

# Kerathin Paper Ropes Textiles



Edition 1999



# Kerathin P Fibreplast

		1000	1260	1400	1500	1600	1700	1800	HA <sup>1)</sup>	AL <sup>2)</sup>	CU <sup>2)</sup>
Max. service temperature [°C]		1050	1150	1300	1450	1550	1600	1700	1600	1100	1300
Chemical analysis [%]	Al <sub>2</sub> O <sub>3</sub>	60	63	65	66	68	73	80	98	24	10
	SiO <sub>2</sub>	38	36	34	33	31	27	20	2	43	29
	Others	–	–	–	–	–	–	–	–	BaO 21	SiC 60
Material consumption [kg/m <sup>3</sup> ] of fresh compound		1500	1500	1500	1500	1500	1800	1800	1800	1700	1500
Dry bulk density [kg/m <sup>3</sup> ]		900	900	900	900	900	1000	1000	1000	850	930
Linear shrinkage [%] after 24 hrs. at	800° C	0.5	–	–	–	–	–	–	–	0.1	–
	900° C	1.0	–	–	–	–	–	–	–	0.5	–
	1000° C	2.0	1.0	–	–	–	–	–	–	1.5	1.2
	1100° C	–	3.0	2.5	–	–	–	–	–	–	1.6
	1250° C	–	4.0	3.0	2.0	–	–	–	–	–	2.5
	1400° C	–	–	4.0	3.0	2.5	–	–	1.0	–	–
	1500° C	–	–	–	3.0	2.0	1.0	–	2.4	–	–
	1600° C	–	–	–	–	5.0	3.0	1.0	4.4	–	–
	1700° C	–	–	–	–	–	5.0	2.0	–	–	–
1750° C	–	–	–	–	–	–	3.0	–	–	–	

1) Particularly suitable for Kerform KVR products

2) Special products for non-ferrous metallurgy

## Product Description

**Kerathin** fibreplasts are mastic ceramic fibre products, made from high-grade alumina-silica fibres, alumina fibres, fillers and inorganic and organic binders. Rheological additives give Kerathin fibreplast its specific processing properties.

The following criteria should be applied in the **selection** of Kerathin fibreplast:

- Type of fibre material or substrate
- Furnace atmosphere, chemical attack
- Service temperature
- Coefficient of thermal expansion

The **advantages** of Kerathin fibreplast are:

- Fast, safe and particularly dust-free in use
- Optimum filling of even the smallest gaps
- With high injection pressure ceramic modules can be further compressed and interlinked, thus partially compensating in the long term for any further shrinkage.

- Module linings can be repaired without causing damage to the existing furnace lining, as can happen when the sheet metal is pulled.
- Durable bonding with the ambient material in contrast to loosely-applied fibres.

## Applications

- Repair compounds for cold and hot repairs (laboratory furnaces, porcelain firing kilns, forging furnaces, holding furnaces and troughs for non-ferrous metals, furnace cars, glass trough hoods)

- Adhesive and levelling compound for shaped fibre materials

- Covering anchor caps

For special applications, please contact one of our sales offices; they will be pleased to be of assistance.

**Delivery:** Ready to use; when delivered in pails or barrels, mix well before use.

**Form of delivery:** Pail, barrel, sleeve or cartridge

**Storage:** Frost-free, up to 6 months

**Processing:** With putty-knife or extrusion; special processing machines are available for extrusion.

# Kerathin K/Acrathin Adhesive

		Kerathin K 900 <sup>1)</sup>	Acrathin 1100	Kerathin K							
				1100 <sup>1)</sup>	1260 F	1500 F	1600	1700	1800	HA <sup>2)</sup>	CU <sup>3)</sup>
Max. service temperature [°C]		900	1100	1100	1300	1500	1600	1700	1800	1600	1300
Chemical analysis [%]	Al <sub>2</sub> O <sub>3</sub>	26	40	–	26	53	68	78	84	98	1
	SiO <sub>2</sub>	67	50	46	67	43	30	21	16	2	21
	others	–	–	MgO 42	–	–	–	–	–	–	SiC 78
Material consumption [kg/m <sup>2</sup> ]		3	3	4	6	6	5	5	5	5	6
of fresh compound [kg/m <sup>3</sup> ]		1800	1950	2000	2000	2000	1900	1900	1900	1900	2000
Grain size [mm]		0–0.5	0–0.5	0–0.3	0–0.5	0–0.5	0–0.5	0–0.5	0–0.1	0–0.5	0–0.1

1) Especially for jointing fibre fabrics and refractory materials with sheet steel or metal-to-metal.

2) Especially for KVR products

3) Especially for bonding Kerform CU

## Product Description

**Kerathin** adhesives are mastic for bonding ceramic fibre materials, refractory bricks, thermal insulation materials and metal base surfaces.

Adhearing is a widely-recognized method of joining. It is used as an alternative to metal or ceramic anchor systems. Kerathin adhesives should always be applied as thinly as possible.

The following criteria should be applied in the **selection** of Kerathin adhesives:

- Type of fibre material or base surface
- Furnace atmosphere, chemical attack
- Service temperature
- Coefficients of thermal expansion

The **advantages** of Kerathin adhesives are:

- Excellent wet bonding strength
- Outstanding bond durability
- Various types available to match materials to be joined, ensuring durable bonding

## Applications

- Bonding vakuüm-formed shapes
- Bonding felt and strip modules to brick furnace linings and expanded sheet metal
- Securing of high-temperature seals

For special applications, please contact one of our sales offices; they will be pleased to be of assistance.

**Delivery:** Ready for use, except  
Acrathin 1100 (dry powder)

**Form of delivery:** Bucket, barrel, except  
Acrathin 1100 (bag)

**Storage:** Frost-free up to 6 months,  
except Acrathin 1100  
(must be stored in a dry place)

**Processing:** With putty-knife or brush

For information on appropriate use we recommend consultation with our technical office.

### Applies to all quoted products:

For applications in corrosive atmospheres and close to maximum service temperatures we recommend consultation with our technical departments. The technical data are reference values, checked according to recognized test standards. Detailed descriptions are given in our data sheets. Other types upon request. We reserve the right to carry out amendments and alterations without prior notice.

# Kerathin S

## Fibrefoam

		1000	1260	1260 K <sup>1)</sup>	1400	1400 K <sup>1)</sup>	1500	1600	1700	1800
Max. service temperature [°C]		1050	1150	1150	1300	1300	1450	1550	1600	1700
Chemical analysis [%]	Al <sub>2</sub> O <sub>3</sub>	28	45	52	47	55	51	52	73	80
	SiO <sub>2</sub>	57	54	41	52	38	49	47	27	20
Material consumption [kg/m <sup>3</sup> ] of fresh compound		1000	1000	1100	1000	1100	1000	1000	1100	1100
Dry bulk density [kg/m <sup>3</sup> ]		450	450	560	450	560	450	450	600	600
Linear shrinkage [%] after 24 hrs. at	800° C	1.0	–	–	–	–	–	–	–	–
	900° C	2.0	–	–	–	–	–	–	–	–
	1000° C	3.0	2.0	2.0	–	–	–	–	–	–
	1100° C	–	4.0	2.2	3.0	2.0	–	–	–	–
	1250° C	–	5.0	3.0	4.0	2.4	3.0	–	–	–
	1400° C	–	–	–	5.0	3.5	4.0	2.0	–	–
	1500° C	–	–	–	–	–	4.0	2.0	1.0	–
	1600° C	–	–	–	–	–	–	5.0	3.0	1.0
	1700° C	–	–	–	–	–	–	–	5.0	3.0
1750° C	–	–	–	–	–	–	–	–	5.0	

1) The hardener supplied must be well intermixed before application. Unused residues are not suitable for subsequent use.

## Product Description

**Kerathin** fibrefoams are mastic ceramic fibre products, made from high-grade alumina-silica fibres, alumina fibres, fillers, inorganic and organic binders. Rheological additives give Kerathin fibrefoam its specific processing properties.

The following criteria should be applied in the **selection** of Kerathin fibrefoam:

- Type of fibre material and substrate
- Furnace atmosphere, chemical attack
- Service temperature
- Coefficient of thermal expansion

The **advantages** of Kerathin fibrefoam are:

- Fast, safe and dust-free
- Even faster hardening can be achieved by using the two-component fibrefoam
- Optimum filling of even the smallest gaps
- With high injection pressure ceramic modules can be further compressed and interlinked, thus compensating in the long term for any further shrinkage.
- Module linings can be repaired without causing damage to the existing furnace lining, as can happen when the sheet metal is pulled.

- Durable bonding with the ambient material in contrast to loosely-applied fibres.

### Applications

- Repair compound for cold and hot repairs (laboratory furnaces, porcelain firing kilns, forging furnaces, holding furnaces and troughs for non-ferrous metals, furnace cars, glass trough hoods).
- Covering anchor caps
- Thermal insulation of support structures in pusher-type furnaces
- Fast production of thermal insulation shapes (prototypes, small batch production) using two-component fibrefoam
- Back insulation for complex geometry applications or cavities where access is difficult

**Delivery:** Ready for use; mix well before use.

**Form of delivery:** Pail, barrel

**Storage:** Frost-free, up to 6 months

**Processing:** With putty-knife or extrusion; special processing machines are available for extrusion.

# Kerathin C

## Coating

	1260	1500	1600	1600Z	1700	1800	HA <sup>1)</sup>	AL <sup>2)</sup>	CU <sup>2)</sup>	
Max. service temperature [°C]	1300	1500	1600	1600	1700	1800	1600	1260	1300 <sup>3)</sup>	
Chemical analysis [%]	Al <sub>2</sub> O <sub>3</sub>	64	72	76	39	80	85	98	60	–
	SiO <sub>2</sub>	33	26	22	32	19	15	2	25	–
	others	–	–	–	ZrO <sub>2</sub> 26	–	–	–	BaO 5	C 25 <sup>4)</sup>
Material consumption [kg/m <sup>2</sup> ]	0.5-1.2	0.5-1.2	0.5-1.2	0.5-1.2	0.5-1.2	0.5-1.2	0.5-1.2	0.5-1.2	0.5-1.2	0.5-1.2
of fresh compound [kg/m <sup>3</sup> ]	1600	1600	1600	1800	1600	1600	1600	1900	1100	
Grain size [mm]	0–0.5	0–0.5	0–0.5	0–0.5	0–0.5	0–0.5	0–0.5	0–0.5	0–0.5	Dispersion

1) Especially for KVR products

2) Special products for non-ferrous metallurgy

3) In absence of oxygen

4) Chemical analysis dry

## Product Description

**Kerathin** coatings are viscous products for the surface coating of ceramic fibre materials.

**Kerform** and other fibre materials can be treated with Kerathin coating, extending the service life of a furnace lining.

The following criteria should be applied in the **selection** of Kerathin coating:

- Type of fibre material, and substrate
- Furnace atmosphere, chemical attack
- Service temperature
- Required radiation characteristics

The **advantages** of Kerathin coating are:

- Dust-free surface of treated products
- Optimum handling
- Increased abrasion resistance
- Resistance to chemical attack
- Energy saving thanks to improvement of radiation characteristics

## Applications

- Treatment of modules and vacuum-formed shapes, ranging from laboratory furnaces to industrial equipment (forging furnaces, dental furnaces, glass-drawing furnaces, etc.)
- Surface sealing for non-ferrous metal holding furnaces and troughs

For special applications, please contact one of our sales offices; they will be pleased to be of assistance.

**Delivery:** Ready for use; mix well before use

**Form of delivery:** Pail, barrel, except Coating CU (can)

**Storage:** Frost-free, up to 6 months

**Processing:** Brushing, spraying

For information on appropriate use we recommend consultation with our technical office.

### Applies to all quoted products:

For applications in corrosive atmospheres and close to maximum service temperatures we recommend consultation with our technical departments. The technical data are reference values, checked according to recognized test standards. Detailed descriptions are given in our data sheets. Other types upon request. We reserve the right to carry out amendments and alterations without prior notice.

# Kerathin H Rigidizer

	900	1260	1400	1600	HA <sup>1)</sup>
Max. service temperature [°C]	900	1260	1400	1600	1600
Chemical analysis [%]					
on delivery					
Al <sub>2</sub> O <sub>3</sub>	–	–	–	20	20
SiO <sub>2</sub>	14	20	20	–	–
Na <sub>2</sub> O	4.5	0.35	0.15	–	–
Material consumption of fresh compound [kg/m <sup>3</sup> ]	1200	1200	1200	1200	1200

1) Especially for Kerform KVR products

## Product Description

**Kerathin** rigidizers are thin inorganic solutions or colloids. They are used for hardening either the surfaces of ceramic fibre materials or throughout. Kerathin rigidizers differ from coatings. They penetrate deeper into the highly porous fibre matrix. The degree of toughness is determined by the concentration of the rigidizer and the method of processing (brushing, spraying or dipping). Due to increased reactivity, the suitability of the rigidizers for special atmospheres should be clarified by contacting one of our technical sales offices.

The following criteria should be applied in the **selection** of Kerathin rigidizers:

- Type of fibre material
- Furnace atmosphere
- Service temperature

The **advantages** of Kerathin rigidizers are:

- Dust-free surface of treated products
- Optimum handling and processing
- Increased abrasion resistance

## Applications

- Treatment of blankets, modules, papers and vacuum-formed shapes

For special applications, please contact one of our sales offices; they will be pleased to be of assistance.

**Delivery:** Ready to use

**Form of delivery:** Bottle, drum, barrel

**Storage:** Frost-free up to 3 months, except Kerathin H 900 (frost-free for up to 6 months)

**Processing:** Brushing, spraying, dipping

For information on appropriate use we recommend consultation with our technical office.

### Applies to all quoted products:

For applications in corrosive atmospheres and close to maximum service temperatures we recommend consultation with our technical departments. The technical data are reference values, checked according to recognized test standards. Detailed descriptions are given in our data sheets. Other types upon request. We reserve the right to carry out amendments and alterations without prior notice.

# Ceramic Fibre Paper

		KP 1250	KP 1400	KP 1600
Classification temperature [°C]		1250	1400	1600
Service temperature [°C]		1100	1250	1500
Bulk density [kg/m <sup>3</sup> ]		200	200	150
Chemical analysis [%]	Al <sub>2</sub> O <sub>3</sub>	49	57	88
	SiO <sub>2</sub>	49	42	9
	others	2	1	3
Linear shrinkage [%] at classification temperature after 24 hrs.		4	4	4
Organic binder content [%]		5	5	5
Thermal conductivity [W/mK] at	120° C	0.045	0.045	–
	285° C	0.071	0.071	–
	300° C	0.073	0.073	0.06
	455° C	0.098	0.098	–
	500° C	0.105	0.105	0.09
	645° C	0.128	0.128	–

Types of Delivery	KP 1250			KP 1400			KP 1600		
Thickness [mm]	1.0	2.0	3.0	1.0	2.0	3.0	1.0	2.0	3.0
Width [mm]	500	500	500	500	500	500	500	500	500
Length [m]	40	20	10	20	20	10	10	10	10

Upon request, ceramic fibre paper can also be supplied in thicknesses from 0.5 to 8 mm and widths up to 1220 mm.

## Product Description

Ceramic fibre papers are manufactured from pure ceramic fibre on paper-making machines. A small amount of organic binder is added to improve the tensile strength of the paper. This evaporates when the paper is exposed to service temperatures.

The fibre papers are tear-resistant, flexible and easy to handle.

The dielectric strength is approx. 3000 V/mm.

## Applications

- Partitioning material
- Firing substrate
- Dental furnaces
- Sealing applications

For special applications, please contact one of our sales offices; they will be pleased to be of assistance.

### Applies to all quoted products:

For applications in corrosive atmospheres and close to maximum service temperatures we recommend consultation with our technical departments. The technical data are reference values, checked according to recognized test standards. Detailed descriptions are given in our data sheets. Other types upon request. We reserve the right to carry out amendments and alterations without prior notice.

# Ceramic Fibre Ropes and Textiles

Reinforced with	Ceramic Fibre Rope							Ceramic Fibre Textile			
	Glass (up to 500° C)			Brass (up to 750° C)	Inconel (up to 1150° C)			Glass (up to 500° C)		Inconel (up to 1150° C)	
Type	loose and twisted	braided	wrapped with reinforced yarn	with sup- porting fibres	loose and twisted	braided	wrapped with reinforced yarn	interwoven to tapes   textiles		interwoven to tapes   textiles	
Trademark	KS-G-500	KE-G-500	KG-G-750	OS-M-750	KS-I-1200	KE-I-1200	KG-I-1200	KB-G-500	KT-G-500	KB-I-1200	KT-I-1200

## Product Description

The ropes have a braided glass fibre, brass or Inconel wire wrapping for applications involving high mechanical loading and have accordingly differing service temperature limits. This also applies for textiles, whereby these are only available with glass fibre or Inconel wire reinforcement.

The ropes can be supplied loose or twisted (Type KS) or with additional braided supporting fibre wrapping (Type OS). We can also supply woven square-plaited ropes (Type KE) as well as sealing and insulation ropes, manufactured as blanket stripes wrapped with reinforced yarn (Type KG). Ropes are available either round or square with diameters from 3 mm.

The textiles consist of a coarsely-woven, combed, three-cord twisted ceramic fibre, an organic backing fibre and an inorganic supporting fibre which determines the actual service temperature.

The organic backing fibre ensures high green strength, but evaporates even at low temperatures. This fibre accounts for approx. 15 to 20% of the fabric. All ropes, ribbons and textiles are free of asbestos.

### Applications

- Sealing applications
  - Flexible attachment of delicate components
- For special applications, please contact one of our sales offices; they will be pleased to be of assistance.

#### Applies to all quoted products:

For applications in corrosive atmospheres and close to maximum service temperatures we recommend consultation with our technical departments. The technical data are reference values, checked according to recognized test standards. Detailed descriptions are given in our data sheets. Other types upon request. We reserve the right to carry out amendments and alterations without prior notice.