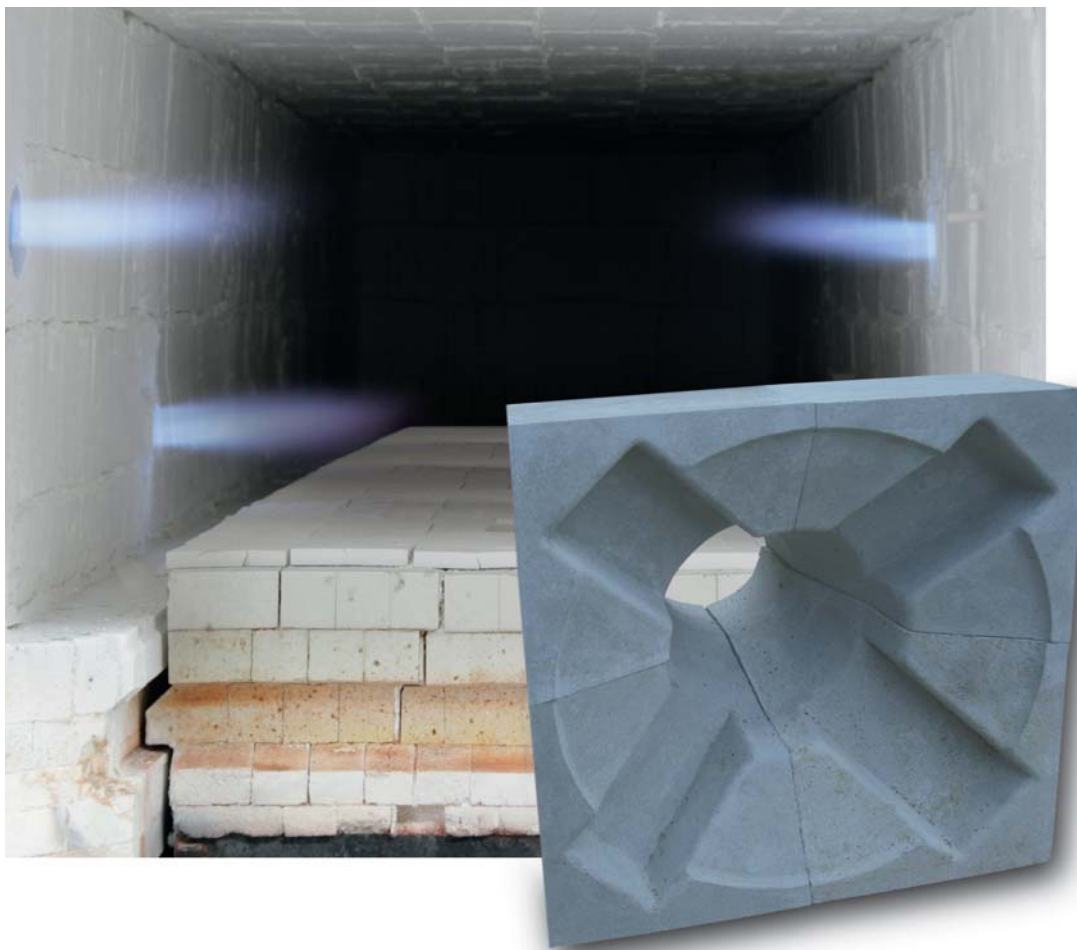


Tailor-made solutions for the ceramics industry.

Top quality refractory materials.



RATH

Specialist for top technology in high temperature.

**Quality with an optimum
price-performance ratio.**

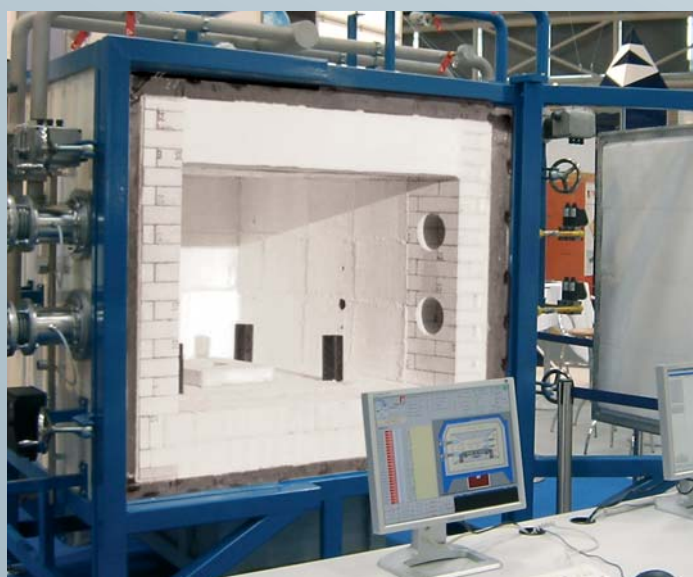


The Rath sales team

Rath offers the ideal combination of tradition and innovation. The result: optimum refractory solutions for a wide range of applications. All items in our broad product portfolio are manufactured in-house. With carefully selected materials and precision processing techniques, we can guarantee top quality.

The Rath sales teams are focussed on the sector and familiar with its specific requirements; our technical offices provide the necessary engineering and assembly know-how. This means we can offer our customers individual, complete refractory solutions with an optimal price-performance ratio.

Energy-conscious production pays off.



Test chamber furnace

The production of ceramics, originally made of clay, is one of the oldest cultural techniques. Today, there are ceramic products made of different raw materials in virtually all areas of life and technology.

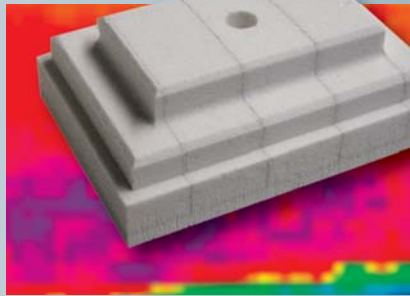
The most decisive factors for modern ceramic production are efficient firing units and optimally customised solutions for refractory linings.

The lining quality is also crucial when it comes to energy costs and thus to the profitability of products. Rath's refractory products and lining solutions set standards in terms of quality and technology.

A flexible company for special requirements.

We are always able to react flexibly to customer demands thanks to optimised structures and production processes within the Rath Group. No matter if production deadlines, single pieces or special applications, our quality-oriented customer services can satisfy all your requirements.

Our product portfolio ranges from dense refractory bricks and cast components to refractory, insulating and gunning castables, insulating fire bricks and other insulation



ACS component

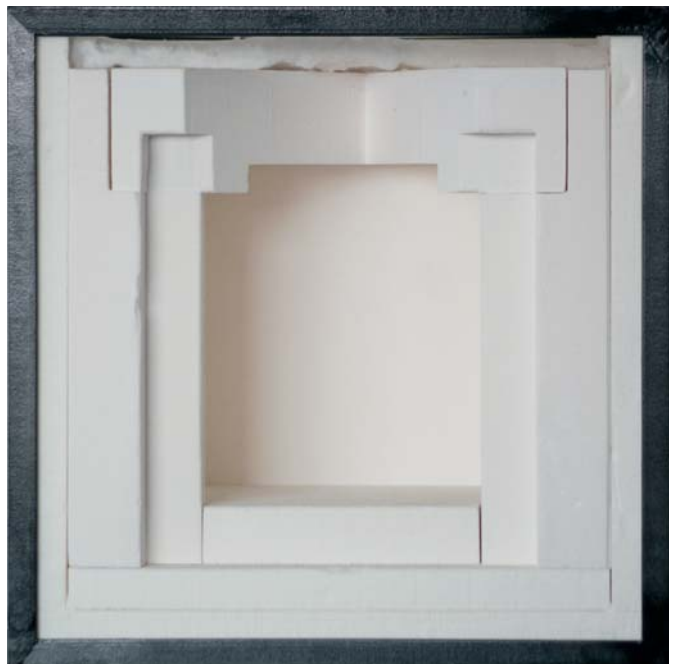
materials such as high temperature insulating wool, vacuum-formed and micro porous products.

We have the right solution for you. Put us to the test.

A particular challenge are laboratory furnaces with temperature requirements as high as 1800°C and sometimes with extremely aggressive or even reducing atmospheres.

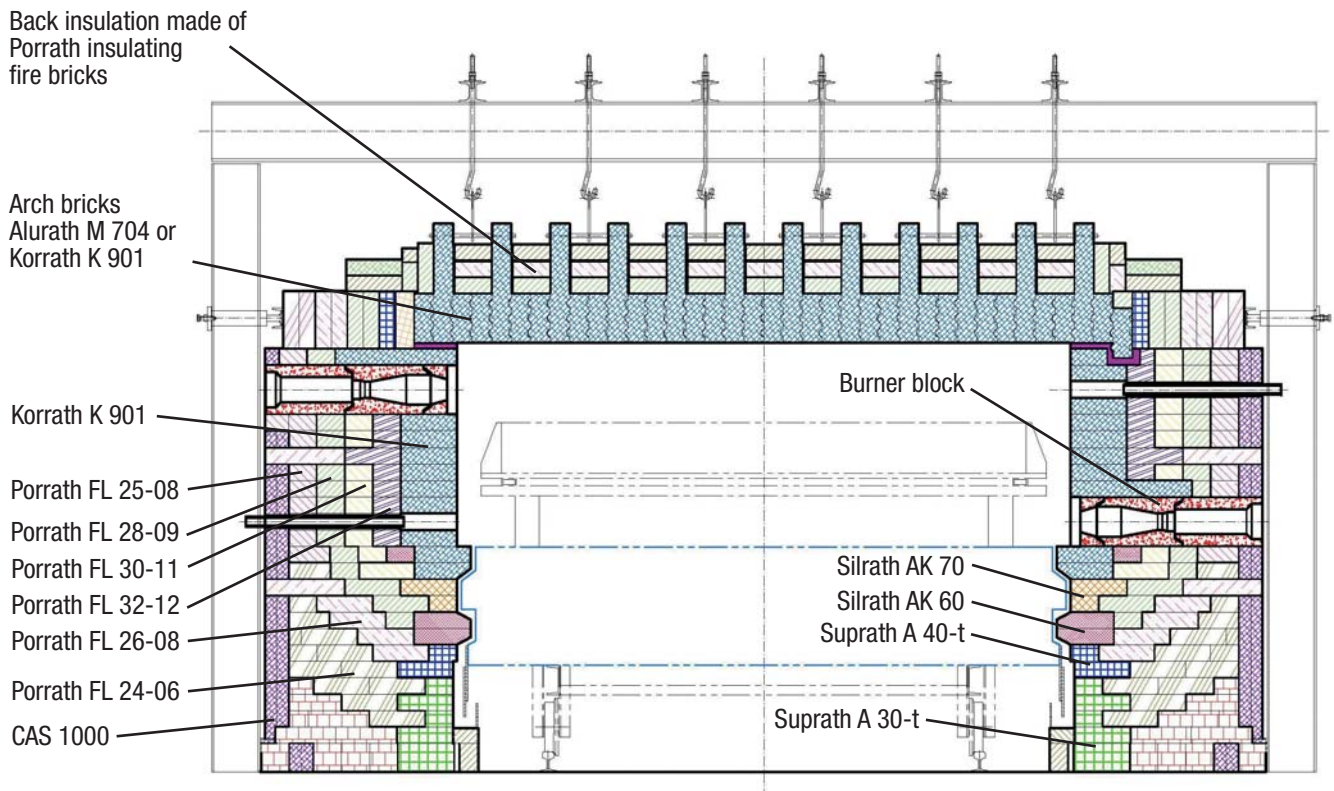
This requires precision cut components and a product range tailor-made to the respective application. With the ACS system (Altra Composite System), Rath can offer complete refractory lining solutions to furnace builders.

This means that we have an answer to the special technical requirements of virtually all ceramic firing processes. Even microwave heating does not represent any problem for our components.



Cross-section dental furnace

**Always expect us to be
one step ahead.**



Drawing bogie hearth furnace 1650 °C



sintering furnace pre-assembly

Technical ceramics.

The requirements in terms of firing processes and firing units are very demanding in the production of ceramics for technical applications. The refractory lining must withstand the most extreme conditions.

Our customers not only benefit from our competence in realising new installations for which we plan and construct the linings, we are also specialised in the repair of existing installations.

In the high temperature range, Rath has become the trusted partner for furnace manufacturers and operators throughout the world, and has the respective references to prove it.



Chamber furnace



Porrath-Insulating fire brick



Rath engineering office

Porrath – Insulating fire bricks *

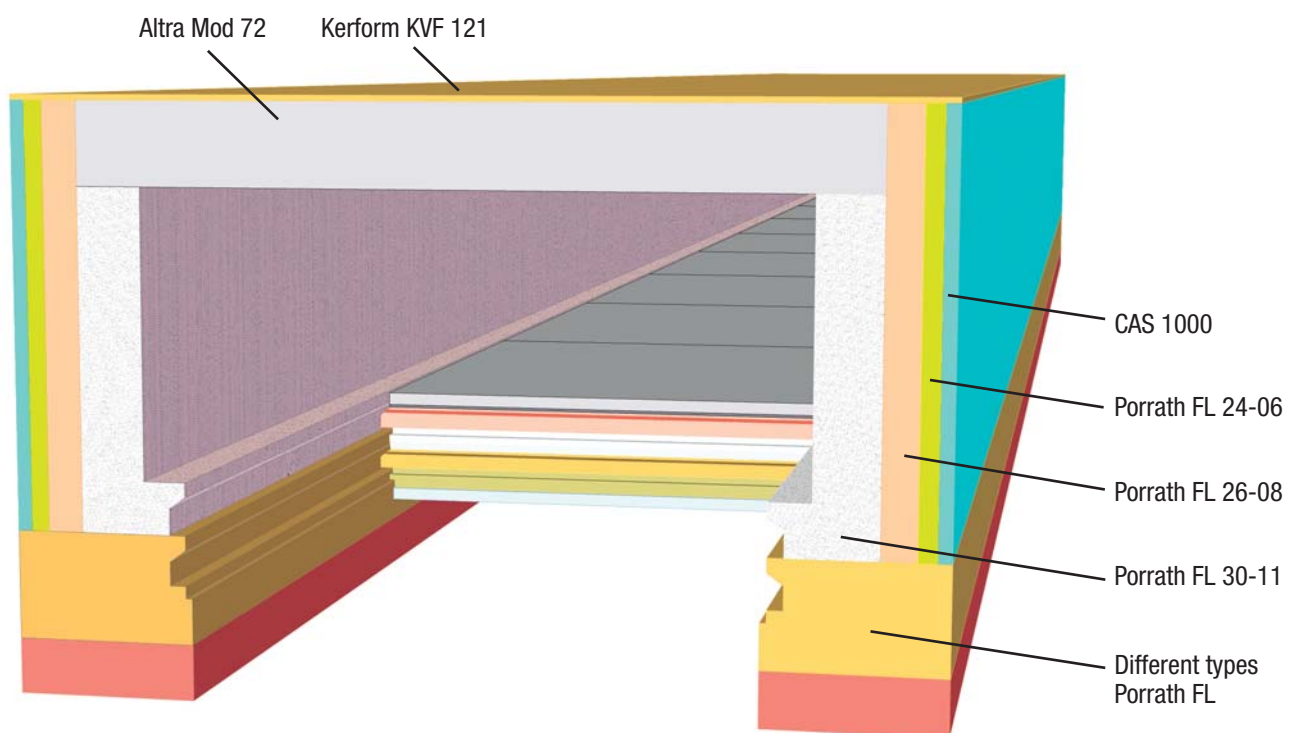
Name	Porrath FL 24-06	Porrath FL 26-08	Porrath FL 28-09	Porrath FL 30-11	Porrath FL 32-12	Porrath FL 33-13	Porrath FL 34-15
Raw material	Aluminium silicate	Aluminium silicate	Aluminium silicate	Aluminium silicate	Lightweight aggregates	Bubble alumina	Bubble alumina
Classification temperature [°C]	1350	1430	1540	1650	1760	1800	1840
Bulk density [g/cm ³]	0.64	0.80	0.90	1.10	1.25	1.3	1.5
Cold crushing strength [MPa]	1.2	3.5	4	5	6	12	10
Chemical analysis [%]							
Al ₂ O ₃	37	52	63	74	87	91	99
SiO ₂	56	44	33	25	12	8	0.1

* This and the following tables contain only an extract of the wide Rath product range.

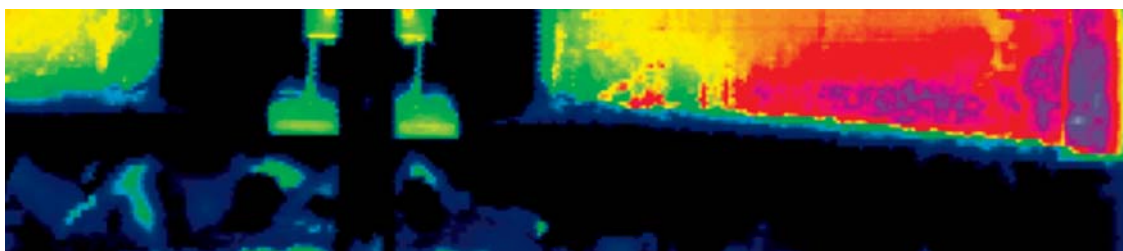
Top performance under the most extreme conditions.



Bogie hearth furnace



3D drawing tunnel furnace



Tableware ceramics.

Today, Tableware ceramics is mainly produced in tunnel furnaces, roller furnaces or bogie hearth furnaces. The assembly of furnaces constructed by Rath is supervised by at least one of our employees. This monitoring and a comprehensive final check are the reason why we can guarantee the durability of our refractory linings.

Perfect planning results in efficient solutions. Three-dimensional illustrations of the refractory constructions allow an enhanced coordination of the projects with our customers already before assembly.

Furthermore, we can also optimise the bills of materials and markedly reduce the security stock, with the result that our customers benefit from reduced costs and space requirements in the realisation of their construction projects.



Altra Mod



Assembly of a pusher-type furnace

Insulating materials

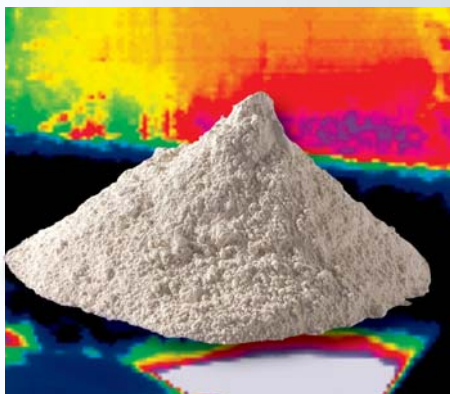
	Insulating plate	High temperature insulating wool				Vacuum-formed products		
Name	CAS 1100	Alsitra Mat 1300	Alsitra Mat 1400	Altra Mat 72	Altra Mat 97	Kerform KVF 121	Altraform KVS 174	Altraform KVS 184
Raw material	Calcium silicate	Aluminium silicate	Aluminium silicate	Aluminium silicate	Aluminium silicate	Aluminium silicate wool	Aluminium oxide wool	Aluminium oxide wool
Classification temperature [°C]	1100	1300	1400	1650	1500	1250	1700	1800
Bulk density [g/cm ³]	240	96-160	96-160	60-120	60-120	160	400	400
Chemical analysis [%]								
Al ₂ O ₃	-	48	54	72	97	50	79	80
SiO ₂	52	52	46	28	3	49	21	22
CaO	47	-	-	-	-	-	-	-

International top. Just so you're satisfied.

Sanitary ceramics.

There are many different system requirements to be considered in the production of sanitary ceramics to which we can react with the required flexibility. Also in this area, Rath is known as reliable partner offering sophisticated and innovative technologies.

Energy expenditure in sanitary ceramics is high. Therefore, the quality and the efficient use of refractory material play an important role in terms of technology and profitability. Costs can be reduced with energy-saving solutions and a long-term trouble free operation, making the production more economic and the products more competitive.



Monolithics

Test in the laboratory

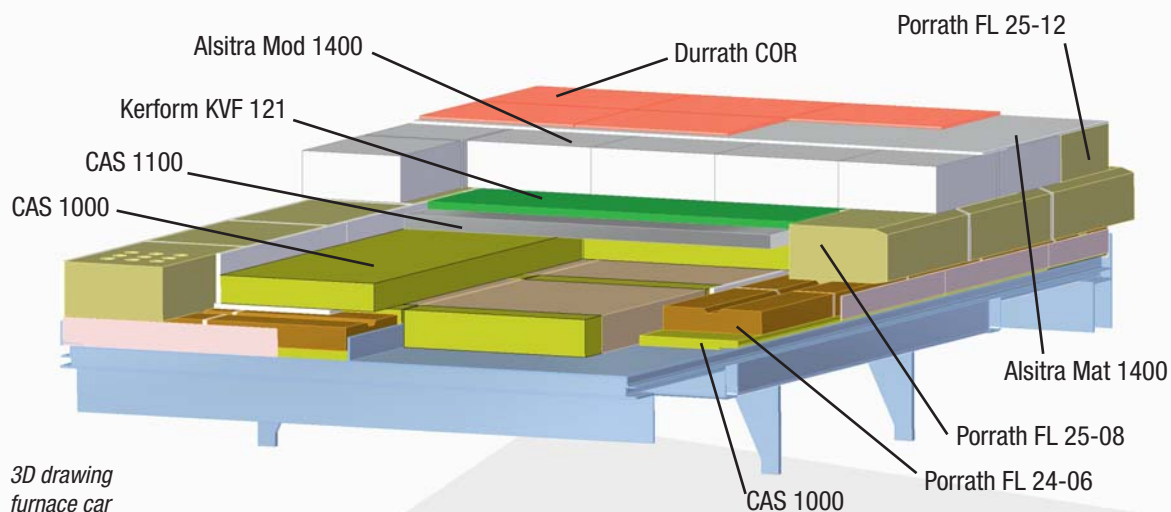


Tunnel furnace sanitary ceramics after 8 years operating time

Name
Raw material
Material required [kg/m ³]
Cold crushing strength [MPa]
Service temperature [°C]
Chemical analysis [%]
Al ₂ O ₃
SiO ₂



Tunnel furnace for sanitary ceramics



3D drawing
furnace car

Carath – unshaped refractory products

Dense castables			Low-cement castables		No-cement castables	Insulating castables		
Carath D 1250	Carath D 1400	Carath D 1500	Carath LC 1400	Carath LC 1550	Carathflux NC 1800	Carath FL 900	Carath FL 1401	Carath FL 1500
Fireclay	Fireclay	Fireclay with high mullite content	Fireclay with high mullite content	Fireclay with high mullite content bauxite	Corundum	Perlite	Leightweight fireclay	Leigthweight fireclay hollow spheres
2150	2250	2250	2300	2400	2850	450	1400	1750
50	40	60	100	100	45	0.75	25	10
1250	1400	1500	1400	1550	1800	900	1400	1500
38	46	54	50	60	92	35	45	60
42	40	40	41	33	7	40	35	34

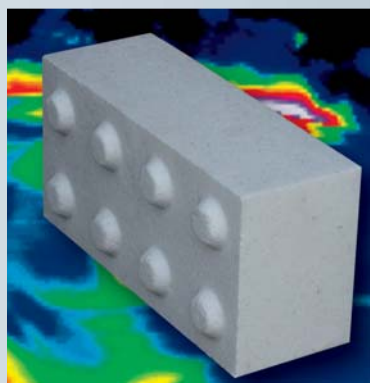
All from one single source. Everything OK.



Bogie hearth furnace 1650°

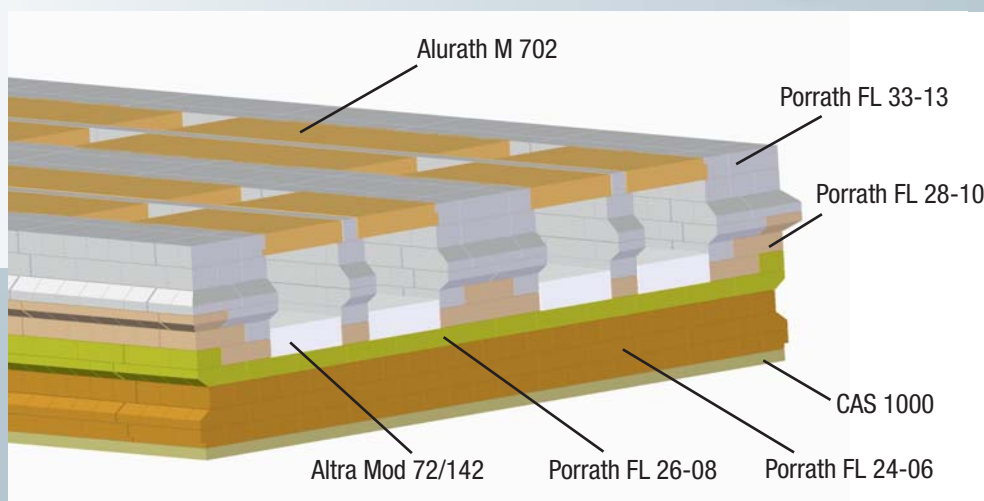
Korrath
nap brick

Refractory ceramics.



Rath is specialist in the lining of machines and units for thermal process control. We develop and operate our own production plants for our refractory products. Thus we continuously gain new experiences and insights.

Our customers not only benefit from this know-how, but also from our first-rate materials for refractory solutions to produce



3D drawing bogie hearth

- bricks with high alumina content
- fusion cast bricks
- magnesite and dolomite bricks
- firing auxiliaries

Dense bricks

Name	Suprath A 40-t	Durrath HS-e	Silrath AK 60	Alurath M 702	Korrath K 901	Korrath K 99
Raw material	Fireclay	Low-ferrous fireclay	Andalusite	Mullite	Corundum	Tabular alumina
Bulk density [g/cm ³]	2.25	2.35	2.60	2.45	3.10	3.15
Cold crushing strength [MPa]	50	80	100	80	90	90
Thermal shock resistance [n]	18	30	120	11	110	17
Chemical analysis [%]						
Al ₂ O ₃	40	47	60	72	90	99
Fe ₂ O ₃	2.1	1.4	1.0	0.5	0.1	0.1

Production in our own factories.

There is one very special feature of Rath: we can always fully guarantee the quality of our highly refractory products, as we manufacture them all ourselves.

State-of-the-art production processes are used in our plants in Europe and the USA. We constantly adapt these processes in line with technical and technological developments as we strive to provide you with top quality.

Our approach benefits our customers: high quality products ensure operational safety and reliability over a long period of time. This means less repairs, less breaks in production and lower costs.



Krummnußbaum



Bennewitz



Mönchengladbach

Rath meets all ISO criteria.

Quality in production can be measured – with ISO 9001/9002. All companies in the Rath Group are certified according to the strict criteria for this standard. We are doing everything to build constantly on this quality standard.

Our products undergo rigorous testing in our own company laboratories. We also regularly have externally government-authorised test centres which check material characteristics.

Our customers can rest assured that all our products are up to date – and provide, in practice, everything that we have promised.

The Rath Group.

Our sales subsidiaries worldwide.

Aug Rath jun. GmbH

Walfischgasse 14
A-1015 Vienna
Tel. +43 (1) 513 44 26-0
Fax +43 (1) 513 44 26-86

Rath GmbH

Ossietzkystraße 37/38
D-01662 Meißen
Tel. +49 (35 21) 46 45-0
Fax +49 (35 21) 46 45-86

Rath GmbH

Krefelder Straße 680-682
D-41066 Mönchengladbach
Tel. +49 (21 61) 96 92-0
Fax +49 (21 61) 96 92-61

Rath Hungaria Kft.

Porcelán utca 1
H-1106 Budapest
Tel. +36 (1) 43 300 43
Fax +36 (1) 26 1 90 52

Rath Ukrajina TOW

Prospekt Osvoboshdenije Donbassa 8b
Office 206
UA-83048 Donezk
Tel. +380 (62) 345 33 06
Fax +380 (62) 345 63 26

Rath USA Inc.

300 Ruthar Drive Suite 1
Newark, DE 19711
Tel. +1 (302) 294 4446
Fax +1 (302) 294 4451

Rath žárotechnika spol. s r.o.

Vorlešská 290
CZ-544 01 Dvůr Králové n. L.
Tel. +420 (499) 321 577
Fax +420 (499) 321 003

Rath Polska Sp. z o.o.

ul. Fabryczna 1
PL-42 530 Dąbrowa Górnicza
Tel. +48 (32) 268 47 01
Fax +48 (32) 268 47 02

Rath SAS

60, route principale du Port
F-92637 Gennevilliers-Cedex
Tel. +33 (1) 47 92 80 62
Fax +33 (1) 47 92 80 22

Rath AG per l'Italia

Im Helui 15
I-39030 Chienes (BZ)
Tel. +39 (0474) 56 56 20
Fax +39 (0474) 56 56 28

E-Mail: info@rath-group.com
Internet: www.rath-group.com