



ČESKÉ LUPKOVÉ ZÁVODY a.s.
NOVÉ STRAŠECÍ

HISTORY



Mining of raw clay and production of chamotte in the area of Nové Strašecí has a tradition dating back more than 100 years. The clays that are mined in this area are of a Carboniferous origin (360–290 million years). They are very firm and hard with low shrinkage, significant bulk density and relatively regular water absorption. Our quarry is located in the centre of the Kladno-Rakovník basin, which has the largest clay reserves in Central Europe.

The company **České lupkové závody** was established in 1958, in the seventies it employed more than 2,000 people and produced up to 190,000 tons of chamotte in two rotary kilns per year. At present, the main production program is focused on the **firing and granulometric processing of refractory clays**—chamotte and kaolin. Other products include metakaolin and geopolymers.



THE PRODUCTION PROCESS

Production of chamotte and kaolin is performed using a rotary kiln at a temperature of about 1,350 °C. The main advantage of this production method is an even burning throughout the batch of raw materials. This provides the specific properties i.e. **low loss on ignition, high bulk density, and low water absorption.**

These parameters, together with high refractoriness, allow **our materials to be used in a wide range of industries** such as the production of refractory bricks, blocks and tiles, castables, foundry moulds, ceramics mixtures and materials for the production of sanitary ceramics. Fired kaolin materials are used in applications that require very pure materials such as the production of sanitary ceramics or electro porcelain. When they are finely ground they can also be used in glazes. The product range also includes burnt cordierite.



An important part of the processing of burnt material is its subsequent sorting and grinding. Apart from the normal standard sorting of coarse and fine grain sizes, České lupkové závody, a.s. also offers highly accurate sorting with assured oversized and undersized content as well as guaranteed internal composition. We also have a line for fine grinding and sorting, which allows the production of products with a grain size from 10 to 100 microns. To protect the products from iron contamination the mill is lined with a high alumina lining and a friction balls made from high alumina material are also used.

Granulation	Granulometry—typical fraction (mm)
Coarse	5–18; 15–30; 0–10; 0–20; 0–30; 0–50; 0–60
Fine	0–1; 1–3; 3–6; and combinations of these fractions
Precise	0,1–0,5; 0,25–0,63; 0,5–1; 0,3–0,8; 0,5–1,5, AFS
– mixture AFS 50	0,5–2,66%; 0,355–33,23%; 0,25–37,58%; 0,18–8,24%; 0,125–8,02%; 0,09–0,1%; 0,063–0,07%; bottom–0,1%
– mixture AFS 65	0,3555–5%; 0,25–29,7%; 0,15–37%; 0,125–24%; 0,09–3,5%; 0,063–0,5%; bottom–0,3%
Finely milled	0–0,1; 0–0,09; 0–0,075; 0–0,063; 0–0,05; 0–0,045; 0–0,02;

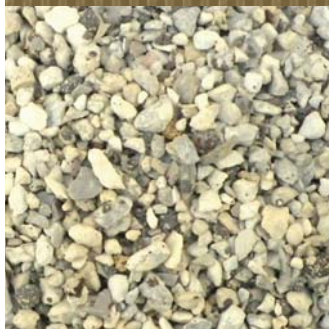
OVERVIEW OF MAIN PRODUCTS

Chamotte		Typical values							
Description according ČSN 721300	Trade mark	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	SiO ₂	MgO	Bulk density	Water absorption	Refractoriness
		%					min. g/cm ³	max. %	min.
Chamotte									
A 111 VHR	NP Special	42,15	1,25	1,54	53,95	0,18	2,55	1,50	175,00
A 231 HR	NPExK	41,85	1,85	1,35	53,44	0,21	2,55	2,00	173,00
A 232 HR	NPEx	41,53	1,85	1,35	53,62	0,22	2,45	3,00	173,00
B 232 HR	-	40,20	1,80	1,32	55,21	0,24	2,45	3,50	173,00
B 242 HR	-	40,20	2,15	1,32	54,68	0,24	2,45	3,90	173,00
B 251 HR	NPIaK	40,20	2,25	1,32	54,58	0,24	2,45	2,50	173,00
B 252 HR	NPIa	40,20	2,25	1,32	54,58	0,24	2,45	3,50	173,00
C 312 VHR	NP 38Li	38,50	1,25	1,50	55,80	0,05	2,40	4,00	171,00
C 343 HR	-	37,88	2,15	1,30	56,83	0,25	2,30	5,90	171,00
C 352 HR	-	37,88	2,45	1,30	56,83	0,25	2,40	3,90	171,00
C 353 HR	-	37,88	2,45	1,30	56,83	0,25	2,30	5,90	171,00
C 362 HR	NPIIa	37,88	2,65	1,30	56,63	0,25	2,40	3,90	171,00
C472 HR	NPIIb	38,50	3,30	1,23	55,40	0,28	2,45	3,90	169,00
D 452 HR	NP 36	36,38	2,37	1,22	58,00	0,31	2,40	3,90	169,00
D 462 HR	NP 35	36,38	2,57	1,22	57,80	0,31	2,30	4,00	169,00
D 463 HR	NP 35 C	36,38	2,57	1,22	57,80	0,31	2,30	5,90	169,00
E 562 HR	NP 32	33,34	2,81	1,15	60,60	0,26	2,30	4,50	165,00
Burnt kaolin									
A 215 SHR	PK 1	41,60	1,00	0,30	55,20	0,40	1,80	16,00	173,00
C 214 HHR	PKH	37,50	0,70	0,45	59,50	0,30	2,00	10,00	173,00
Cordierite									
C 65	C 65	36,20	2,40	1,30	48,40	11,50	2,00	8,00	-
Raw clay									
NOVOII	-	36,40	3,80	1,20	57,30	0,26	-	-	167,00
KJŠ	-	24,68	1,62	1,63	-	-	-	-	158,00
Metakaolin									
Mefisto L ₀₅	Mefisto L ₀₅	41,9	1,08	1,80	52,90	0,18	-	-	-
Mefisto K ₀₅	Mefisto K ₀₅	38,5	0,72	0,50	58,70	0,38	-	-	-
Mefisto LB ₀₅	Mefisto LB ₀₅	37,5	3,50	1,30	54,40	0,25	-	-	-

NP SPECIAL



NP SPECIAL 1-3 mm



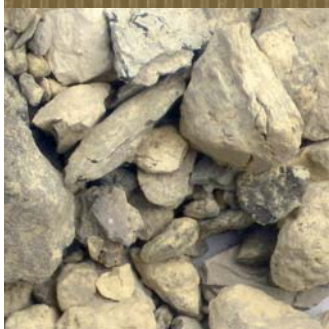
NP SPECIAL 0-0,5 mm



NP SPECIAL 0-0,1 mm



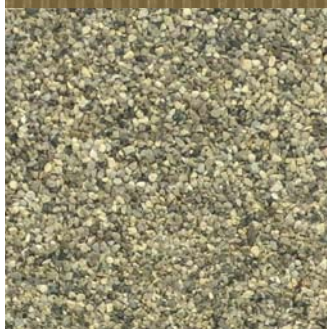
NP 35



NP 35 1-3 mm



NP 35 0,3-1 mm



NP 35 0-0,1 mm



PKH 0-0,075 mm



PK 1 0-0,5 mm



Cordierite 0-0,5 mm



Cordierite 1-3 mm



SPECIAL PRODUCTS

METAKAOLINS

Products from the **MEFISTO** range are obtained by controlled processes of thermal and mechanical treatment of kaolin and carefully selected chamotte, resulting in highly active metakaolin-based pozzolan.

Use:

It can be used as a replacement for Portland cement in airy lime plaster (masonry and top coat), it provides high permeable layers. It is also very suitable as an additive to concrete replacing up to 15 % of the total amount of cement; it improves mechanical properties such as strength, water absorption and resistance to aggressive environments.

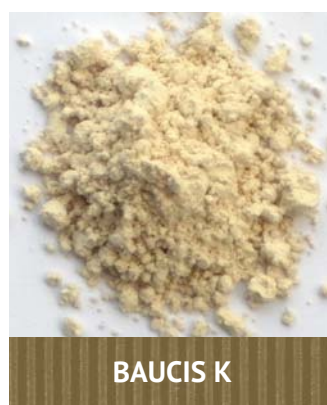
Mefisto can be used to produce geopolymers. It is also used in building chemistry (sealants), in coatings for foundry moulds, fire protection and insulation material.

Chamotte		Typical values					Granulation
Description according ČSN 721300	Trade mark	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	SiO ₂	MgO	
Metakaolin		%					
Mefisto L ₀₅	Mefisto L ₀₅	41,9	1,08	1,80	52,90	0,18	Grain size less than 20 microns
Mefisto K ₀₅	Mefisto K ₀₅	38,5	0,72	0,50	58,70	0,38	Grain size less than 20 microns
Mefisto LB ₀₅	Mefisto LB ₀₅	37,5	3,50	1,30	54,40	0,25	Grain size less than 20 microns

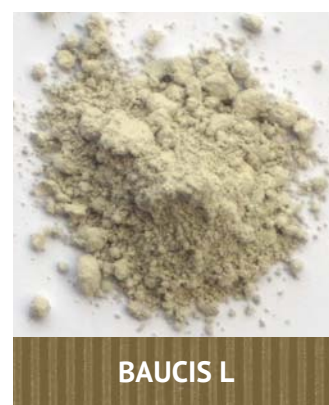
MEFISTO L₀₅



MEFISTO K₀₅



BAUCIS K



BAUCIS L

BAUCIS GEOPOLYMERS

Products from the **BAUCIS** range are produced by controlled thermal treatment of selected chamotte and kaolin. A liquid alkaline activator is used to achieve the “polymerization”. The result is a two-component aluminosilicate binder that is chemically and structurally similar to natural rock. Baucis cement does not use limestone as a raw material. Instead, it uses kaolinite-based clays.

Use:

It sets very rapidly: 50 % of the final strength is achieved on the first day, 90 % of the final strength is achieved at room temperature after 7 to 14 days. It does not contain hydration water and will not explode in fire. In conjunction with refractory filler types of chamotte, it can be exposed to temperatures of up to 1,200 °C. It is excellent for restoration, as an imitation of natural materials, for building chemistry (sealants, fire systems), and structural binding agents in aggressive environments.

Geopolymers type Baucis	Initial setting time (20 °C)	Final setting time (20 °C)	Compressive strength	Flexural strength
Baucis L110	110 min	160 min	> 80 MPa after 28 days	10–12 MPa after 28 days
Baucis L160	160 min	230 min	> 90 MPa after 28 days	12–14 MPa after 28 days
Baucis LD85	85 min	105 min	> 70 MPa after 28 days, > 80 MPa after 180 days	> 10 MPa after 28 days, > 12 MPa after 180 days
Baucis K80	80 min	130 min	> 80 MPa after 28 days	10–12 MPa after 28 days
Baucis K125	125 min	190 min	> 90 MPa after 28 days	10–12 MPa after 28 days

QUALITY, RESEARCH & DEVELOPMENT, CUSTOMER SERVICES

In 2005 České lupkové závody a.s. introduced a **certified Quality Management System (CQS)**. It holds all of the certificates required for its activities and carries out its delivery of goods according to European standards.



Our modern equipped **laboratory ensures control of all stages of the production process**. All of the finished products are provided with a quality certificate. Representative samples of each batch are analysed and the results are kept on record. Analyses are performed using an X-ray spectrometer, an X-ray diffractometer, a dilatometer or a laser particle size analyser.



České lupkové závody, a.s. provide its customers with comprehensive customer services. From the initial technical consultation on defining the suitable materials, through its multilingual sales team (Refracer, a.s.), various product packaging options (paper bags, big-bags, containers, silos), to the providing of shipping to any country of the world.





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