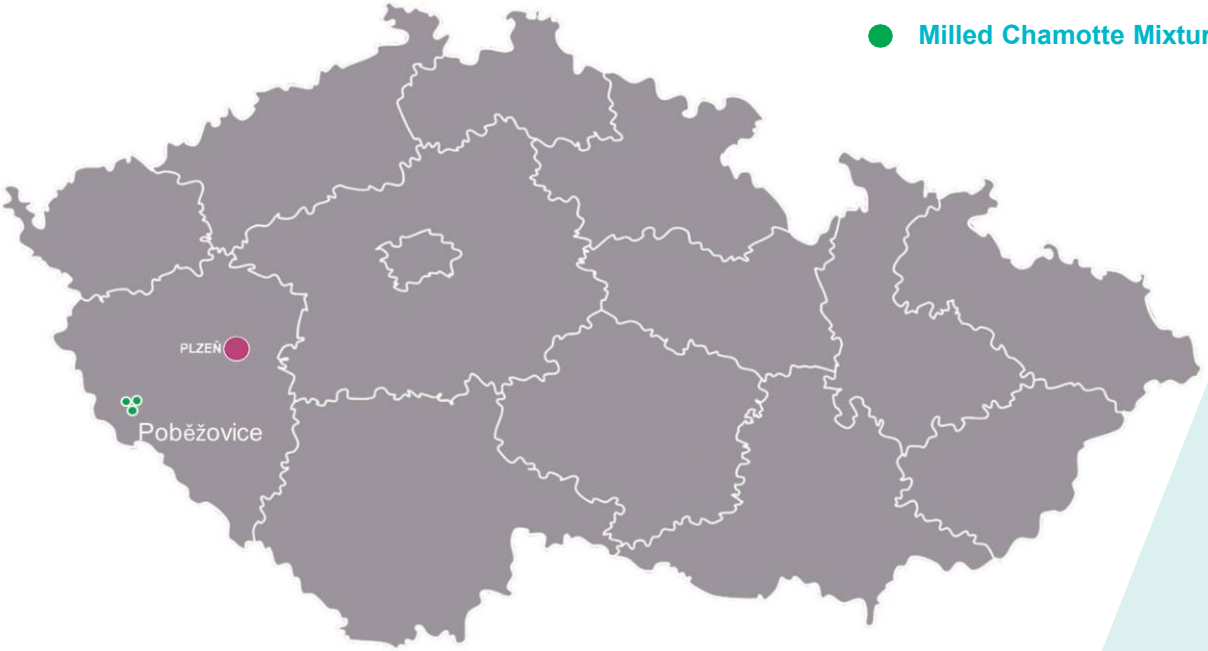
NAME AND LOCATION OF PRODUCTION SITE:

This EPD includes Milled Chamotte Mixtures from the site of LB MINERALS, s.r.o. – Poběžovice plant and Mračnice mine.

Map of LB MINERALS' production:



Map of Milled Chamotte Mixtures' production site:



PRODUCT INFORMATION

PRODUCT NAME: **Milled Chamotte Mixtures**

PRODUCT IDENTIFICATION AND DESCRIPTION:

Milled chamotte mixtures produced by LB MINERALS are part of the recipes of FFC (Fine fireclay) and super FFC sanitary ware materials. Those are mixtures of several chamottes, feldspar and quartz sands, which take advantage of the different thermal properties (dilatation) of the individual components when heated. Some raw materials may be unfired, but they do not change significantly when fired. The basis of the mixtures is burnt clay (chamotte). Several chamotte products with different contents of mullite, quartz and cristobalite are used.

MAIN AREAS OF APPLICATION OF MILLED CHAMOTTE MIXTURES:

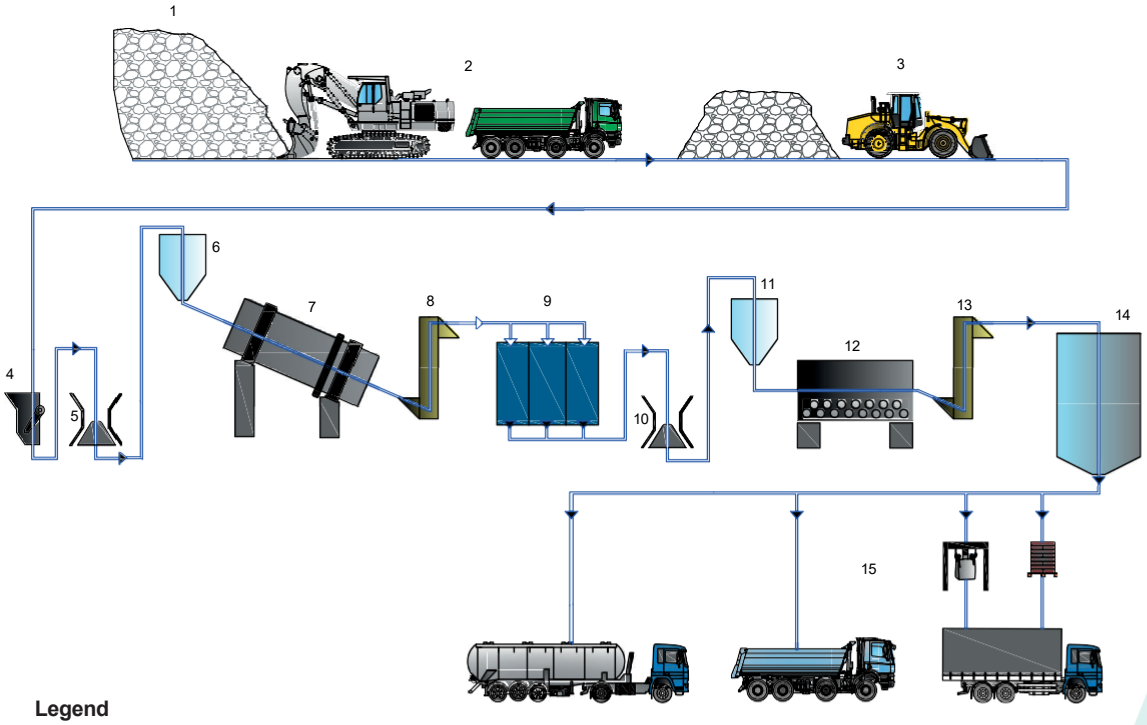
Milled chamotte mixtures for sanitary ware use the properties of chamotte as an additive to ceramic mass in the production of sanitary ware products (washbasins, toilets, etc.) Chamotte is added as a grog (sometimes also referred to as “fine fireclay” or “fireclay grog”) to ceramic clay for several reasons:

- **Reduction of shrinkage:** Chamotte is already burned and therefore does not shrink further. Its addition to the ceramic mass significantly reduces the overall shrinkage of the product during drying and firing. This reduces the risk of cracking and warping.
- **Increased dimensional stability:** Chamotte makes the products more dimensionally stable and holds their shape better even at high temperatures in the furnace. This is crucial for the production of large and complex ceramic parts.
- **Improved thermal shock resistance:** Although sanitary ware is not primarily intended for extreme temperatures like chamotte fireplace linings, chamotte can still contribute to better resistance to temperature changes during the manufacturing process.
- **Mechanical strength:** Chamotte forms a “skeleton” in the ceramic body, which contributes to its overall strength and durability.

Milled chamotte mixtures ensure improvement of the processing properties of the ceramic mass and dimensional stability of the final products during production and firing.

Illustration of Milled Chamotte Mixtures:

Production diagram:



Legend

1 ..... MINING
2 ..... TRANSPORT
3 ..... INPUT TO PLANT
4 ..... JAW CRUSHER
5 ..... IMPACT CRUSHER
6 ..... STORAGE
7 ..... DRYER
8 ..... CONVEYOR
9 ..... HOMOGENIZATION
10 ..... IMPACT CRUSHER
11 ..... STORAGE
12 ..... BALL MILL
13 ..... CONVEYOR
14 ..... STORAGE
15 ..... DISPATCH

NACE code for Milled Chamotte Mixtures: 08.12

UN CPC code: 15400

Geographical scope: Czech Republic

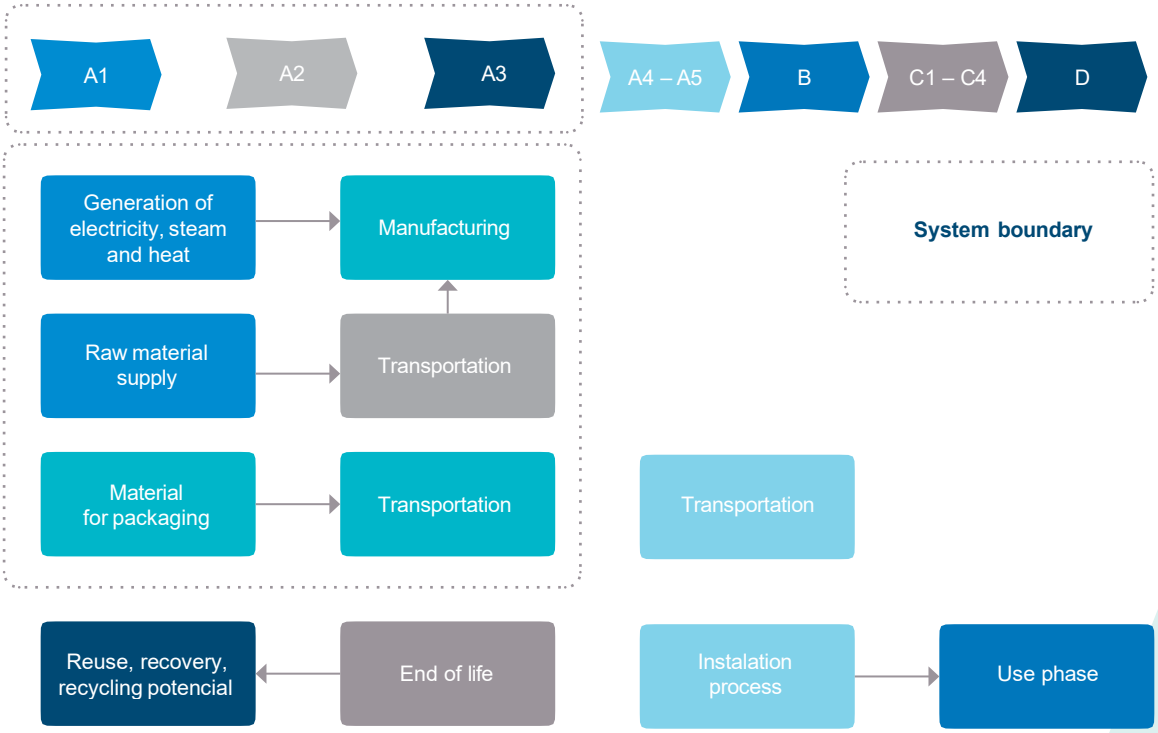
LCA information

Functional unit / declared unit: 1 ton of product

Time representativeness: 2023

Database(s) and LCA software used: LCA for Experts (Sphera), Sphera database and ecoinvent database

System diagram:



Description of system boundaries:

Cradle to gate (A1–A3).

Module A1 covers the production of materials and components needed for extraction of the product and production of other input materials.
Module A2 covers the transport of materials and components into the site of production LB MINERALS. Generic database processes with site-specific parameters for distance were used.
Module A3 covers on-site operated processes dealing with the product production.

Cut off rules:

The cut-off criterion was chosen based on the used PCR. According to the used PCR, more than 99 % of flows were included.

Electricity mix:

Generation of electricity consumed within the production was based on the Czech residual electricity mix.

Allocations:

Specific inputs and outputs were measured or calculated for specific product. The allocation of common inputs (thermal energy, electricity) and outputs (waste, emissions) is based on the general allocation rule what represents the proportion of production of every specific product in overall production expressed in tons.

Characterisation factors:

Characterisation factors are based on Environmental Footprint 3.1. (EF 3.1).

Declared modules:

A1 - A3 PRODUCT STAGE	Raw material supply	A1	X
	Transport	A2	X
	Manufacturing	A3	X
A4 - A5 CONSTRUCTION PROCESS STAGE	Transport from the gate to the site	A4	ND
	Construction installation	A5	ND
B1 - B7 USE STAGE	Use	B1	ND
	Maintenance	B2	ND
	Repair	B3	ND
	Replacement	B4	ND
	Refurbishment	B5	ND
	Operational energy use	B6	ND
	Operational water use	B7	ND
C1 - C4 END OF LIFE STAGE	Deconstruction, demolition	C1	ND
	Transport	C2	ND
	Waste processing	C3	ND
	Disposal	C4	ND
D BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES	Reuse, recovery, recycling potential	D	ND

Processes contributing with more than 10% to the GWP total results of cradle-to-gate:

PROCESS	SOURCE TYPE	SOURCE	REFERENCE YEAR	DATA CATEGORY	SHARE OF PRIMARY DATA OF GWP TOTAL RESULTS (%)
Fireclay production	Database	Sphera	2023	Primary data	78,30
Clay powder production	Database	Sphera	2023	Primary data	14,66

Declaration of sources and share of primary data:

PROCESS	SOURCE TYPE	SOURCE	REFERENCE YEAR	DATA CATEGORY	SHARE OF PRIMARY DATA OF GWP TOTAL RESULTS (%)
Electricity consumption	Database	Sphera	2023	Primary data	3,42
Transport	Database	Sphera	2023	Primary data	2,67

CONTENT DECLARATION

Product

CHAMOTTE MIXTURES	TYPICAL VALUES (%)	ENVIRONMENTAL/ HAZARDOUS PROPERTIES
SiO_2	66 - 72	no environmental or hazardous properties
Al_2O_3	23 - 29	
TiO_2	0,9 -1,3	
Fe_2O_3	0,7 -1,1	
CaO	0,2 - 0,4	
MgO	0,3 -0,4	
Na_2O	0,1 -0,2	
K_2O	0,8 - 1,3	
mullit	25 - 35	
quartz	30 -45	
amorphous	20 - 30	

Packaging

Distribution packaging: No packaging was used during distribution.
Consumer packaging: No packaging was used during customer delivery.

Recycled material

Provenience of recycled materials (pre-consumer or post-consumer) in the product: No recycled materials were used.

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

MANDATORY IMPACT CATEGORY INDICATORS ACCORDING TO EN 15804

PARAMETER		UNIT	A1-A3
Global warming potential (GWP)	Fossil	kg CO_2 eq.	5,80E+02
	Biogenic	kg CO_2 eq.	7,02E+00
	Land use and land transformation	kg CO_2 eq.	3,63E-01
	TOTAL	kg CO_2 eq.	5,87E+02
Ozone layer depletion (ODP)		kg CFC 11 eq.	1,51E-05
Acidification potential (AP)		mol H+ eq.	1,54E+00
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	9,24E-02
	Aquatic marine	kg N eq.	6,19E-01
	Aquatic terrestrial	mol N eq.	6,59E+00
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	2,19E+00
Abiotic depletion potential (ADP)*	Metals and minerals	kg Sb eq.	5,18E-04
	Fossil resources	MJ, net calorific value	7,67E+03
Water deprivation potential (WDP)*		m^3 world eq. deprived	3,41E+01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

RESOURCE USE INDICATORS

PARAMETER		UNIT	A1-A3
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	3,15E+02
	Used as raw materials	MJ, net calorific value	0,00E+00
	TOTAL	MJ, net calorific value	3,15E+02
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	7,67E+03
	Used as raw materials	MJ, net calorific value	0,00E+00
	TOTAL	MJ, net calorific value	7,67E+03
Secondary material (optional)		kg	0,00E+00
Renewable secondary fuels (optional)		MJ, net calorific value	0,00E+00
Non-renewable secondary fuels (optional)		MJ, net calorific value	0,00E+00
Net use of fresh water (optional)		m^3	9,26E-01

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

WASTE INDICATORS

PARAMETER	UNIT	A1-A3
Hazardous waste disposed	kg	5,17E-08
Non-hazardous waste disposed	kg	2,42E-01
Radioactive waste disposed	kg	7,14E-02

OUTPUT FLOW INDICATORS

PARAMETER	UNIT	A1-A3
Components for reuse	kg	0,00E+00
Material for recycling	kg	9,23E-04
Materials for energy recovery	kg	0,00E+00
Exported energy, electricity	MJ per energy carrier	0,00E+00
Exported energy, thermal	MJ per energy carrier	0,00E+00

ADDITIONAL ENVIRONMENTAL INFORMATION

- LB MINERALS, s.r.o. is certified according to ISO 14 001 and 50 001.
- All non-conforming or otherwise non-compliant products are returned to the production process – maximum use of the raw material.

REFERENCES

ISO 14020:2000 Environmental labels and declarations — General principles, 2000-09

ISO 14025: EN ISO 14025:2006-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework, 2006-07

ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines, 2006-07

EN 15804:2012 +A2:2019/AC:2021 European Committee for Standardization: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products, 2021.

Sphera: software LCA for Expert. 2024, Sphera solutions, www.sphera.com

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