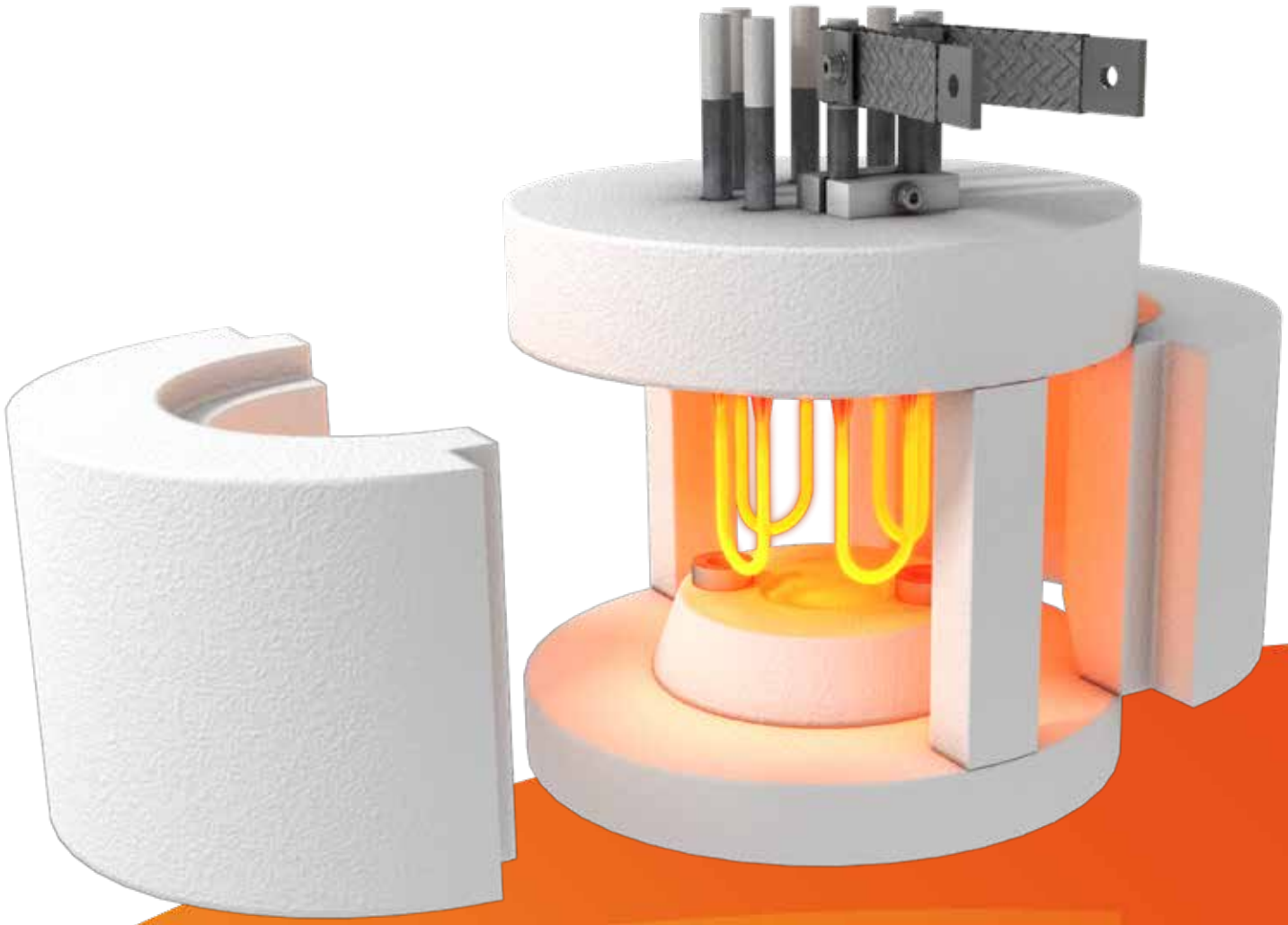
SCHUPP®

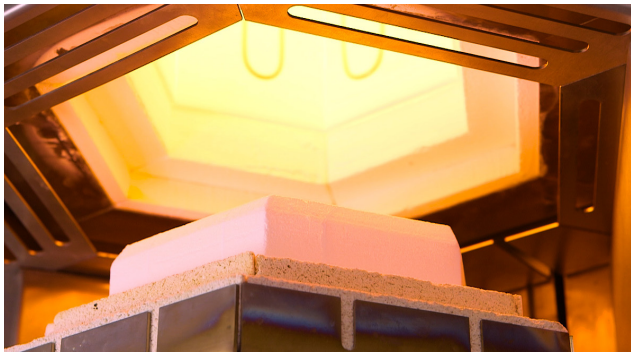
simply high temperature technology



HIGH-TEMPERATURE
PRODUCTS, COMPONENTS AND SYSTEMS
560 °C - 1.800 °C

HEATING | INSULATION | MEASURING

PROFESSIONAL HIGH TEMPERATURE TECHNOLOGY
560 °C – 1.800 °C



SCHUPP® Ceramics is an established specialist for high temperature technology. Our family-owned company has been developing, producing and marketing high-quality metallic-ceramic solutions for sintering, firing, melting and heat treatment since 1996.

From approved standard products for high-precision firing process control to individual, custom-made products for electrical heating or thermal insulation – we provide standard and tailor-made solutions for industrial applications, production, and research for customers around the world.

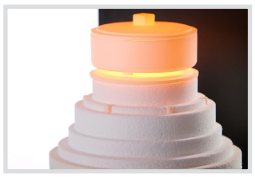
TEAMWORK IS THE KEY

Our international team works with head, hand and whole heart for currently over 900 clients worldwide. True to the principle of value creation through appreciation, we maintain our relationships with customers, production and research partners and employees. At the same time, we naturally use materials and energy as responsibly and as sparingly as possible.

YOUR SUCCESS AND SATISFACTION ARE OUR MOTIVATION, PASSION AND DRIVE

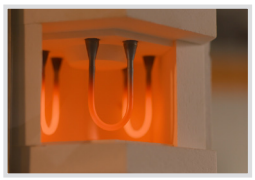
WHERE EXPERIENCE IS REQUIRED

SCHUPP® Ceramics delivers to all industries where high temperature is used.

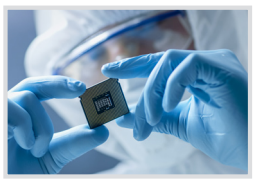


SINTERING & FIRING

MELTING



HEAT TREATMENT



RESEARCH & DEVELOPMENT

ENGINEERING

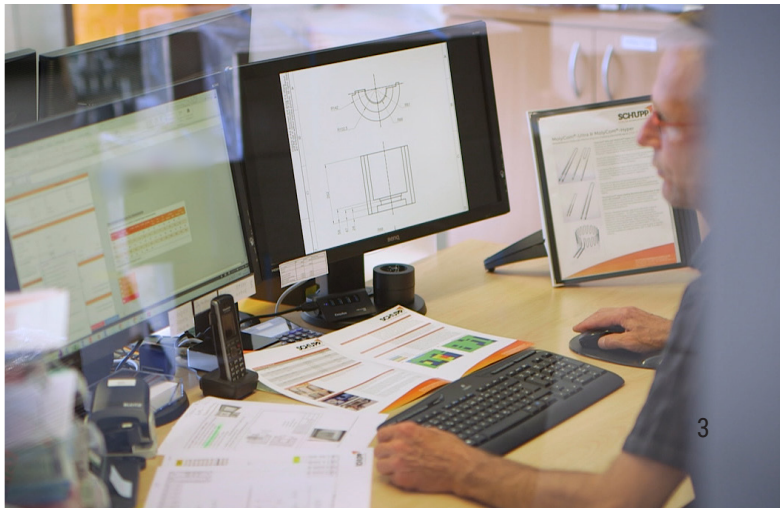
We develop tailor-made high-temperature systems that can be successfully integrated into the thermal processes of our customers and thus ensure cost-effectiveness and reliability.

FOR **ELECTRICALLY** AND **COMBUSTION HEATED** FURNACES

QUALITY MANAGEMENT

We want to make a decisive contribution to your business success. This is how we measure the value of our work.

That is why we have developed a comprehensive **quality management system** that is reflected in the high standard of all our systems, components and products. And we are **ISO 9001** certified.



THERMAL INSULATION

RIGID INSULATION UP TO 1.800 °C APPLICATION TEMPERATURE

BOARDS, CYLINDERS AND SHAPES MADE OF POLYCRISTALLINE MULLITE/ALUMINA WOOL (PCW)

Made of **polycrystalline mullite/alumina wool (PCW)**, vacuum formed **UltraBoard** and **UltraVac** (3D-shapes) products are a high-quality alternative to insulation materials made of aluminosilicate wool (ASW), also known as refractory ceramic fiber (RCF).

- Up to 1.800 °C application temperature
- Low thermal conductivity
- Long service life due to very low shrinkage
- Easy machining (homogeneous structure)

UltraBoard & UltraVac

Type	UV 1500-3	1500-300	UV 1600-4	1600-400	UV 1750-4	1750-400P	1850-400	1850-500	1850-700
SiO_2 [%]	25	30	20	28	17	22	20	15	15
Al_2O_3 [%]	75	70	80	72	83	78	80	85	85
Classification temperature [°C]	1500	1500	1600	1600	1750	1750	1850	1850	1850
Max. service temperature (perm.) [°C]	1500	1450	1600	1500	1750	1700	1780	1800	1800
Density [kg/m³]	300	300	400	400	400	400	400	500	700
Thermal conductivity [W/mK]	0,50 (1400 °C)	0,50 (1400 °C)	0,42 (1400 °C)	0,47 (1400 °C)	0,35 (1400 °C)	0,27 (1400 °C)	0,34 (1400 °C)	0,38 (1400 °C)	0,39 (1400 °C)
Linear change [%]	-0,22 (1500 °C /24h)	-1,2 (1500 °C /24h)	+0,14 (1600 °C /24h)	-0,5 (1600 °C /24h)	-0,13 (1750 °C /24h)	-0,4 (1700 °C /24h)	+0,5 (1700 °C /24h)	+0,2 (1700 °C /24h)	+0,1 (1700 °C /24h)
Standard dimension	UltraBoard: 900 mm x 600 mm x (20, 25, 40, 50 mm) – Customised dimensions on request. UltraVac: Customised dimensions and shapes on request.								

THERMAL INSULATION

SOFT INSULATION UP TO 1.600 °C APPLICATION TEMPERATURE

POLYCRYSTALLINE MULLITE/ALUMINA WOOL (PCW) BULK AND NEEDLED BLANKETS

Made of **polycrystalline mullite/alumina wool (PCW) ITM-Fibermax®** is available as a raw material in form of **wool** and **needled blankets**.

The material is an extremely good substitution for materials containing ceramic fibers (RCF). The light shot- and RCF-free material is particularly suitable for temperatures above 1.250 °C as well as applications that require a chemical resistance.

Blankets needled on both sides are an indispensable component in module production.

- Mullite structure, high strength
- Shot-free and ceramic fiber (RCF)-free
- Up to 1.600 °C application temperature
- 72 % Al_2O_3 content
- Long service life due to very low shrinkage

ITM-Fibermax® wool and needled blankets, max. service temperature 1.600 °C

Type	SiO_2 [%]	Al_2O_3 [%]	Density [kg/m³]	Thermal conductivity [W/mK]	Thickness [mm]	Dimension [mm]	Type of packaging	Comments
Bulk Wool 1600	Al_2O_3 + SiO_2 ≥ 99	72	-	-	-	-	10 kg bag of wool	Unchopped/ chopped
Blanket 1600/100	28	72	100	0,42 (1200 °C)	12,5 25	610 x 7200	roll / carton on pallet	needled
Blanket 1600/130	28	72	130	0,36 (1200 °C)	12,5 25	610 x 7200	roll / carton on pallet	needled

ELECTRIC HEATING

UP TO 1.850 °C ELEMENT TEMPERATURE

HEATING ELEMENTS MADE OF MOLYBDENUM DISILICIDE ($MoSi_2$)

PROFESSIONAL. RELIABLE. INDIVIDUAL.

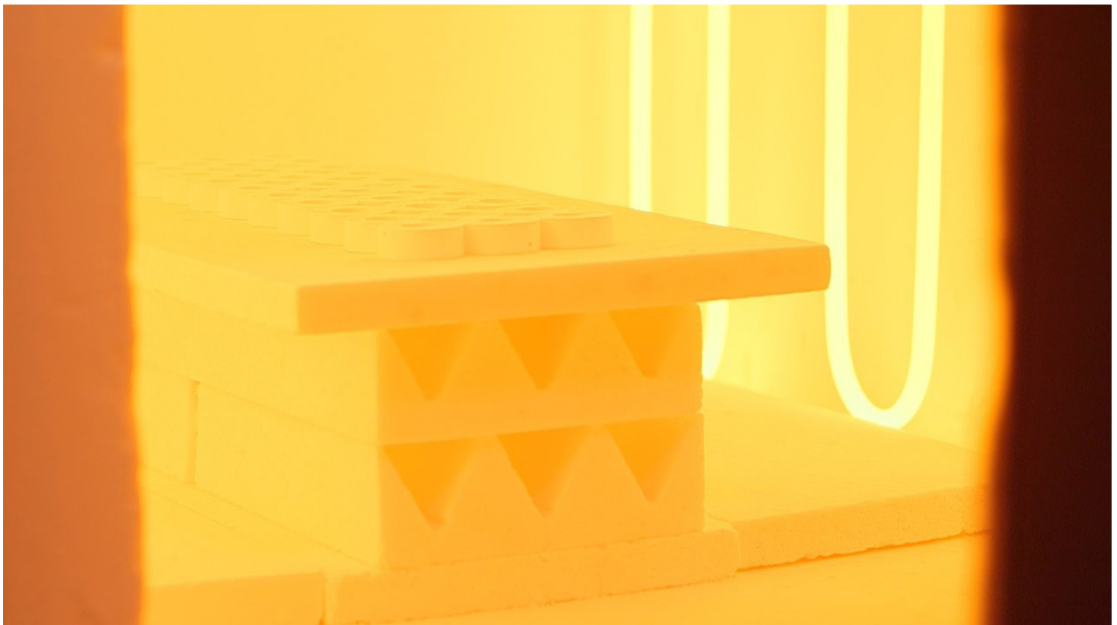
Industry standard or extra high-purity demands – SCHUPP® Ceramics provides $MoSi_2$-heating elements for any requirements you may have.

All heating elements are also fully compatible with other comparable manufacturer's elements.

- High surface load and long service life of the elements
- Diameters from 3/6 mm to 12/24 mm and lengths from 25 mm to 2000 mm
- Geometries: U-, L-, W-shaped elements and other

MolyCom®-Ultra 1700, 1800 and 1850 are particularly durable and conform to industrial standards. The heating elements form a self-healing protective layer of pure quartz.

MolyCom®-Hyper 1800 and 1900 is the solution for particularly high purity demands: Trace elements are reduced to a minimum (1/10 compared to competitor). **MolyCom®-Hyper 1800, 1800SC and 1900** allow sintering of zirconia without discoloration, also above 1.600 °C. **MolyCom®-Hyper 1800AP** is a special type of element, one that is resistant to oxidation from 200 °C to 700 °C.



MolyCom®-Hyper 1800 / -Hyper 1800SC / -Hyper 1800AP / -Hyper 1900

HIGH PURITY		MolyCom®-Hyper 1800	MolyCom®-Hyper 1800SC[1)]	MolyCom®-Hyper 1800AP[2)]	MolyCom®-Hyper 1900
Density	[kg/dm³]	5,7	5,7	5,7	7,2
Bending strength at 20 °C	[N/mm²]	350 – 450	350 – 450	350 – 450	400 – 500
Porosity	[%]	< 1	< 1	< 1	< 1
Max. element temperature (under air)	[°C]	1800	1800	1800	1850
Max. furnace/kiln temperature (under air)	[°C]	1750	1750	1750	1800

* Depending on furnace size and type. | [1)] SC - Super Clean / [2)]AP- Anti Pest

MolyCom®-Ultra 1700 / -Ultra 1800 / -Ultra 1850

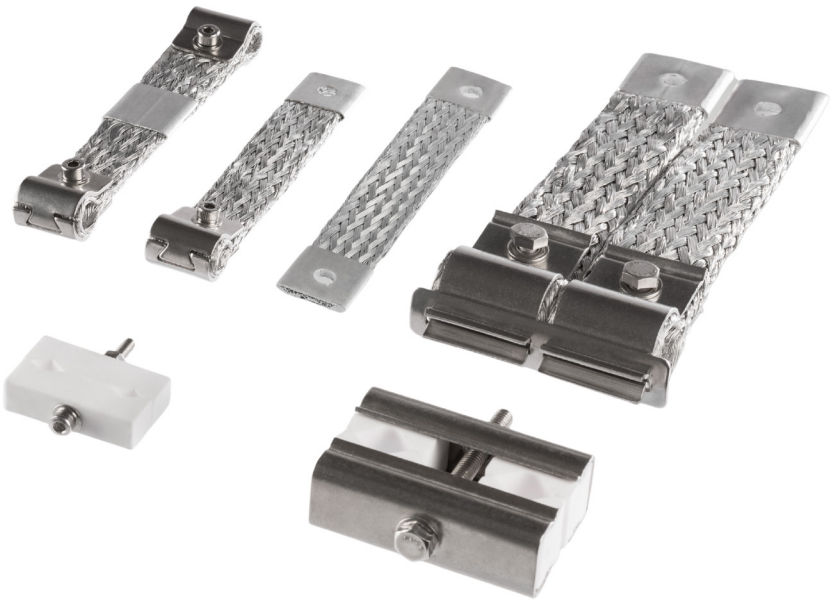
INDUSTRIESTANDARD		MolyCom®-Ultra 1700	MolyCom®-Ultra 1800	MolyCom®-Ultra 1850
Density	[kg/dm³]	5,8	5,8	6,5
Bending strength at 20 °C	[N/mm²]	350 – 450	350 – 450	350 – 450
Porosity	[%]	< 1	< 1	< 1
Max. element temperature (under air)	[°C]	1700	1780	1820
Max. furnace/kiln temperature (under air)	[°C]	1550	1650	1750

ACCESSORIES FOR ELECTRIC HEATING ELEMENTS

SCHUPP® Ceramics offers a wide range of accessories for connection of electric heating elements made of moybdenum disilicide ($MoSi_2$).

These include element holders, such as single- and two-shank holders, contact straps, air nozzles and passage bricks.

We supply the matching fastening systems depending on element size.

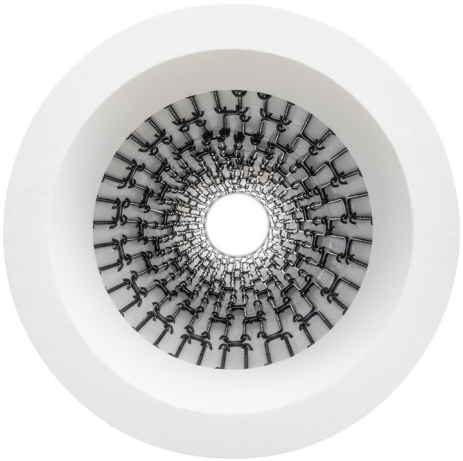


ELECTRIC HEATING SYSTEMS & FURNACE LININGS

MolyTec combines intermetallic molybdenum disilicide ($MoSi_2$) heating elements and polycrystalline mullite/ alumina wool (PCW) shaped insulation parts to make turn-key heating systems for application temperatures up to 1.550 °C (geometry dependent).

SCHUPP® Ceramics also manufactures **complete furnace sets** made of PCW insulation boards or shapes up to 1.800 °C application temperature as an economical alternative for the re-lining of existing furnaces and for the production of new systems.

We draw upon our many years of experience in high temperature technology and in a wide range of application industries to find a solution that is both technically optimized and cost-efficient.



OUR SERVICE

- Consulting
- Conception
- Heat transfer calculation
- Construction
- Installation

MEASURING

PRECISE CONTROL OF THERMAL PROCESSES IN A TEMPERATURE RANGE FROM 560 °C TO 1.750 °C

PTCR - PROCESS TEMPERATURE CONTROL RINGS

- Ensuring a reliable, outstanding, and regular quality level
- Reducing of your quality assurance efforts
- Precise measuring results +/- 3 °C or better
- Easy handling and cost-efficient

Process temperature control rings PTCR make a decisive contribution to controlling and therefore to the quality of thermal processes. Thanks to their special ceramic material properties, they determine the heat input up to 1.750 °C more precisely than conventional measurement methods.

ADDITIONAL TOOLS:

- **PTCR WEB APP** - web-based application to simplify the work with PTCR and the documentation of thermal processes
- **Digital micrometer** with custom-fit receptacles for the rings and USB interfaces for data transfer.

Process Temperature Control Rings PTCR

Type	Temperature range [°C]	Colour	Dimensions
PTCR-ZTH	560 – 660	blue	Ø Outer: 20 mm Ø Inner: 10 mm Standard height: 7 mm Special height: 3,5 mm
PTCR-ATH	600 – 850	gray	
PTCR-UTH	660 – 900	yellow	
PTCR-ETH	850 – 1100	pale green	
PTCR-LTH	970 – 1250	pink	
PTCR-STH	1130 – 1400	green	
PTCR-MTH	1340 – 1520	yellow	
PTCR-HTH	1450 – 1750	white	

LIGHTWEIGHT KILN FURNITURE

FOR SINTERING AND FIRING; MADE OF PCW

UltraSaggars securely hold small workpieces during sintering and firing processes at application temperatures up to 1.600 °C. If necessary, they can be closed with precise lids. The material has density of 1.000 kg/m³. Available in customized sizes of 80-120 mm diameter.

UltraSetters are sintering and firing setters for small workpieces. They are suitable for application temperatures of up to 1.650 °C (geometry dependent).

CERAMIC ADHESIVE MADE OF PCW

FOR HIGH TEMPERATURE APPLICATIONS UP TO 1.750 °C

FiberPlast 1800PRO permits reliable bonding or coating of ceramic fiber-based materials - such as insulation boards; Also for repairs and maintenance work. The plastic adhesive is made of polycrystalline mullite/alumina wool (PCW) with added inorganic binders and specifically coordinated additives. Single-component adhesive ready for use and easy to process.

FiberPlast 1800PRO

Type	Max. service temperature	Al_2O_3	SiO_2	Bulk density (wet)	Type of packaging
FiberPlast 1800PRO	1750 °C	84 %	16 %	1650 kg/m³	1 kg Other type of packaging upon request.

We will gladly develop special high-temperature masses, such as adhesives or coatings, together with you to suit your requirements.

RESPONSIBLE FOR MAN AND ENVIRONMENT

Sustainability is a defined corporate objective of SCHUPP® Ceramics. We support this with our actions. We strictly observe that all production steps are implemented with the best energy-efficiency, while preserving resources and avoiding waste.

TAILORED TO YOUR NEEDS

The reliable integration of our systems, components and products into your value chain is a key requirement of our quality awareness.

With professional merchandise management, transparent delivery processes and tailor-made, protective packaging, we also ensure the successful production of our customers, especially in dynamic, complex markets.

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simply high temperature technology

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