

REFRACTORY SOLUTIONS FOR REHEATING APPLICATIONS

Efficient | Robust | Reliable



METALS



CERAMICS



GLASS



SPECIAL
FURNACES



FUELS
CHEMICALS
ENERGY

top technology |
creates confidence

RATH

www.rath-group.at

WELCOME TO RATH - YOUR REFRACTORY SPECIALIST

RATH develops and produces refractory products and supplies plants all over the world with high quality refractory lining. When customers need reliability and quality, they choose RATH products and services.

DETAILED PLANNING - PERFECT INSTALLATION

We provide solutions for specific requirements by precisely planning, drawing and calculating the equipment in our planning offices. RATH customers receive a standardized construction plan for the equipment, after which the equipment can be installed either by RATH staff or by third-party companies. In many cases, RATH also handles the supervision of installment by third-party staff so that the construction is guaranteed according to RATH's strict quality requirements.

WELL-DESIGNED PRODUCTS THAT COMPLEMENT EACH OTHER

We keep the later assembly capability of the product in mind right from the start of product development. A good example is Rathloc®, a system in which bricks can be mounted in the simplest way using a standardized push-fit system and always fit perfectly.

RESEARCH, DEVELOPMENT, MANUFACTURING - ALL FROM A SINGLE CAST

Our speciality is refractory materials for temperatures up to 1800°C and for hot gas filtration up to 1000°C. We do all research and development in our own laboratories and produce everything from the base materials to the finished component in our own production facility.

A COMPREHENSIVE PORTFOLIO

- Dense fire bricks
- Monolithics
- Pre-cast blocks
- Insulating fire bricks
- High-temperature insulating wool
- Vacuum-formed shapes



CUSTOMIZED SOLUTIONS ARE OUR SPECIALTY

We make no compromises in adapting the refractory lining to the plant design. We can do this because we focus on customized planning and production. Each part is pre-engineered in the CAD system and checked for fit so everything runs smoothly on the construction site.

RATH COVERS A WIDE RANGE OF PLANTS FOR IRON AND STEEL PRODUCTION.

- Bogie hearth forging furnace
- Chamber forging furnace
- Rotary hearth furnace
- Bogie hearth furnace
- Chamber annealing furnace
- Top-hat furnace
- CSP roller furnace
- Walking beam furnace
- Pit furnace
- Conveyor belt compensation
- Hardening furnace

THE FULL-RANGE PROVIDER FOR THE METAL INDUSTRY

Provision of a solid refractory lining does not start with ordering material and does not end with delivery of the material to the plant manufacturer or user. A complete solution includes professional selection of materials, solid construction, quality-focused delivery and efficient project management.

With expertise and years of hands-on experience, our project managers worldwide ensure the execution and coordination of refractory linings for iron and steel smelting. This means RATH customers have a reliable partner for refractory plants with a comprehensive service portfolio.



ENGINEERING

The basis of every lining concept is the heat transfer, which will determine the optimum wall structure. Extensive knowledge of thermal and corrosive loads is required. We use modern heat transfer calculation programs and software systems to calculate thermodynamic equilibriums and phase diagrams. We, as a manufacturer, have access to extensive databases, which are required for the calculations.

Upon request, we are also able to carry out economic calculations of refractory linings, taking material and energy costs into account, which provides customers with the support they need to make decisions.

MATERIAL SUPPLY

RATH material is made to order for customers and according to the agreement, with experienced shipping companies delivering directly to the construction site. No matter where in the world the construction site is, our logistics experts ensure reliable and punctual delivery.

ASSEMBLY MONITORING / SUPERVISION

RATH also handles assembly supervision in many cases with regard to assembly by third-party companies so that the construction is guaranteed according to RATH'S strict quality requirements.

ASSEMBLY

Refractory linings of liquid steel plants require expert on-site assembly. Our highly trained assembly staff ensure reliable installation and attach great importance to high safety standards. This includes continuous monitoring of construction sites by experienced installation directors.

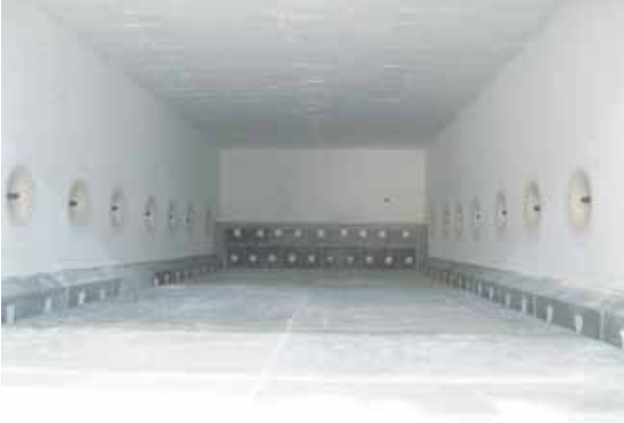
We attach great importance to high quality assembly equipment and assembly aids to ensure effective and quality delivery.

MAINTENANCE AND REPAIR

We monitor the performance of your refractory lining and provide the necessary maintenance to ensure safe operation of the equipment.

We also offer ongoing predictive maintenance and repair.

BOGIE HEARTH FORGING FURNACE



Bogie hearth forging furnaces are of key importance in the smelting process. The intermittent operation, various grades of steel to be treated individually and the various process techniques require mechanical resilience and chemical resistance of the refractory materials.



Due to the optimum mixture of heavy and light lining on the one hand, we meet extremely high demands in terms of wear and, on the other hand, we supply a modern, energy-efficient refractory lining.

CONCRETES

CARATH 1460D
CARATH 1550LC-10
CARATH A58LC
CARATH B1652LC
CARATH FL 1250
CARATH FL 1401
CARATH FL 1500

INSULATING FIRE BRICKS

PORRATH FL 24-06
PORRATH FL 25-10
PORRATH FL 28-09
PORRATH FL 30-11

HIGH TEMPERATURE INSULATION WOOL

ALSITRA MAT 1400
ALSITRA MOD 14/200
ALTRA MAT 72
ALTRA MOD 72/140
KOMBI MOD 72/14

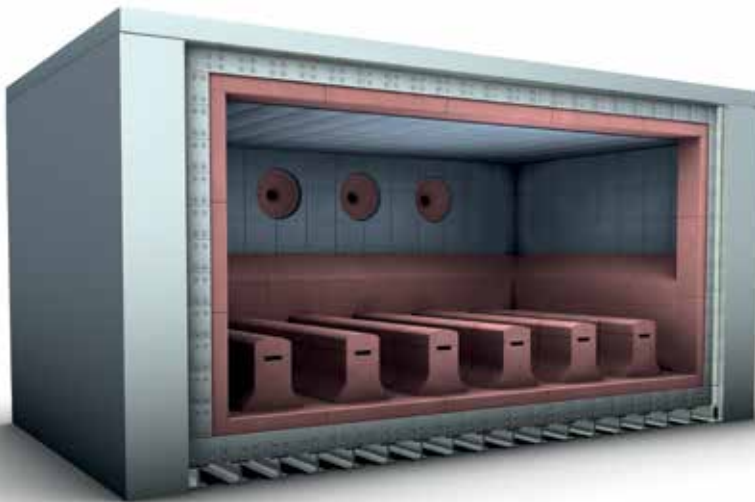
VACUUM-FORMED PRODUCTS

KERFORM KVF 121
KERFORM KVS 121
KERFORM KVF 141
KERFORM KVS 141
KERFORM KVS 164

CHAMBER FORGING FURNACE



Chamber forging furnaces are operated intermittently at up to 1350°C. The refractory lining is mechanically stressed due to the loading method.



Whether a single chamber or double chamber furnace is involved, with automated or manual loading and different designs, RATH has the experience and expertise needed to make the right choice of materials in every area.

CONCRETES

CARATH 1460D
 CARATH 1550LC-10
 CARATH A58LC
 CARATH B1652LC
 CARATH FL 1250
 CARATH FL 1401
 CARATH FL 1500

INSULATING FIRE BRICKS

PORRATH FL 24-06
 PORRATH FL 25-10
 PORRATH FL 28-09
 PORRATH FL 30-11

HIGH TEMPERATURE INSULATION WOOL

ALSITRA MAT 1400
 ALSITRA MOD 14/200
 ALTRA MAT 72
 ALTRA MOD 72/140
 KOMBI MOD 72/14

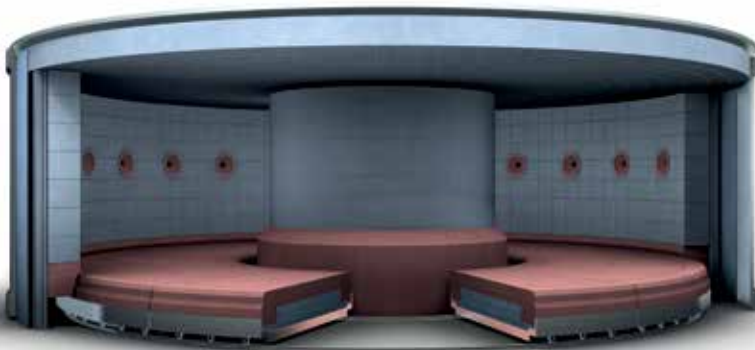
VACUUM FORMED SHAPES

KERFORM KVF 121
 KERFORM KVS 121
 KERFORM KVF 141
 KERFORM KVS 141
 KERFORM KVS 164

ROTARY HEARTH FURNACE



Rotary hearth furnaces are operated continuously and are used to heat a wide variety of components. Drawing temperatures up to 1350°C and differently arranged burner technologies require experience to make the right choice in materials.



Whether heavy lining with concrete moldings and dense fire bricks is involved, or energy-efficient lining with modules made of high-temperature insulation wool, and depending on the customer's requirements, the best solution is developed by our engineering team and implemented on the construction site.

CONCRETES

- CARATH 1460D
- CARATH 1550LC-10
- CARATH A58LC
- CARATH A58LC- BT
- CARATH B1652LC
- CARATH B1652LC- BT
- CARATH FL 1250
- CARATH FL 1401
- CARATH FL 1500

DENSE FIRE BRICKS

- DURRATH HS
- SILRATH AK60

INSULATING FIRE BRICKS

- PORRATH FL 24-06
- PORRATH FL 25-10
- PORRATH FL 28-09

HIGH TEMPERATURE INSULATION WOOL

- ALSITRA MAT 1400
- ALSITRA MOD 14/200
- ALTRA MAT 72
- ALTRA MOD 72/140
- KOMBI MOD 72/14

VACUUM FORMED SHAPES

- KERFORM KVF 121
- KERFORM KVS 121
- KERFORM KVF 141
- KERFORM KVS 141
- KERFORM KVS 164

BOGIE HEARTH FURNACE / CHAMBER ANNEALING FURNACE



Bogie hearth furnaces for heat treatment must be energy efficient on the one hand, and on the other, they must meet the mechanical requirements in the car sector.



Our proven module lining of high-temperature insulation wool for walls and ceilings and abrasion-resistant fired concrete lining suitable for cars or floors has been successfully implemented countless times in order to offer our customers long service life.

CONCRETES

CARATH 1460D
CARATH 37 MC
CARATH FL 1250
CARATH FL 1401

INSULATING FIRE BRICKS

PORRATH FL 24-06
PORRATH FL 25-10

HIGH TEMPERATURE INSULATION WOOL

ALSITRA MAT 1300
ALSITRA MAT 1400
ALSITRA MOD 14/200
ALSITRA MOD 13/180

VACUUM FORMED SHAPES

KERFORM KVF 121
KERFORM KVS 121
KERFORM KVF 141
KERFORM KVS 141

STRIP GALVANIZING PLANT



Hot-dip galvanizing is a vertical form of strip galvanizing, in which furnace temperatures of up to 1350°C can be reached. Different parts of the installation require a very wide range of different qualities in the refractory lining.



The direct-fired section uses high-quality polycrystalline high-temperature insulation wool and fire bricks to withstand the temperatures and chemical attack. Other materials used include ALSITRA high temperature insulation wool products, refractory concretes, and lightweight refractory bricks.

CONCRETES

CARATH 1650 D
CARATH L FL1401

INSULATING FIRE BRICKS

PORRATH FL 24-06
PORRATH FL 25-10
PORRATH FL 28-09
PORRATH FL 30-11

HIGH TEMPERATURE INSULATION WOOL

ALSITRA MAT 1400
ALSITRA MOD 14/200
ALTRA MAT 72
ALTRA MOD 72/140
KOMBI MOD 72/14

VACUUM FORMED SHAPES

ALTRAFORM® KVF 161
KERFORM KVS 141

TOP-HAT FURNACE



Top-hat furnaces are used for heat treatment of various steel parts up to 1150°C. The light lining of high-temperature insulation wool of the hood is essential so that it can be manipulated.



Movable hood with electric heating

Suitable abrasion-resistant, fire-resistant concrete for the base and a sophisticated sealing system between the hood and the base are also important components for this type of installation.

CONCRETES

CARATH 1460D
CARATH 37 MC
CARATH FL 1250
CARATH FL 1401

INSULATING FIRE BRICKS

PORRATH FL 24-06
PORRATH FL 25-10

HIGH TEMPERATURE INSULATION WOOL

ALSITRA MAT 1300
ALSITRA MAT 1400
ALSITRA MOD 14/200
ALSITRA MOD 13/180

VACUUM FORMED SHAPES

KERFORM KVF 121
KERFORM KVS 121
KERFORM KVF 141
KERFORM KVS 141

HEATING COIL CARRIER BRICK

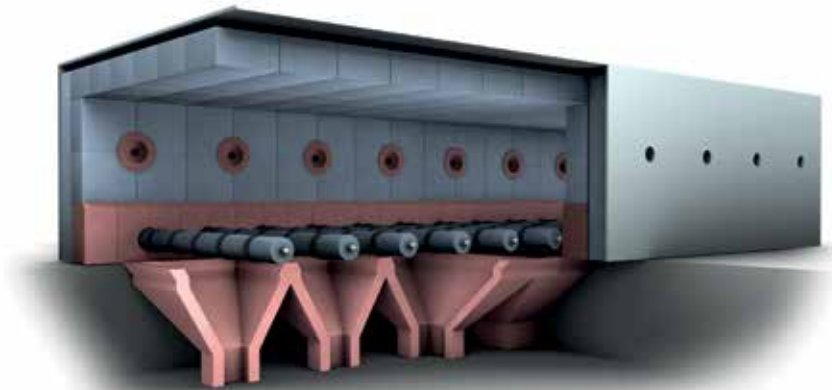
Component A 58 LC

CSP ROLLER FURNACE



ALTRA roller insulation pre-assembled at the factory

The CSP furnace, an integral part of the rolling line, heats slabs directly from the continuous casting plant to temperatures of up to 1300°C. The combination of concrete moldings and vacuum moldings in the roller area ensures mechanical resistance in the furnace chamber on the one hand, and on the other, perfect sealing of the roller bushing.



The sub-furnace is made of dense fire bricks and high-quality, abrasion-resistant refractory concrete to ensure a lining with long-lasting resistance. Above the roller area, high temperature products are used. The highest priority of a CSP roller furnace is its availability, which we know and ensure through experience and the needs of our customers.

CONCRETES

CARATH 1460 D
 CARATH FL1401
 CARATH FL1250
 CARATH FL1401 component

DENSE FIRE BRICKS

SILRATH AK60

INSULATING FIRE BRICKS

PORRATH FL 24-06
 PORRATH FL 28-09
 PORRATH FL 26-08

HIGH TEMPERATURE INSULATION WOOL

ALTRA MAT 72
 KOMBI MOD 72/14
 ALSITRA MOD 14/200
 ALSITRA MAT 1400

VACUUM FORMED SHAPES

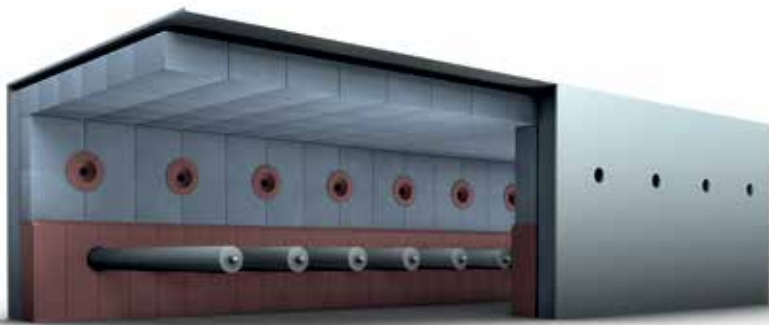
KERFORM KVS 121
 KERFORM KVS 141
 KERFORM KVS 141 - Roll brick

ROLLER FURNACE



The roller furnace, a type of continuous furnace, is primarily used to heat slabs or strips in a continuous production process at temperatures up to 1150°C.

The heat treatment can be carried out with or without protective gas.



The combination of precast concrete parts and vacuum formed shapes in the roller area ensures mechanical resistance in the kiln chamber on the one hand, and on the other, a perfect seal of the roller passage. Depending on the requirements, we use dry-pressed bricks or insulating fire bricks for the area under the kiln, and products made of high-temperature insulation wools are used above the roller area. The mix guarantees an optimal energy balance.

CONCRETES

CARATH 1460D
 CARATH 1460D -component
 CARATH 37 MC -component
 CARATH FL 1401
 CARATH FL1401 -component

INSULATING FIRE BRICKS

PORRATH FL 24-06
 PORRATH FL 28-09

HIGH TEMPERATURE INSULATION WOOL

ALSITRA MAT 1300
 ALSITRA MAT 1400
 ALSITRA MOD 14/200
 ALSITRA MOD 13/180

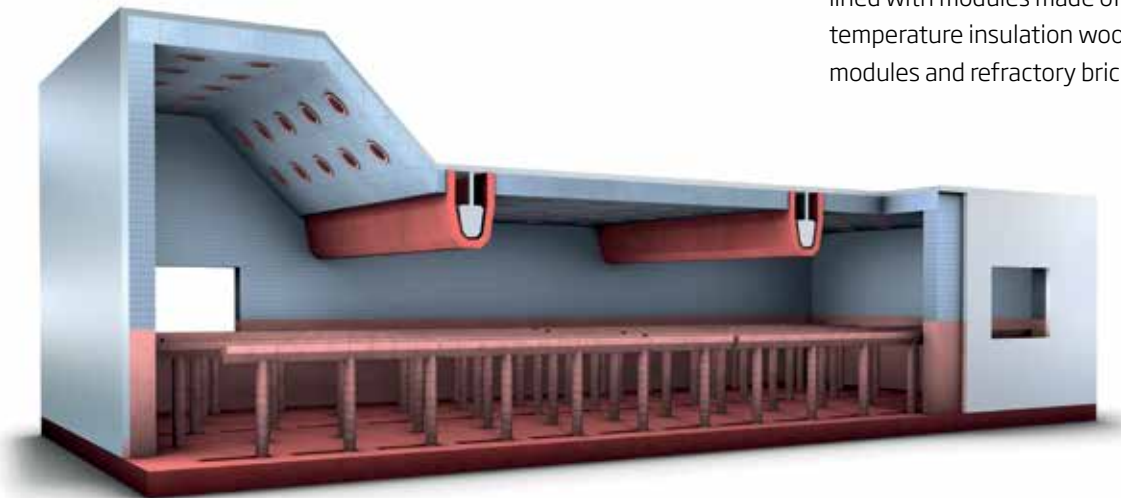
VACUUM FORMED SHAPES

KERFORM KVS 121
 KERFORM KVS 141
 KERFORM KVS 141 -
 Roll brick

WALKING BEAM FURNACE/ WALKING HEARTH FURNACE



A walking beam furnace is used to heat slabs and billets at temperatures up to 1350°C. The refractory lining is equipped with plastic compounds, dense fired concretes and abrasion-resistant, low-cement fireclay concretes.



The preheating zone can be lined with modules made of high temperature insulation wool, combo modules and refractory bricks.

CONCRETES

CARATH 48 MC STR
CARATH 1655 LC
CARATH A58 LC
CARATH FL1401
CARATHPLAST 1550
CARATH 1550 LC
CARATH B 1652 LC

DENSE FIRE BRICKS

DURRATH HS
SILRATH AK60

INSULATING FIRE BRICKS

PORRATH FL 24-06
PORRATH FL 25-10
PORRATH FL 28-09

HIGH TEMPERATURE INSULATION WOOL

ALSITRA MAT 1300
ALSITRA MAT 1400
ALTRA MAT 72
KOMBI MOD 72/14

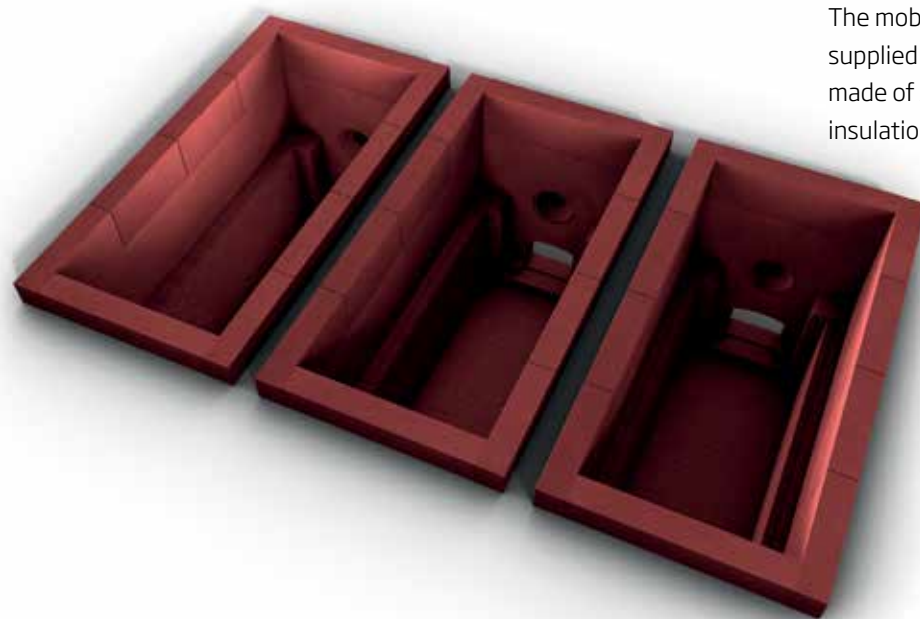
VACUUM-FORMED PRODUCTS

KERFORM KVS 121
KERFORM KVS 141

PIT FURNACE



A pit furnace is used to heat special types of steel at temperatures up to 1350°C. The refractory lining is equipped either with suitable abrasion-resistant dense refractory bricks or with mechanically resistant low-cement fireclay concretes.



The mobile covers can be supplied with combo modules or modules made of ALTRA high temperature insulation wool.

CONCRETES

CARATH 47 A LC
CARATH A 58 LC
CARATH T 86 M ULC
CARATH FL 1401

DENSE FIRE BRICKS

ALURATH B80
SILRATH AK70

INSULATING FIRE BRICKS

PORRATH FL 25-10
PORRATH FL 28-09

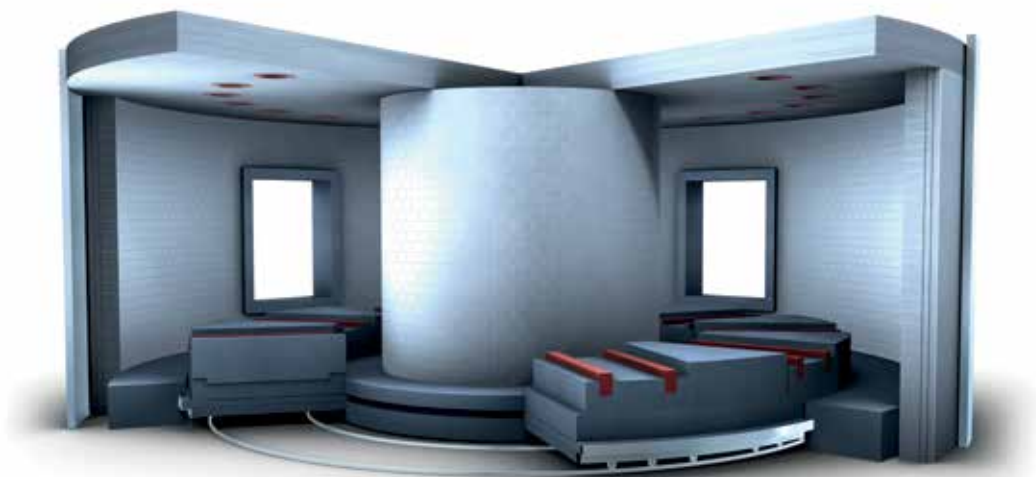
HIGH TEMPERATURE INSULATION WOOL

ALSITRA 1400
ALSITRA MOD 14/200
KOMBI MOD 72/14
ALTRA MAT 72

HARDENING FURNACE



Different furnace atmospheres and temperatures require a wide mix of materials when it comes to these types of furnaces. With our comprehensive and complete product range, as well our own production, we can always ensure the right material selection.



CONCRETES

CARATH 1460 D
CARATH 52 MCR/10

DENSEFIRE BRICKS

SILRATH AK60
SUPRATH A403-t
SUPRATH T501

INSULATING FIRE BRICKS

PORRATH FL 24-06
PORRATH FL 25-10
PORRATH FL 26-08

HIGH TEMPERATURE INSULATION WOOL

ALSITRA MAT 1300
ALSITRA MAT 1400
CALSITRA MAT 1250
CALSITRA MOD 1250
ALSITRA MOD 13/180

VACUUM FORMED SHAPES

EVAC EVS
KERFORM KVF 121
KERFORM KVS 121
KERFORM KVF 141
KERFORM KVS 141



PRODUCTS

Special products, a variety of individual geometries made of dense fire bricks, insulating fire bricks, vacuum moldings, as well as prefabricated concrete elements, play an important role in the lining of the various furnaces. RATH supplies the latter as burner bricks, quarl bricks, furnace components, cover parts or tunnel furnace car parts.



MONOLITHICS

NAME	CARATH T 86 M ULC	CARATH 1460 D	CARATH 1550 LC-10	CARATH 1650 D-3	CARATH 1655 LC	CARATH 37 MC	
Raw material base	Tabular clays, mullite	Low iron, high alumina raw materials	Clay rich raw materials	Corundum, mullite	Andalusite	Refractory clay	
Type of installation	vibrate	vibrate	vibrate	vibrate	vibrate	vibrate	
Max. operating temperature [°C]	1750	1400	1550	1600	1650	1320	
Material requirements [kg/m ³]	3060	2250	2520	2680	2550	2230	
Cold pressure resistance at 110 °C [in N/mm ²]	35	55	90	38	75	90	
Grain size [mm]	0-6	0-10	0-10	0-3	0-6	0-6	
Chemical analysis [%]							
	Al ₂ O ₃	86.5	52	58	79	63	37
	SiO ₂	10.5	38	35	16	34	51
	Fe ₂ O ₃	0.4	1	1.2	0.4	0.8	2.4
	CaO	0.4	4.6	2.4	3.5	-	4.4

NAME	CARATH 47 A LC	CARATH 48 MC str	CARATH 52 MC R/10	CARATH A 58 LC	CARATH B 1652 LC	
Raw material base	Dense refractory clay with andalusite additive	Refractory clay	Low iron mullite refractory clay	Andalusite	Bauxite	
Type of installation	vibrate	vibrate	vibrate	vibrate	vibrate	
Max. operating temperature [°C]	1500	1400	1500	1650	1620	
Material requirements [kg/m ³]	2380	2360	2440	2590	2950	
Cold pressure resistance at 110 °C [in N/mm ²]	90	120	100	60	115	
Grain size [mm]	0-6	0-6	0-10	0-6	0-6	
Chemical analysis [%]						
	Al ₂ O ₃	47	49	52	58	84
	SiO ₂	46	42	42	38	10
	Fe ₂ O ₃	1.3	1.4	0.8	0.9	1
	CaO	2.7	4.5	3.1	1.9	1.5

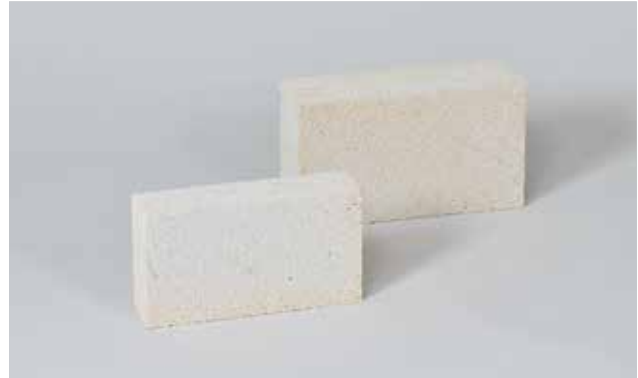
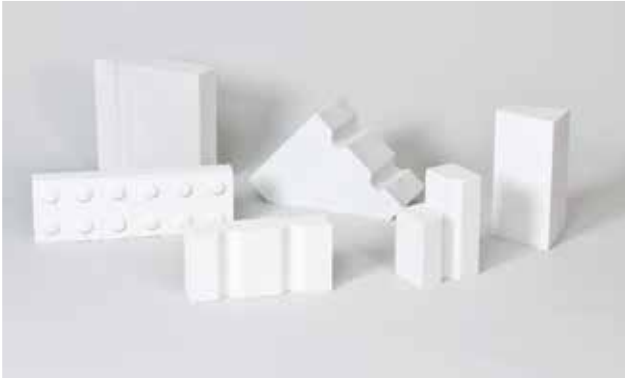
NAME	CARATH FL 106	CARATH FL 1250	CARATH FL 1401	CARATH FL 1500	
Raw material base	Lightweight aggregates	Lightweight refractory clay	Lightweight refractory clay	Low iron mullite refractory clay	
Type of installation	cast-poke	cast-poke	cast-poke	cast-poke	
Max. operating temperature [°C]	1000	1250	1400	1500	
Material requirements [kg/m ³]	600	1600	1520	1750	
Cold pressure resistance at 110 °C [in N/mm ²]	0.7	15	24	9	
Grain size [mm]	0-4	0-8	0-8	0-5	
Chemical analysis [%]					
	Al ₂ O ₃	27	37	46	64
	SiO ₂	27	46	34	30
	Fe ₂ O ₃	12	6	3.5	0.6
	CaO	22	7.7	11	4.5
	MgO	6	-	-	-

DENSE FIRE BRICKS



NAME		ALURATH B80	DURRATH HS	SILRATH AK60	SILRATH AK70	SUPRATH A403-T	SUPRATH T503
Raw material base		Bauxite	Refractory clay	Andalusite	Andalusite	Mullite rich refractory clay	Mullite rich refractory clay
Raw density [g/cm ³]		2.75	2.3	2.58	2.70	2.3	2.3
Open porosity (%vol)		18	14	14	15	16	19
Cold compression strength [MPa]		100	70	100	100	50	50
Refractoriness under load T ₀₅ [0,20 MPa]		1510	1390	1600	1650	1450	1470
Chemical analysis [%]	Al ₂ O ₃	80	40	60	70	49	53
	SiO ₂	12	50	37	28	46	43
	Fe ₂ O ₃	1.6	1.6	1	0.8	1.1	1.1
Extra properties Extra information				Good chemical resistance, very good thermal shock resistance, abrasion-resistant	Very good hot strength and thermal shock resistance, abrasion-resistant		
Thermal conductivity [W/mK] Hot wire (cross) procedure ISO 8894-1	800°C	1.92	1.30	2.02	1.80	1.60	1.50
	1000°C	2.00	1.37	2.12	2.00	1.60	1.60
	1200°C	2.11	1.46	2.32	2.30	1.60	1.80
	1400°C	2.23	1.54	2.64	-	-	2.00

INSULATING FIRE BRICKS



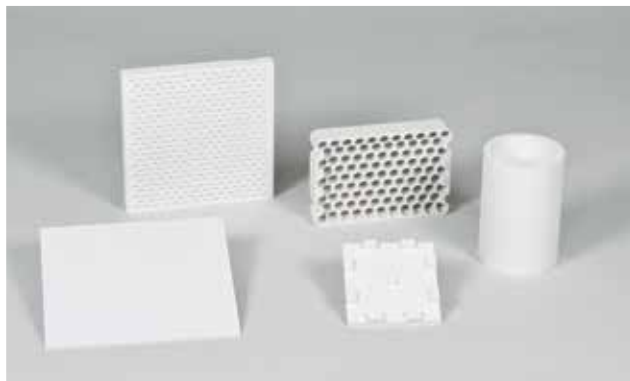
NAME		PORRATH FL 24-06	PORRATH FL 25-08	PORRATH FL 25-10	PORRATH FL 26-08	PORRATH FL 28-09	PORRATH FL 28-10	PORRATH FL 30-11
Raw material base		Aluminum silicate	Aluminum silicate	Aluminum silicate	Aluminum silicate	Aluminum silicate	Aluminum silicate	Aluminum silicate
Classification temperature [°C]		1350	1380	1400	1430	1540	1540	1650
ASTM group		-	-	-	26	28	28	30
Raw density [g/cm ³]		0.64	0.8	1.0	0.8	0.9	1.0	1.1
Cold compression strength [MPa]		1.2	4	8	3.5	4	5	5
Permanent length change [%]		1320 °C/ 12 h -0.7	1320 °C/ 12 h -0.9	1320 °C/ 12 h -0.9	1400 °C/12 h -0.5	1510 °C/12 h -0.7	1510 °C/12 h -0.5	1620 °C/12 h -1.1
Chemical analysis [%]	Al ₂ O ₃	37	38	40	52	63	66	72
	SiO ₂	56	55	54	44	31	31	27
	Fe ₂ O ₃	1.9	2.2	2.3	1.1	0.8	0.8	0.3
Thermal conductivity [W/mK] (Hot wire procedure) DIN EN 993-14	200°C	-	-	-	-	-	-	-
	400°C	-	-	-	-	-	-	-
	600°C	0.28	0.36	0.42	0.36	0.38	0.42	0.44
	800°C	0.32	0.41	0.46	0.39	0.40	0.44	0.46
	1000°C	0.38	0.47	0.50	0.43	0.43	0.47	0.51
	1200°C	0.43	0.50	0.54	0.48	0.47	0.50	0.58

HIGH-TEMPERATURE INSULATION WOOL

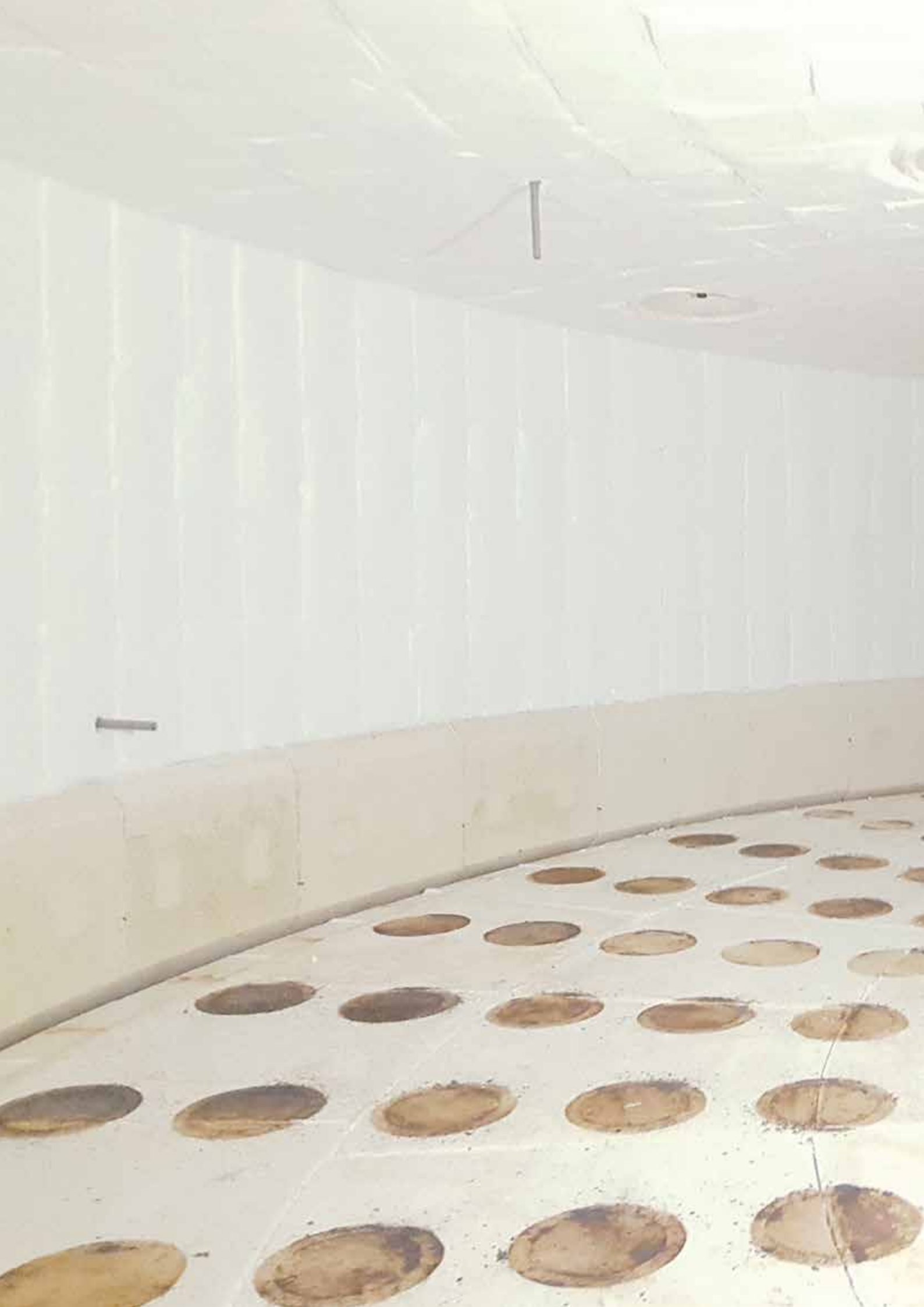


PROPERTIES	ALSITRA MAT 1300	ALSITRA MAT 1400	ALSITRA MOD 1300	ALSITRA MOD 1400	ALTRA MAT 72	ALTRA MOD 72	COMBO MOD 97
Raw material base	Alumina, aluminum silicate	Alumina, aluminum silicate	Aluminum silicate	Aluminum silicate	Aluminum silicate	Aluminum silicate	Mullite, aluminum silicate
Classification temperature [°C]	1300	1400	1300	1400	1650	1650	1450
Continuous use temperature [°C]	< 1150	< 1250	< 1150	< 1250	1600	< 1650	< 1400
Raw density [kg/m³]	128	128	130	130	128	100-180	140/180
Thermal conductivity [W/mK]	400°C	0.11	0.11	0.07	0.07	0.09	-
	600°C	0.15	0.15	0.1	0.1	0.13	-
(Hot wire procedure)	800°C	0.21	0.21	0.14	0.14	0.19	-
	1000°C	0.31	0.31	0.19	0.19	0.28	-
DIN EN 993-14	1200°C	0.44	0.44	0.26	0.26	0.41	0.42
	1400°C	-	0.64	0.33	0.33	0.61	-

VACUUM-FORMED SHAPES



PROPERTIES (dried)		KERFORM KVS 161	ALTRAFORM KVS 164-301	EVAC EVS 131	KERFORM KVF 121	KERFORM KVF 141	KERFORM KVS 121	KERFORM KVS 141
Raw material base		Aluminum silicate wool	Aluminum silicate wool / polycrystalline wool	Earth alkali silicate wool	Aluminum silicate wool, Altra	Aluminum silicate wool, Altra	Aluminum silicate wool	Aluminum silicate wool
Classification temperature [°C]		1600	1600	1300	1250	1400	1250	1400
Continuous application temperature [°C]		1500	1500	1280	1150	1300	1150	1300
Bulk density [kg/m³]		300	300	320	> 160	> 160	300	300
Permanent length change [%] DIN EN 1094-6	900 °C/24 hrs.	-	-	-	-1.0	-	-	-
	1000 °C/24 hrs.	-	-	-1.8	-2.0	-1.0	-	-
	1100 °C/24 hrs.	-	-	-3	-3.0	-2.0	-2.9	-1.6
	1250 °C/24 hrs.	-	-	-	-	-3.0	-3.7	-2.5
	1300 °C/24 hrs.	-	-	-3.9	-	-	-	-3.7
	1400 °C/24 hrs.	-2.0	-1.0	-	-	-	-	-
	1500 °C/24 hrs.	-2.0	-1.0	-	-	-	-	-
	1600 °C/24 hrs.	-3.0	-2.1	-	-	-	-	-
Chemical analysis [%] DIN EN 955-2; 4 after burnout	Al ₂ O ₃	65	28	2	46	48	50	55
	SiO ₂	34	20	76	53	52	49	44
	CaO / MgO	-	-	22	-	-	-	-
	ZrO ₂	-	51	-	-	-	-	-
Thermal conductivity [W/mK] (Hot wire procedure) DIN EN 993-14	200 °C	-	-	0.09	-	-	0.09	-
	400 °C	0.17	0.12	0.12	0.07	0.07	0.12	0.12
	600 °C	0.18	0.13	0.16	0.12	0.12	0.15	0.15
	800 °C	0.20	0.15	0.21	0.18	0.18	0.19	0.19
	1000 °C	0.26	0.18	0.29	0.25	0.25	0.25	0.24
	1200 °C	0.34	0.23	0.37	0.35	0.35	0.35	0.31
	1400 °C	0.44	-	-	-	0.48	-	0.40





INDUSTRIES AND APPLICATIONS



Forging furnace



Glass production



Aluminum melting furnace

Thanks to their many projects, RATH employees have a great deal of experience and knowledge that they contribute to the development and planning of refractory linings.

RATH HAS EXPERIENCE AND EXPERTISE IN SPECIFIC INDUSTRIAL APPLICATIONS

Metal-processing industry

- Metallurgical heating furnaces
- Heat treatment furnaces
- Aluminum smelting furnaces
- Direct reduction plants
- Hot-gas filtration

Petrochemistry, chemistry

- Carbon black reactors
- Reformers and cracking furnaces
- Chlorine reactors
- Sulfur extraction plants
- Hot-gas filtration

Energy & environmental engineering

- Biomass firing systems
- Wood distillation, grate stoker furnaces
- Hot-gas generation
- Fluidized bed reactors
- Rotary kilns
- Waste incineration plants
- Heat exchangers
- Hot-gas filtration

Tiled stoves and domestic fireplaces

- Complete oven systems
- Biological combustion chamber plus
- Flue systems
- Combustion chamber linings
- Inspection window doors
- Mortars and adhesives

Ceramic industry

- Technical ceramics, sanitary ceramics, pottery ceramics, refractory ceramics
- Tunnel kilns
- Rotary furnaces
- Hood-type furnaces

Special furnace construction

- Laboratory furnaces
- Dental furnaces
- Analytic devices

Glass industry

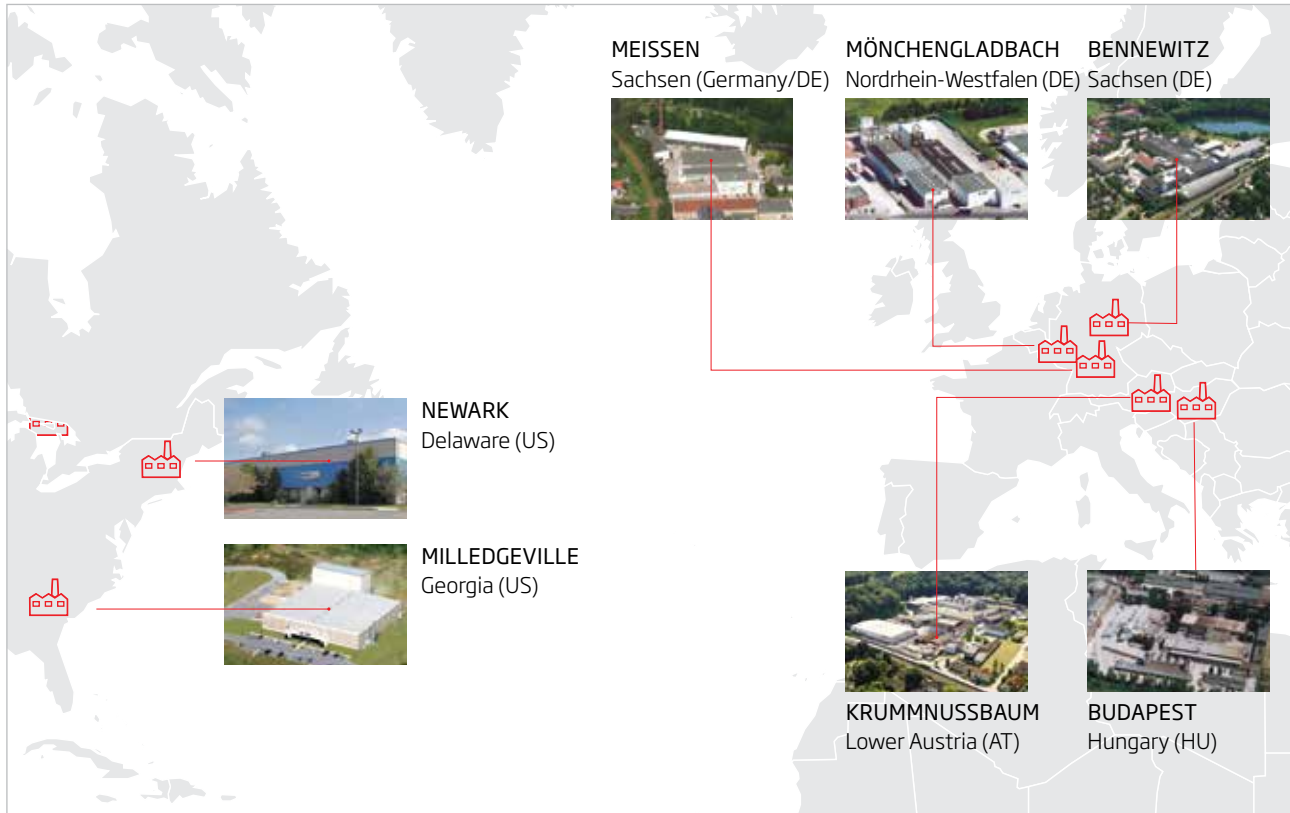
- Regenerator chambers
- Melting ends
- Working ends
- Forehearths
- Basins for glass processing

IN-HOUSE MANUFACTURING AT HIGHEST QUALITY LEVEL



Seven production sites in Europe and America are constantly exchanging information about manufacturing procedures to guarantee best products.

Quality at Rath is not just a buzz-word but a vivid corporate culture. Each individual employee strives for the best solution and does not give up until it is achieved.



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