

REFRACTORY SOLUTIONS FOR DISTRIBUTOR, FOREHEARTH AND FEEDER SPOUT SYSTEMS



METALS



CERAMICS



GLASS



SPECIAL
FURNACES



FUELS
CHEMICALS
ENERGY

top technology |
creates confidence

RATH

www.rath-group.at


WELCOME TO RATH

YOUR SPECIALISTS FOR REFRACTORY SOLUTIONS

For more than 125 years, material expertise, application know-how and personal service have made RATH a provider that customers around the world rely on. Because it is important to have a dependable partner, especially when it comes to the mastery of high temperatures.

WITH ITS GLASS EXPERTISE, RATH COVERS THE FULL SPECTRUM OF UNITS FOR VARIOUS KINDS OF GLASS PRODUCTION:

- Recuperative furnaces
- Oxy-fuel furnaces
- Electric furnaces
- Daily tanks and pot furnaces
- Regenerative U-flame and or cross-fired furnaces, incl. complete
 - Flue gas channels
 - Regenerator chambers
 - Melting furnaces
 - Distributors
 - Forehearth
 - Feeders



125
YEARS
RESPONSIBILITY
& PASSION

WELCOME TO THE WORLD OF REFRACTORY MATERIALS

RATH develops, produces and provides the full range of refractories such as dense bricks, pre-shaped blocks, monolithics, insulating fire bricks, high temperature insulation wool and vacuum-formed shapes as well as hot gas filtration elements.

We have 540 people working daily for you in the field of refractory technology. We produce high quality refractory materials, including everything required for the lining of furnaces. Our fireproof liners are always the best technical and cost-efficient solution. We deliver systems with high-quality incombustible liners all over the world. Whenever customers need quality, safety, productivity and reliability, they choose RATH products and services.

WORKING END & DISTRIBUTORS

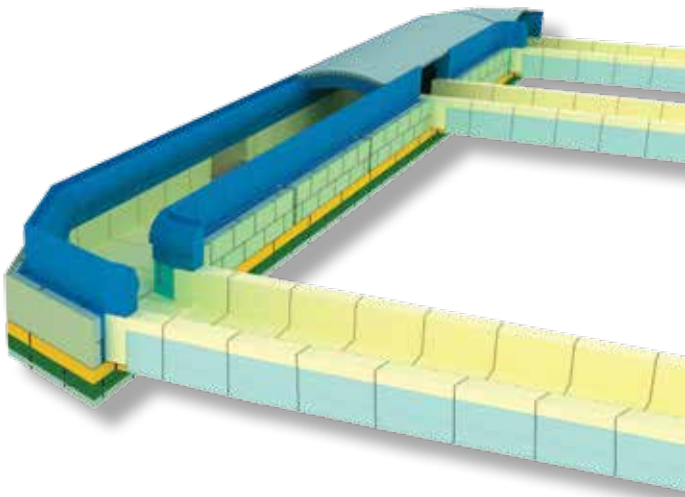
RATH supplies the sub- and superstructure of working ends and distributors from its own product portfolio. Superstructure cover blocks, as well as burner and peep-hole blocks are available in Andalusite, Fused-mullite and Zircon-mullite qualities.



Distributor superstructure_VIBRORATH A70M



Bottom sub-paving blocks after machine grinding



Precision grind WE sub-paving blocks are available with or without pre-assembly, depending on the customer's needs. In addition, RATH can provide the complete range of WE insulation from its own portfolio, including the different light-weight insulating bricks, calcium-silicate, vacuum-formed and/or microporous insulating boards.

Mortars, adhesives, patch and ramming mixes supplied in bags or buckets (ready for use) are also available in our scope of delivery.

RECOMMENDED REFRACTORIES FOR TYPICAL DISTRIBUTOR APPLICATIONS

Qualities provided by RATH	VIBRORATH A60 Andalusite	VIBRORATH A70M Fused-mullite	CARATH 1650 ULC-AZ5 Zircon-mullite	CARATH 1650 ULC-AZ7 Zircon-mullite
Glass type	Soda-lime container glass (flint, amber, green), lead-free crystal glass	Soda-lime container glass (flint, amber, green), lead-free crystal glass	Soda-lime container glass (flint, amber, green), lead-free crystal glass	Borosilicate glass, fluoride opal glass, fiber glass, lead crystal glass
DISTRIBUTOR COVER BLOCKS		✓	✓	
DISTRIBUTOR BURNER BLOCKS	✓	✓	✓	✓

Recommended refractories based on typical glass compositions and conditions. Any variation in operating conditions and glass compositions may affect material selection.

FOREHEARTH

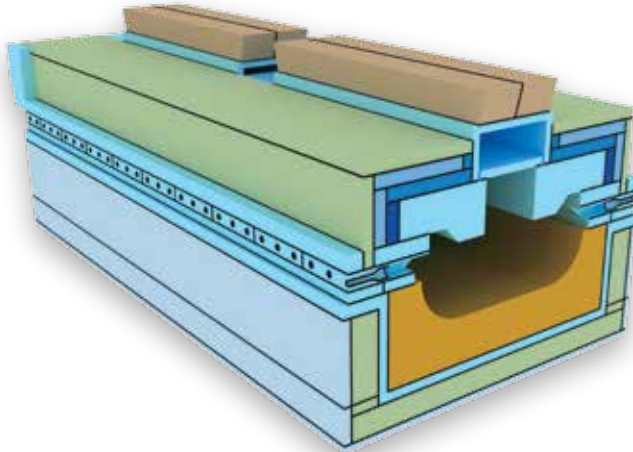
RATH supplies complete forehearth channels, including the glass contact high-alumina or bonded AZS channel blocks, the burner course and superstructure of forehearths, as well as the complete sub-structure and insulation. For details, please contact your RATH sales representative!



Forehearth cover blocks under machining



Pre-assembled channel blocks



RECOMMENDED REFRACTORIES FOR TYPICAL FOREHEARTH APPLICATIONS

Qualities provided by RATH	CARATH A 58 LC /338 Andalusite	VIBRORATH A60 /338 Andalusite	VIBRORATH A70M /345 Fused-mullite	VIBRORATH A70M/345 Fused-mullite	CARATH 1650 ULC-AZS/333 Zircon-mullite	CARATH 1650 ULC-AZS/315 Zircon-mullite	333 Zircon-mullite
Glass type	Soda-lime container glass (flint, amber, green), lead-free crystal glass	Soda-lime container glass (flint, amber, green), lead-free crystal glass	Soda-lime container glass (flint, amber, green), lead-free crystal glass	Borosilicate glass, fluoride opal glass, fiber glass, lead crystal glass	Soda-lime container glass (flint, amber, green)	Borosilicate glass, fluoride opal glass, fiber glass, lead crystal glass	Soda-lime container glass (flint, amber, green), lead-free crystal glass
FOREHEARTH CHANNEL BLOCKS					✓*		✓
FOREHEARTH COVER BLOCKS		✓	✓	✓	✓	✓	
FOREHEARTH BURNER BLOCKS	✓	✓	✓	✓	✓	✓	
FOREHEARTH ZONE DIVIDING BLOCKS			✓		✓	✓	

*Low-zircon version

Any variation in operating conditions and glass compositions may affect material selection.

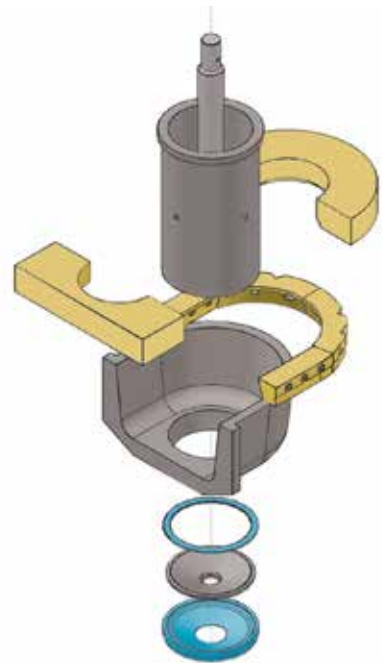
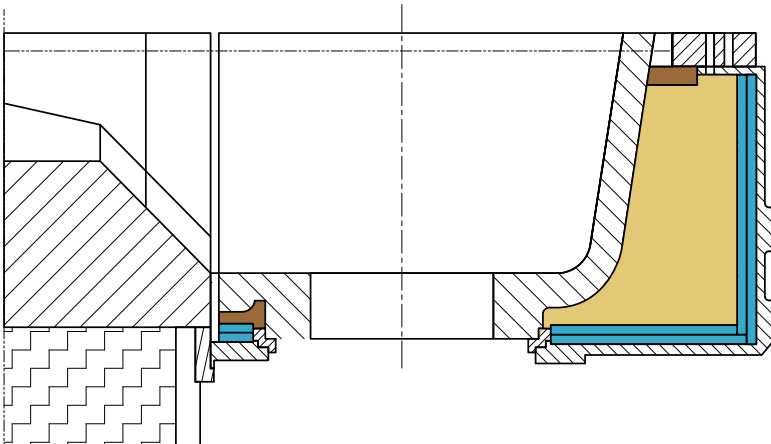
Mixes 338/345/333/315 are produced by RATH LLC, Owensville, USA (former Bucher Emhart Glass production facility)

FEEDER SPOUT ASSEMBLIES

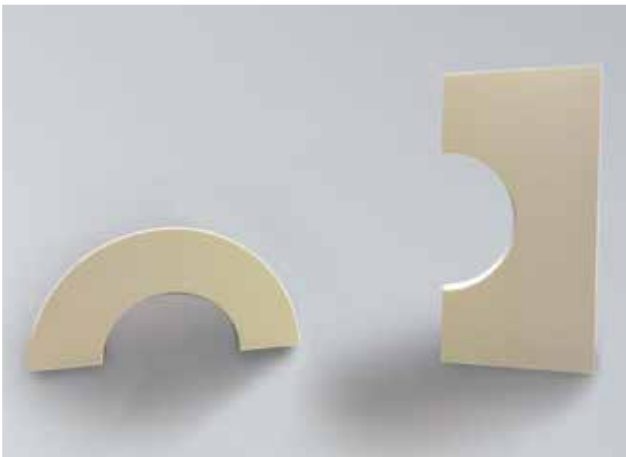


Pre-assembled forehearth and spout cover blocks

Starting from the microporous spout insulation kits up to the luting cements, insulation castables, orifice ring preforms and sealing gaskets, RATH provides a complete range of insulating and sealing materials for all kind of spouts and orifice rings.



LIGHT-WEIGHT SPOUT COVER BLOCKS_ALTRAFORM KVS166



ALTRAFORM KVS-166/301 light-weight front and rear spout cover blocks

ALTRAFORM KVS-166/301 is a poly-crystalline fiber product, manufactured with vacuum-formed technology.

The ALTRAFORM spout cover blocks are fired and completely impregnated, and can be used in soda-lime container glass feeders (flint, amber, green). The greatest advantage of the product is the extreme insulation ability, thus providing significantly better glass temperature homogeneity in the spout. Due to their extreme low weight (compared to the conventionally used sillimanite or mullite cover blocks), the installation of the blocks is much easier for the operators. The typical service life of ALTRAFORM spout cover blocks is 14-18 months.

RECOMMENDED REFRACTORY AND INSULATING MATERIALS FOR FEEDER APPLICATIONS

MATERIAL	QUALITIES	MATERIAL	QUALITIES	MATERIAL	QUALITIES	MATERIAL	QUALITIES
Luting cements, ramming and patch mixes produced on fireclay, andalusite, mullite, zircon-mullite and zircon-silicate raw material basis	CARATHIN C40	Spout insulation light-weight castables and wools	ALSITRA 1300 (RCF)	Spout cover and burner blocks ALTRAFORM is available only as cover blocks in soda-lime container glass feeders	CARATH A58LC	Preforms and gaskets	ALSITRA MAT 1400 (RCF)
	CARATHIN AK60		ALSITRA 1400 (RCF)		VIBRORATH A70M		ALTRA MAT 72 (poly-crystalline)
	CARATHIN M70-3		CARATH FL1301		CARATH 1650ULC-AZS		CALSITRA MAT 1250 (ecological)
	CARATHIN AZS30-3		CARATH FL1502		ALTRAFORM KVS166 (poly-crystalline)		KERFORM KVF141 (RCF)
	CARATHPLAST 1650AZS-RAM		CALSITRA 1250 (ecological)				EVAC EVF131 (ecological)
CARATHPLAST 1600ZS-RAM							

For assistance with choosing the right quality, please contact your RATH sales responsible.

HIGH-END REFRACTORY DENSE BRICKS FOR GLASS INDUSTRIAL APPLICATIONS, FURNACE OVERCOATING

RATH provides high quality dense bricks for different glass industrial applications. We are able to supply complete regenerator rider-arch and transition course systems, doghouse protection arches and hanging bricks, as well as customized overcoating blocks for tank hot&cold repairs from our own portfolio. We provide special shape refractory dense products such as burner, camera, peep hole and thermocouple blocks.



Precision machining with state-of-the-art technology



Overcoating blocks produced in BDP in various dimensions according to customer's request

Furnace sub-paving layers are supplied by RATH, starting from the insulating sub-paving layers, up to the fireclay, andalusite, zircon-silicate layers, and ramming mixes. In-house pre-assembly and precision machining is available in the RATH's Budapest plant. We manufacture high-end dense bricks for the most demanding glass industrial applications.

HYDRAULIC-PRESSED DENSE REFRACTORY BRICKS FOR GLASS INDUSTRIAL APPLICATIONS

MATERIAL	QUALITIES	MATERIAL	QUALITIES	MATERIAL	QUALITIES	MATERIAL	QUALITIES
Super duty fireclay bricks	DURRATH HS-E	Anadalu-site bricks	SILRATH AK60	High-fired fused-mullite bricks	SILRATH AK75M	Zircon-mullite and zircon-silicate bricks	ZIRRATH AZS20
	SUPRATH A40T		SILRATH AK65		ALURATH E75		ZIRRATH AZS30
	SUPRATH T45		SILRATH AK70	Hydraulic pressed chrom-alumina bricks	KORRATH C30		ZIRRATH AZS303A
	SUPRATH T501				KORRATH C50		ZIRRATH ZS65
			KORRATH C95	ZIRRATH ZS653A			

For assistance with choosing the right quality, please contact your Rath sales responsible.

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