

Laboratory Chamber & Tube Furnaces



Testing
Analysing
Ashing
Drying
Preheating
Debinding
Firing
Sintering
Annealing
Melting

Laboratory Chamber & Tube Furnaces



THERMCONCEPT develops, designs and manufactures furnaces and ovens for a broad range of different Research & Development applications. THERMCONCEPT furnaces and ovens are proven in daily use at satisfied customers in many countries worldwide. The reasons for our success are simple:

Proven technology

For the production of our furnaces and ovens only first-class, proven materials from world renowned suppliers are used. This ensures maximum efficiency, reliable operation and long service life.

Cutting-edge designs

Furnaces and oven are designed and build strictly in accordance with enduser optimized criteria. Our target is to deliver decisive technical and economical advantages.

Wide range of standard furnaces and ovens

Many applications can be achieved with our extensive range of standard furnaces and ovens. The advantages are: proven, fully-developed models, excellent value for money and quick delivery times.

Customer-specific solutions

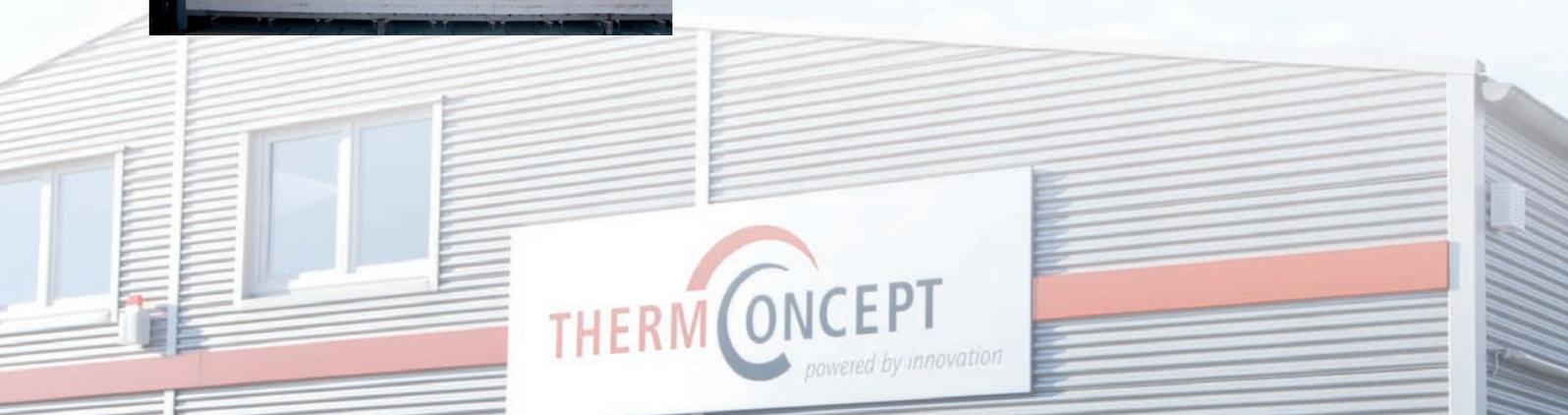
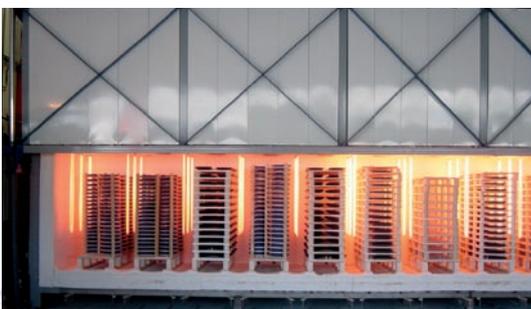
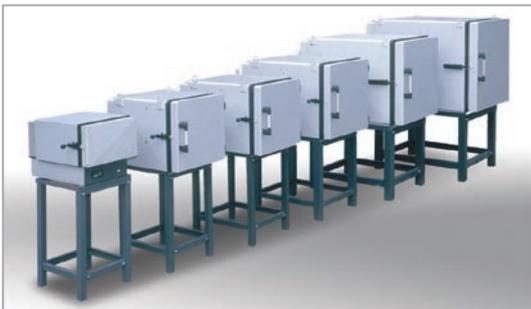
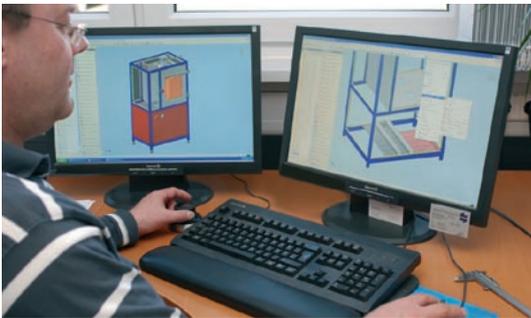
Of course, we also supply customized furnaces specially designed to meet your specific requirements. In close consultation with you we create a furnace system which meets your challenging tasks both reliably and economically.

Professional service:

With our skilled workforce we are able to provide from the outset a wide range of professional services relating to all furnace matters.

Our head quarters are located in Bremen / Germany. In Bremen we develop, design and manufacture furnaces and ovens for a broad range of applications. Service and support is provided world wide by qualified agents and partners giving prompt service at your site.

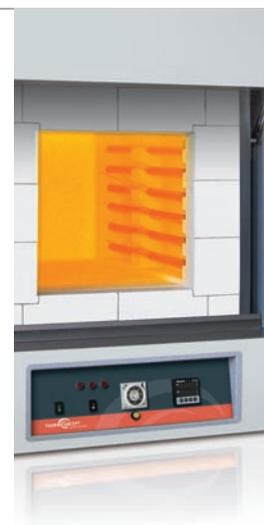
THERMCONCEPT is your reliable partner for furnaces and ovens for Research and Development.



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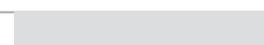
Professional service

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The product range at a glance

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Muffle Furnaces

T max 1100 °C and 1200 °C



- Universal muffle furnaces for ambitious laboratory applications
- Compact design for minimum space requirements
- Stainless steel casing, long service life, extremely resistant
- Resistant fibre module as inner chamber, high mechanical durability, short heating cycles, low power consumption
- Door collar made of strong fire bricks to protect insulation against mechanical damages
- High-quality heating elements, long service life
- Heating wire embedded in ceramic plates with good protection against damages, service-friendly and cost-effective
- Heating elements controlled by solid state relays for very precise temperature control, wear-free and noiseless
- Exhaust pipe in the rear wall

Accessories:

- Vent with / without fan
- Vent with fan and catalytic converter
- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- Further accessories see page 9

Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions [mm] Width x Depth x Height	Power [kW]	Voltage [V]	Weight [kg]
KL 03/11	1100	180 x 140 x 100	3	380 x 415 x 400	1,2	230 V 1/N	20
KL 05/11	1100	230 x 170 x 130	5	430 x 445 x 425	2,4	230 V 1/N	35
KL 09/11	1100	230 x 240 x 170	9	430 x 515 x 465	3,0	230 V 1/N	45
KL 15/11	1100	250 x 340 x 170	15	450 x 615 x 465	3,5	230 V 1/N	50
KL 03/12	1200	180 x 140 x 100	3	380 x 415 x 400	1,2	230 V 1/N	20
KL 05/12	1200	230 x 240 x 170	5	430 x 445 x 425	2,4	230 V 1/N	35
KL 09/12	1200	250 x 340 x 170	9	430 x 515 x 465	3,0	230 V 1/N	45
KL 15/12	1200	250 x 340 x 170	15	450 x 615 x 465	3,5	230 V 1/N	50

Compact Muffle Furnace

T max 1000 °C

- Compact muffle furnace with outstanding price-performance ratio
- Suitable for maximum temperature up to 1000 °C
- User-friendly swing door
- Insulation completely made of high grade ceramic fibre with low thermal mass for fast heating cycles
- Heating elements wound around outside of ceramic muffle, heating from all sides
- Heating elements controlled by solid state relays for very precise temperature control, wear-free and noiseless
- Exhaust pipe in the rear wall

Accessories:

- Vent
- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- Further accessories see page 9



Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions [mm] Width x Depth x Height	Power [kW]	Voltage [V]	Weight [kg]
KLS 03/10	1000	140 x 200 x 110	3	320 x 350 x 410	1,5	230 V 1/N	20

Laboratory Chamber Furnaces

T max 1100 °C, 1200 °C and 1300 °C



- Very high temperature uniformity inside the furnace chamber
- Double-walled housing with rear-ventilation to ensure low outer-casing temperatures
- Parallel-guided door moving up-wards with hot insulation surface to the rear, away from operator
- Insulation made of high grade ceramic fibre with low thermal mass
- Door collar made of strong fire bricks
- Wear-resistant fire brick insulation in the furnace bottom
- Delivery includes ceramic bottom plate
- Heating elements on ceramic supporting tubes, mounted in front of the insulation for free heat radiation
- Powerful heating elements in both sides providing fast heating rates
- Heating elements controlled by solid state relays for very precise temperature control, wear-free and noiseless
- Exhaust pipe in the rear wall

Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions [mm] Width x Depth x Height	Power [kW]	Voltage [V]
KLS 05/11	1100	210 x 200 x 150	6	550 x 580 x 650	2,0	230 V 1/N
KLS 10/11	1100	200 x 250 x 200	10	560 x 670 x 720	3,0	230 V 1/N
KLS 15/11	1100	220 x 300 x 230	15	560 x 670 x 720	4,0	400 V 2/N
KLS 30/11	1100	280 x 380 x 280	30	590 x 700 x 790	4,0	400 V 2/N
KLS 45/11	1100	300 x 500 x 300	45	660 x 720 x 770	6,0	400 V 3/N
KLS 05/12	1200	180 x 200 x 140	5	550 x 580 x 650	2,0	230 V 1/N
KLS 10/12	1200	200 x 250 x 200	10	560 x 670 x 720	4,0	400 V 2/N
KLS 15/12	1200	220 x 300 x 230	15	560 x 670 x 720	4,0	400 V 2/N
KLS 30/12	1200	280 x 350 x 280	27	590 x 700 x 790	4,5	400 V 3/N
KLS 45/12	1200	300 x 500 x 300	45	660 x 720 x 770	6,0	400 V 3/N
KLS 05/13	1300	200 x 250 x 140	7	550 x 580 x 650	2,5	230 V 1/N
KLS 10/13	1300	200 x 250 x 180	9	560 x 670 x 720	4,0	400 V 2/N
KLS 15/13	1300	230 x 300 x 230	16	560 x 670 x 720	4,0	400 V 2/N
KLS 30/13	1300	270 x 350 x 270	26	590 x 700 x 790	6,0	400 V 3/N
KLS 45/13	1300	300 x 500 x 300	45	660 x 720 x 770	6,0	400 V 3/N

Laboratory Chamber Furnaces

Wide range of furnaces

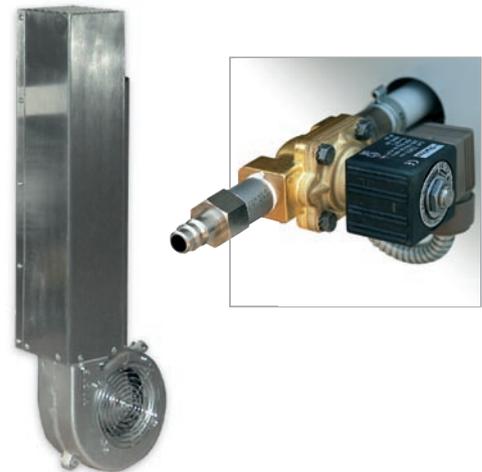
THERMCONCEPT laboratory chamber furnaces are available in sizes from 5 litres to 45 litres (see Technical Data page 6). The inner dimensions and maximum operating temperatures are adapted to the needs of laboratories. Our range of furnaces also includes models with a Voltage of 230 V.



Accessories

Due to many different accessories and extras our laboratory chamber furnaces can be adapted to individual needs and applications:

- Vent with / without fan
- Vent with fan and catalytic converter
- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- Protective gas connection at the rear side
- Further accessories see page 9



With moveable bottom

Laboratory chamber furnaces can be also supplied with manually moveable furnace bottom to charge the bottom easily outside the furnace. Available for all chamber furnaces with a temperature range up to 1100 °C, 1200 °C and 1300 °C.

With integrated air circulation

Laboratory chamber furnaces can be supplied optional with fan for integrated air circulation. This air circulation system increases heat transfer from heating elements to the charge and temperature uniformity inside the chamber. Chamber furnaces with integrated air circulation are available for a maximum temperature of 1100 °C.





Chamber Furnaces with ceramic muffle

T max 1150 °C and 1300 °C

- Chamber furnaces with integrated ceramic muffle, high mechanical and chemical resistance
- Furnace designed especially and recommended for ambitious laboratory applications with aggressive waste gases
- Suitable for assay of precious metals or ashing of organic substances
- Delivery including ceramic muffle heated from four sides
- Double-walled housing with rear-ventilation to ensure low outer-casing temperatures
- KLS 07/11/M with parallel-guided door moving up-wards with hot insulation surface to the rear, away from operator, insulation made of high grade ceramic fibre with low thermal mass, collar made of fire bricks to ensure high wear resistance against mechanical stress
- KLS 05/13/M with large swing door for maintenance and closure brick for muffle, multilayer insulation made of high grade fibre and strong fire bricks
- Heating elements wound around outside the ceramic muffle, heating on all sides, high temperature uniformity inside the chamber
- Heating elements controlled by solid state relays for very precise temperature control, wear-free and noiseless
- Exhaust pipe in the rear wall

Accessories:

- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- Other sizes upon request
- Further accessories see page 9

Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions [mm] Width x Depth x Height	Power [kW]	Voltage [V]	Weight [kg]
KLS 07/11/M	1150	210 x 280 x 110	7	550 x 580 x 650	2,7	230 V 1/N	20
KLS 05/13/M	1300	200 x 250 x 90	5	800 x 800 x 1450	20	400 V 3/N	450

Furnace Accessories

Exhaust

Exhaust vent to remove emerging waste gases from the furnace chamber, mounted at the rear side, suitable for connection to a local chimney.

Exhaust vent with fan, to remove larger volumes of emerging waste gases and to speed up waste gas stream. Mounted on the rear side and controlled by extra function of controller.

Exhaust vent with catalytic converter, to split organic parts of the emerging waste gases to CO₂ and water steam, smells will be minimised. Mounted on the rear side and controlled by extra function of controller.



Probe saggar, crucibles and trays

Stackable probe saggar, crucibles and trays made of ceramic, available in different sizes and materials



Collecting pans and plates

Collecting pans and plates made of ceramic and steel, to protect furnace bottom, available for KL and KLS furnaces

Ceramic plates and collecting pans up to 1300 °C

Steel charging plates and steel collecting pans up to 1100 °C



Laboratory tongs and heat-resistant gloves

Charging tongs and heat-resistant gloves for easy loading a hot furnace

Heat-resistant gloves for short-term contact temperatures of 600 °C or 900 °C

Charging tongs
With length of 300 and 500 mm





High Temperature Furnaces with SiC-rod heating

T max 1400 °C, 1500 °C and 1600 °C

- Excellent uniformity inside the furnace chamber
- Double-walled housing with rear-ventilation to ensure extremely low outer-casing temperatures
- Parallel-guided door moving up-wards with hot insulation surface to the rear, away from operator
- Insulation made of high grade ceramic fibre with low thermal mass
- Door collar made of strong fire bricks to protect insulation against mechanical damages
- Wear-resistant fire brick insulation in the furnace bottom
- Delivery includes ceramic bottom plate
- Powerful SiC-rod heating elements mounted in two sides of the furnace providing very fast heating times
- Heating elements controlled by solid state relays for very precise temperature control, wear-free and noiseless
- Exhaust pipe in the furnace ceiling

Accessories:

- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- Further accessories see page 9

Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions [mm] Width x Depth x Height	Power [kW]	Voltage [V]
KLC 05/14	1400	150 x 250 x 140	6	540 x 580 x 650	3,0	230 V 1/N
KLC 10/14	1400	200 x 250 x 180	9	560 x 670 x 720	4,0	400 V 2/N
KLC 15/14	1400	220 x 310 x 220	15	600 x 750 x 770	9,0	400 V 3/N
KLC 30/14	1400	250 x 480 x 270	33	600 x 750 x 770	12,0	400 V 3/N
KLC 05/15	1500	150 x 250 x 140	6	560 x 670 x 720	3,5	400 V 3/N
KLC 10/15	1500	200 x 250 x 180	9	560 x 670 x 720	5,2	400 V 3/N
KLC 15/15	1500	220 x 310 x 220	15	600 x 750 x 770	9,0	400 V 3/N
KLC 30/15	1500	250 x 440 x 270	30	600 x 750 x 770	12,0	400 V 3/N
KLC 05/16	1600	150 x 240 x 140	6	550 x 580 x 650	4,9	400 V 3/N
KLC 10/16	1600	210 x 240 x 180	9	560 x 670 x 720	5,8	400 V 3/N
KLC 15/16	1600	220 x 310 x 220	15	600 x 750 x 770	10,0	400 V 3/N
KLC 30/16	1600	250 x 460 x 260	28	600 x 750 x 770	12,5	400 V 3/N

High Temperature Furnaces with MoSi₂ heating elements

T max 1500 °C, 1600 °C, 1750 °C and 1800 °C

- High temperature uniformity inside the furnace chamber
- Compact bench top furnaces with user-friendly parallel-guided door moving up-wards
- Optional also available with combined bottom-door-system for simple and comfortable charging
- Double-walled housing with rear-ventilation to ensure low outer-casing temperatures
- Insulation made of high grade aluminium oxide fibre with low thermal mass for very fast heating and cooling
- High grade heating elements made of Molybdenum-Disilicide (MoSi₂) mounted in two sides
- Low power rating
- Heating elements controlled by thyristors for very precise temperature control, wear-free and noiseless
- Exhaust pipe in the furnace ceiling



Accessories:

- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- Automatically driven exhaust flap in the ceiling
- Controlled cooling system to accelerate cooling times
- Protective gas connection
- Manual or automatic gassing system



Technical Data

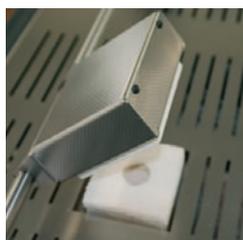
Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions [mm] Width x Depth x Height	Power [kW]	Voltage [V]	Weight [kg]
HTL 01/15	1500	120 x 90 x 120	1	520 x 470 x 680	1,6	230 V 1/N	75
HTL 02/16	1600	110 x 120 x 150	2	740 x 440 x 630	1,5	230 V 1/N	76
HTL 04/16	1600	150 x 150 x 150	4	740 x 440 x 630	3	230 V 1/N	83
HTL 10/16	1600	200 x 250 x 200	10	790 x 540 x 680	4	400 V 2/N	97
HTL 02/17	1750	110 x 120 x 150	2	740 x 440 x 630	1,5	230 V 1/N	76
HTL 04/17	1750	150 x 150 x 150	4	740 x 440 x 630	3	230 V 1/N	83
HTL 10/17	1750	200 x 250 x 200	10	790 x 540 x 680	4	400 V 2/N	97
HTL 02/18	1800	110 x 120 x 150	2	740 x 440 x 630	1,5	230 V 1/N	76
HTL 04/18	1800	150 x 150 x 150	4	740 x 440 x 630	3	230 V 1/N	83
HTL 10/18	1800	200 x 250 x 200	10	790 x 540 x 680	4	400 V 2/N	97



High Temperature Furnaces with MoSi₂ heating elements

T max 1600 °C, 1750 °C and 1800 °C

- High temperature chamber furnaces with chamber volume of 16 - 70 litres*
- Free-standing furnaces with highest operation standard on precision and comfort. Very fast heating and cooling cycles, low power rating
- Outer-casing made of strong and sleek framework construction
- Double-walled housing with rear-ventilation to ensure very low outer-casing temperatures
- Inner casing and front made of stainless steel
- Parallel-guided door moving side-wards with hot insulation surface to the rear, away from operator
- Insulation made of high grade aluminium oxide fibre with low thermal mass for very fast heating and cooling
- High grade heating elements made of Molybdenum Disilicide (MoSi₂) mounted in two sides, additional heating from the rear wall available
- Heating elements controlled by thyristors for very precise temperature control, wear-free and noiseless
- Sophisticated process control systems
- Exhaust pipe in the furnace ceiling



Accessories:

- Automatic process monitoring and software for process visualisation
- Autom. driven exhaust flaps for extended ventilation of furnace chamber
- Controlled cooling system to accelerate cooling times
- Protective gas connection
- Manual or automatic gassing system
- Bottom reinforcement for high weight load

Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions [mm] Width x Depth x Height	Power [kW]	Voltage [V]	Weight [kg]
HTK 16/16	1600	200 x 300 x 260	16	820 x 655 x 1570	8	400 V 3/N	285
HTK 20/16	1600	250 x 320 x 260	21	870 x 675 x 1570	8	400 V 3/N	295
HTK 40/16	1600	300 x 350 x 350	37	920 x 705 x 1660	11	400 V 3/N	375
HTK 50/16	1600	250 x 550 x 350	48	870 x 905 x 1660	18	400 V 3/N	655
HTK 70/16	1600	400 x 400 x 400	64	1020 x 755 x 1710	12	400 V 3/N	545
HTK 16/17	1750	200 x 300 x 260	16	820 x 655 x 1570	8	400 V 3/N	285
HTK 20/17	1750	250 x 320 x 260	21	870 x 675 x 1570	8	400 V 3/N	295
HTK 40/17	1750	300 x 350 x 350	37	920 x 705 x 1660	11	400 V 3/N	375
HTK 50/17	1750	250 x 550 x 350	48	870 x 905 x 1660	18	400 V 3/N	655
HTK 70/17	1750	400 x 400 x 400	64	1020 x 755 x 1710	12	400 V 3/N	545
HTK 16/18	1800	200 x 300 x 260	16	820 x 655 x 1570	8	400 V 3/N	285
HTK 20/18	1800	250 x 320 x 260	21	870 x 675 x 1570	8	400 V 3/N	295
HTK 40/18	1800	300 x 350 x 350	37	920 x 705 x 1660	11	400 V 3/N	375
HTK 50/18	1800	250 x 550 x 350	48	870 x 905 x 1660	18	400 V 3/N	655
HTK 70/18	1800	400 x 400 x 400	64	1020 x 755 x 1710	12	400 V 3/N	545

Chamber Furnaces with 5-side heating

T max 1300 °C and 1400 °C

- Chamber furnaces for complex laboratory applications and simulation of production processes
- Extremely short heating up times, excellent temperature uniformity
- Double-walled casing with rear-ventilation to ensure low outer-casing temperatures
- Side walls and door of outer casing made of stainless steel, door lintel also made of stainless steel
- Swing door hinged to the right side
- Door safety switch
- Delivery including furnace base
- Efficient multilayer insulation made of high grade and strong fire bricks for low heat losses, low energy consumption and low energy costs
- Heated from 5 sides (left, right, door, rear wall, bottom), excellent temperature uniformity in the chamber
- High grade heating elements on ceramic supporting tubes, mounted in front of the insulation for free heat radiation
- Bottom heating elements protected by silicon carbide plates with high mechanical strength and heat conductivity



Accessories

- Parallel-guided door moving side-wards, with hot insulation surface to the rear, away from the operator (see photo)
- Multi-zone control
- Automatically driven exhaust flap
- Controlled cooling system to accelerate cooling times
- Protective gas connection
- Manual and automatic gassing system



Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions [mm] Width x Depth x Height	Power [kW]	Voltage [V]	Weight [kg]
KC 16/13	1300	250 x 250 x 250	16	650 x 800 x 1400	7	400 V 3/N	160
KC 32/13	1300	320 x 320 x 320	33	700 x 850 x 1450	8	400 V 3/N	170
KC 64/13	1300	400 x 400 x 400	64	780 x 950 x 1520	11	400 V 3/N	280
KC 128/13	1300	500 x 500 x 500	125	880 x 1050 x 1620	15	400 V 3/N	350
KC 16/14	1400	250 x 250 x 250	16	700 x 850 x 1400	8	400 V 3/N	160
KC 32/14	1400	320 x 320 x 320	33	780 x 900 x 1450	10	400 V 3/N	170
KC 64/14	1400	400 x 400 x 400	64	860 x 970 x 1520	12	400 V 3/N	280
KC 128/14	1400	500 x 500 x 500	125	960 x 1080 x 1620	18	400 V 3/N	350

Other sizes on request



Annealing Furnaces

T max 1300 °C

- Rugged chamber furnaces especially designed for robust heat treatment purposes
- Double-walled housing with rear-ventilation to ensure low outer-casing temperatures
- Side walls and door of outer casing made of stainless steel, door lintel also made of stainless steel
- Parallel-guided door, moving downwards, can be opened up to T max.
- Delivery including furnace base (KM 50/13 - KM 90/13)
- Efficient multilayer insulation made of high grade and strong fire bricks for low heat losses, low energy consumption and low energy costs
- Heating from three sides (both side walls and bottom) for good temperature uniformity inside the furnace chamber
- High grade heating elements on ceramic supporting tubes, mounted in front of the insulation for free heat radiation (KM 50/13 - KM 90/13)
- Bottom heating elements protected by silicon carbide plates with high mechanical strength and heat conductivity
- Exhaust pipe in the rear wall



Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions [mm] Width x Depth x Height*	Power [kW]	Voltage [V]	Weight [kg]
KM 10/13	1300	250 x 250 x 120	8	500 x 600 x 700	2,5	230 V 1/N	75
KM 15/13	1300	250 x 250 x 200	13	500 x 700 x 700	3,6	230 V 1/N	85
KM 20/13	1300	250 x 350 x 200	18	500 x 700 x 700	6,0	400 V 3/N	85
KM 30/13	1300	250 x 500 x 200	25	500 x 850 x 700	7,0	400 V 3/N	95
KM 50/13	1300	350 x 500 x 250	44	1000 x 1300 x 1400	13	400 V 3/N	250
KM 70/13	1300	350 x 750 x 250	66	1000 x 1400 x 1400	20	400 V 3/N	330
KM 90/13	1300	350 x 1000 x 250	88	1000 x 2000 x 1400	22	400 V 3/N	500

Systems, Tools and Accessories

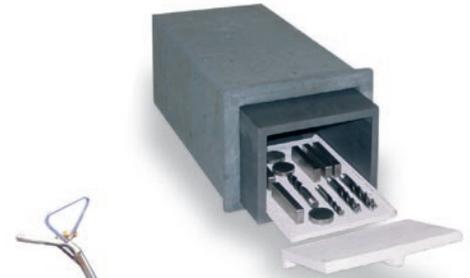
THERMCONCEPT delivers specially developed hardening accessories that has been proven in practical use over many years. Our accessories are specially designed to complement the various annealing furnaces, thus enabling inert gas hardening or oxidation-free hardening that is easy in handling and economical in operation. Please contact us for practical advice in selecting the most useful components and how they are handled in practice.



Diamond Block System

Oxidation-free hardening up to 1300 °C

- Specially suitable for all types of high-speed steel and high-alloy chrome steels
- Multiple use of carbonaceous block, ensures protective atmosphere
- Oxidation or decarburisation of the component is almost completely eliminated
- Easy to operate, superb results, high product quality
- Can be used in all chamber furnaces



Gas Grid System

Hardening and cooling under inert gas up to 1200 °C

- Enables bright annealing with subsequent gas quenching
- No loss of time during heat-up due to use of ultra-thin foil containers
- Can be used with forming gas, nitrogen and inert gases such as argon and helium
- Very low gas consumption due to small container volumes
- Also available with optional thermocouple for continuous measurement of the temperature inside the container



Hardening Box System

Hardening, carburising, nitriding up to 1100 °C

- All hardening boxes match the inside dimensions of the annealing furnaces
- By using a neutral annealing compound, virtually oxidation-free hardening is possible
- Also available with gas connection for inert gas hardening or as atmosphere box with hinged lid that stays in the furnace
- Easy handling, reliable process



Accessories and Tools

- Hardening foils, envelopes and containers for oxidation-free annealing of steels up to 1200 °C
- Thermo-chemically stable hardening oils for tank temperature of 50 - 150 °C
- Materials for cleaning, degreasing and corrosion protection
- Carburizing granulate, nitriding powder and neutral annealing compound
- Inner gas retorts and hardening boxes
- Baskets and furnace grids
- Charging wagons
- Hand tools and heat-resistant gloves
- Charging tools such as shovels, draw-hooks and charging plates
- Hardness tester



Ask for our special brochures!



Tube Furnaces 1-zone and 3-zone design

T max 1200 °C

- Wide range of 11 standard furnaces
- Tube diameter 20 mm to 105 mm
- Heated length 250 mm to 900 mm
- Integrated ceramic tube with 2 fibre plugs included
- Use of separate work tube possible, e.g. to operate with different atmospheres
- Integrated safety grid for low surface temperatures on the tube module
- Sophisticated casing partly made of stainless steel
- Insulation made of high grade ceramic fibre with low thermal mass
- Powerful heating and fast heating times
- Heating elements controlled by solid state relays for very precise temperature control, wear-free and noiseless
- Switchgear and control unit integrated in the furnace housing underneath the tube module for comfortable operation of the controller

Accessories:

- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- 3-zone design for high temperature uniformity
- Further accessories see page 22

Technical Data: 1-zone models

Model	T max [°C]	Outer dimensions [mm] Width x Depth x Height	Tube-Ø Inner [mm]	Heated length [mm]	Tube length [mm]	Power [kW]	Voltage [V]	Weight [kg]
ROS 20/250/12	1200	630 x 340 x 510	20	250	500	1,0	230 V 1/N	22
ROS 20/400/12	1200	630 x 340 x 510	20	400	500	1,3	230 V 1/N	22
ROS 38/250/12	1200	630 x 340 x 510	38	250	750	1,3	230 V 1/N	24
ROS 38/450/12	1200	630 x 340 x 510	38	450	750	1,8	230 V 1/N	24
ROS 50/250/12	1200	630 x 340 x 510	50	250	750	1,3	230 V 1/N	27
ROS 50/450/12	1200	630 x 340 x 510	50	450	750	1,5	230 V 1/N	27
ROS 75/600/12	1200	720 x 410 x 600	75	600	900	3,5	230 V 1/N	51
ROS 75/800/12	1200	920 x 410 x 600	75	800	1000	3,5	230 V 1/N	52
ROS 105/500/12	1200	630 x 410 x 600	105	500	600	2,4	230 V 1/N	54
ROS 105/700/12	1200	720 x 410 x 600	105	700	800	3,5	230 V 1/N	58
ROS 105/900/12	1200	920 x 410 x 600	105	900	1000	3,5	230 V 1/N	63

Tube Furnaces Designs

Standard design: Horizontal operation

Tube module fixed on furnace housing.
Switchgear and control unit integrated in the base



Optional: Vertical operation

Tube module fixed on solid base frame.
Switchgear and control unit mounted in a separate cabinet.



Optional: Universal operation

Tube module fixed on solid base frame with adjustable inclination angle.
Switchgear and control unit mounted in a separate cabinet



Technical Data: 3-zone models

Model	T max [°C]	Outer dimensions [mm] Width x Depth x Height	Tube-Ø Inner [mm]	Heated length [mm]	Tube length [mm]	Power [kW]	Voltage [V]	Weight [kg]
ROS 38/500/12-3	1200	700 x 340 x 510	38	500	750	2,0	230 V 1/N	28
ROS 50/500/12-3	1200	700 x 340 x 510	50	500	750	2,2	230 V 1/N	30
ROS 50/700/12-3	1200	950 x 340 x 510	50	700	1000	3,5	230 V 1/N	38
ROS 75/700/12-3	1200	750 x 410 x 600	75	700	1000	3,5	400 V 3/N	35
ROS 105/700/12-3	1200	950 x 410 x 600	75	700	1000	4,3	400 V 3/N	45
ROS 105/900/12-3	1200	950 x 410 x 600	75	900	1000	4,5	400 V 3/N	48

Modular Tube Furnaces 1-zone and 3-zone design

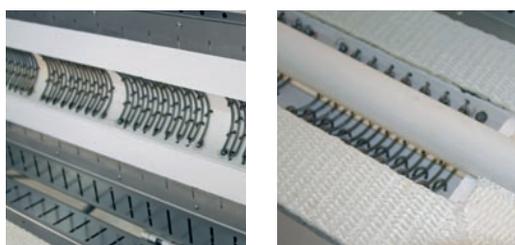
T max 1100 °C and 1300 °C



- Tube diameter up to 200 mm
- Heated length 500 mm and individually expandable
- Suitable for a wide range of work tubes made of different materials (glass, ceramic, metal) with different diameters
- Heating elements embedded in high grade vacuum-formed fibre insulation, for excellent temperature uniformity
- Powerful heating and fast heating cycles
- Heating elements controlled by solid state relay (1100 °C) and thyristors (1300 °C) for very precise temperature control, wear-free and noiseless
- Switchgear and control unit integrated in the furnace housing underneath the tube module for comfortable operation of the controller

Accessories:

- 3-zone design for high temperature uniformity
- With solid base frame also suitable for vertical operation
- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- Further accessories see page 22



Technical Data: 1-zone models

Model	T max [°C]	Outer dimensions [mm] Width x Depth x Height	Furnace-Ø [mm]	Heated length [mm]	Power [kW]	Voltage [V]	Weight [kg]
ROM 70/500/11	1100	700 x 340 x 510	70	500	1	230 V 1/N	30
ROM 100/500/11	1100	700 x 340 x 510	100	500	1,3	230 V 1/N	32
ROM 150/500/11	1100	950 x 340 x 510	150	500	1,9	230 V 1/N	41
ROM 200/500/11	1100	700 x 410 x 600	200	500	2,5	230 V 1/N	44
ROM 70/500/13	1300	700 x 340 x 810	70	500	6	400 V 3/N	110
ROM 100/500/13	1300	700 x 340 x 810	100	500	6	400 V 3/N	110
ROM 150/500/13	1300	700 x 340 x 810	150	500	11,2	400 V 3/N	120
ROM 200/500/13	1300	700 x 410 x 900	200	500	11,2	400 V 3/N	130

Split Tube Furnaces 1-zone and 3-zone design

T max 1100 °C

- Tube diameter up to 300 mm
- Heated length up to 500 mm and individually expandable
- Split design allows to insert tubes with large flanges
- Due to flexible insulation plugs on both ends, the furnace can be easily adapted to different tube diameters
- Heating elements embedded in high grade vacuum-formed fibre insulation, for excellent temperature uniformity
- Powerful heating and fast heating cycles
- Accelerate cooling of furnace and tube by opening hinged casing
- Heating elements controlled by solid state relays for very precise temperature control, wear-free and noiseless
- Switchgear and control unit integrated in the furnace housing underneath the tube module for comfortable operation of the controller

Accessories:

- 3-zone design for high temperature uniformity
- With solid base frame also suitable for vertical operation
- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- Further accessories see page 22



Technical Data: 1-zone models

Model	T max [°C]	Furnace-Ø [mm]	Heated length [mm]	Power [kW]	Voltage [V]
ROK 70/250/11	1100	70	250	1	230 V 1/N
ROK 70/500/11	1100	70	500	1,8	230 V 1/N
ROK 100/250/11	1100	70	250	2,7	230 V 1/N
ROK 100/500/11	1100	100	500	1,3	230 V 1/N
ROK 150/250/11	1100	100	250	2,6	230 V 1/N
ROK 150/500/11	1100	100	500	3,0	230 V 1/N
ROK 200/250/11	1100	200	250	1,9	230 V 1/N
ROK 200/500/11	1100	200	500	1,9	230 V 1/N
ROK 250/400/11	1100	250	400	3,6	230 V 1/N
ROK 300/400/11	1100	300	400	2,8	230 V 1/N



High Temperature Tube Furnaces with SiC-rod heating

T max 1400 °C, 1500 °C and 1600 °C

- Tube diameter 20 mm to 105 mm
- Heated length 180 mm to 610 mm
- Integrated safety grid for low surface temperature on tube module
- Insulation made of high grade ceramic fibre with low thermal mass
- Powerful SiC-rod heating elements, mounted parallel to the tube, fast heating
- Heating elements controlled by solid state relays for very precise temperature control, wear-free and noiseless
- Switchgear and control unit integrated in the furnace housing underneath the tube module for comfortable operation of the controller

Accessories:

- Solid base frame for vertical operation
- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- Tubes for operation with water-cooled flanges
- Gassing systems for operation under inert gas or vacuum
- Further accessories see page 22

Technical Data

Model	T max [°C]	Outer dimensions [mm] Width x Depth x Height	Tube-Ø Inner [mm]	Heated length [mm]	Tube length [mm]	Power [kW]	Voltage [V]	Weight [kg]
ROC 20/180/14	1400	630 x 340 x 510	20	180	500	3,5	400 V 2/N	35
ROC 38/180/14	1400	630 x 340 x 510	38	180	750	3,5	400 V 2/N	37
ROC 50/180/14	1400	630 x 340 x 510	50	180	750	3,5	400 V 2/N	40
ROC 20/250/14	1400	630 x 340 x 510	20	250	500	3,0	400 V 2/N	35
ROC 38/250/14	1400	630 x 340 x 510	38	250	750	3,6	400 V 2/N	39
ROC 50/250/14	1400	630 x 340 x 510	50	250	750	4,0	400 V 2/N	42
ROC 50/450/14	1400	720 x 410 x 600	50	450	750	3,9	400 V 2/N	51
ROC 75/450/14	1400	720 x 410 x 600	75	450	750	4,5	400 V 2/N	58
ROC 105/450/14	1400	720 x 410 x 600	105	450	1000	5,5	400 V 2/N	64
ROC 50/610/14	1400	920 x 410 x 600	50	610	1000	5,2	400 V 2/N	51
ROC 75/610/14	1400	920 x 410 x 600	75	610	1000	5,5	400 V 2/N	63
ROC 38/180/15	1500	720 x 410 x 600	38	180	750	3,6	400 V 3/N	48
ROC 50/180/15	1500	720 x 410 x 600	50	180	750	3,9	400 V 3/N	51
ROC 50/250/15	1500	720 x 410 x 600	50	250	750	3,1	400 V 3/N	51
ROC 50/450/15	1500	720 x 410 x 600	50	450	750	4,5	400 V 3/N	53
ROC 75/450/15	1500	720 x 410 x 600	75	450	750	6,0	400 V 3/N	63
ROC 50/610/15	1500	920 x 410 x 600	50	610	1000	6,0	400 V 3/N	56
ROC 75/610/15	1500	920 x 410 x 600	75	610	1000	6,25	400 V 3/N	68
ROC 38/250/16	1600	720 x 410 x 600	38	250	800	4,5	400 V 3/N	48
ROC 50/250/16	1600	720 x 410 x 600	50	250	800	4,5	400 V 3/N	48
ROC 50/450/16	1600	720 x 410 x 600	50	450	750	5,1	400 V 3/N	55
ROC 75/450/16	1600	720 x 410 x 600	75	450	750	6,0	400 V 3/N	63
ROC 50/610/16	1600	920 x 410 x 600	50	610	1000	7,0	400 V 3/N	58

High Temperature Tube Furnaces with MoSi₂ heating elements

T max 1700 °C and 1800 °C

- Tube diameter from 38 mm to 75 mm
- Heated length from 200 mm to 400 mm
- Delivery with tube made of aluminium oxide C 799 and 2 fibre plugs
- Double-walled housing with rear-ventilation to ensure very low outer-casing temperatures
- Insulation made of high grade vacuum formed aluminium oxide fibre with low thermal mass for very fast heating and cooling cycles
- Powerful Molybdenum-Disilicide heating elements, mounted on 2 sides parallel to the tube, fast heating
- Heating elements controlled by thyristors for very precise temperature control, wear-free and noiseless
- Switchgear and control unit integrated in the furnace housing underneath the tube module for comfortable operation of the controller, for vertically operated furnaces switchgear in a sep. cabinet
- Suitable for operation under inert gas or vacuum

Accessories:

- 3-zone design for high temperature uniformity
- Solid base frame for vertical operation
- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- For various applications different tubes (glass, ceramic, metal) available
- Gas-tight, water-cooled flanges and gassing systems for operation under inert gas or vacuum
- Further accessories see page 22



Technical Data

Model	T max [°C]	Outer dimensions [mm] Width x Depth x Height	Tube-Ø Inner [mm]	Heated length [mm]	Tube length [mm]	Power [kW]	Voltage [V]
ROHT 38/200/17	1700	460 x 460 x 750	38	200	800	3,6	230 V 1/N
ROHT 50/200/17	1700	460 x 460 x 750	50	200	800	3,6	230 V 1/N
ROHT 75/200/17	1700	460 x 460 x 750	75	200	800	3,6	230 V 1/N
ROHT 38/300/17	1700	560 x 460 x 750	38	300	900	3,6	400 V 2/N
ROHT 50/300/17	1700	560 x 460 x 750	50	300	900	5,4	400 V 2/N
ROHT 75/300/17	1700	560 x 460 x 750	75	300	900	5,4	400 V 2/N
ROHT 38/400/17	1700	660 x 460 x 750	38	400	1000	6,7	400 V 2/N
ROHT 50/400/17	1700	660 x 460 x 750	50	400	1000	6,7	400 V 2/N
ROHT 75/400/17	1700	660 x 460 x 750	75	400	1000	6,7	400 V 2/N
ROHT 38/200/18	1800	460 x 460 x 750	38	200	800	3,6	230 V 1/N
ROHT 50/200/18	1800	460 x 460 x 750	50	200	800	3,6	230 V 1/N
ROHT 75/200/18	1800	460 x 460 x 750	75	200	800	3,6	230 V 1/N
ROHT 38/300/18	1800	560 x 460 x 750	38	300	900	5,4	400 V 2/N
ROHT 50/300/18	1800	560 x 460 x 750	50	300	900	5,4	400 V 2/N
ROHT 75/300/18	1800	560 x 460 x 750	75	300	900	5,4	400 V 2/N
ROHT 38/400/18	1800	660 x 460 x 750	38	400	1000	6,7	400 V 2/N
ROHT 50/400/18	1800	660 x 460 x 750	50	400	1000	6,7	400 V 2/N
ROHT 75/400/18	1800	660 x 460 x 750	75	400	1000	6,7	400 V 2/N



Tube Furnace-Accessories

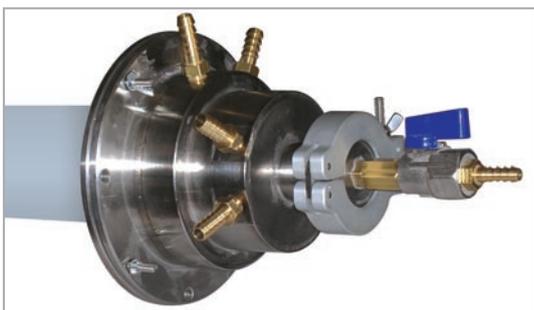
Working Tubes

Tubes made of different materials and various diameters are available for different applications and operating temperatures.



Plugs

Fibre plugs for all tube diameters and temperatures available, optional also with protective gas connection.



Flanges

Gas-tight flanges made of stainless steel, with and without water cooling, for protective gas atmosphere or vacuum can be supplied.



Gassing systems

For different furnace types we can supply manual or automatic gassing systems for flammable, non-flammable gases or for vacuum operation.



Water cooling

Inner furnace casing with water-cooler coils and additional external cooling unit .

Elevator Furnaces

T max 1600 °C, 1750 °C and 1800 °C

- Furnaces of 2 and 4 litres in bench top design, larger furnaces in free-standing version
- Double-walled housings with rear-ventilation to ensure very low outer-casing temperatures
- Casing made of strong and sleek framework construction
- Reliable vibration-free bottom lifting with electro-mechanical movement
- Insulation made of high grade aluminium oxide fibre with low thermal mass for very fast heating and cycles
- High grade heating elements made of Molybdenum disilicide (MoSi₂)
- Low power rating
- Switch gear and control unit integrated in furnace housing for comfortable operation of controller
- All types also available in Lift-Top version (bottom is fixed, furnace hood moves vertically)
- For large scale production furnaces with an useable volume of up to 2000 litre are available

Accessories:

- Air inlet
- Automatically driven exhaust flaps for extended ventilation of furnace chamber
- Controlled cooling system to accelerate cooling times
- Protective gas connection
- Bottom reinforcement for high weight load

Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Power [kW]	Voltage [V]
ELHT 02/16	1600	120 x 120 x 150	2	2	230 V 1/N
ELHT 04/16	1600	150 x 150 x 150	3	4	400 V 3/N
ELHT 10/16	1600	250 x 250 x 200	12	8	400 V 3/N
ELHT 40/16	1600	350 x 350 x 350	43	20	400 V 3/N
ELHT 70/16	1600	400 x 400 x 400	64	30	400 V 3/N
ELHT 02/17	1750	120 x 120 x 150	2	2	230 V 1/N
ELHT 04/17	1750	150 x 150 x 150	3	4	400 V 3/N
ELHT 10/17	1750	250 x 250 x 200	12	8	400 V 3/N
ELHT 40/17	1750	350 x 350 x 350	43	20	400 V 3/N
ELHT 70/17	1750	400 x 400 x 400	64	30	400 V 3/N
ELHT 02/18	1800	120 x 120 x 150	2	2	230 V 1/N
ELHT 04/18	1800	150 x 150 x 150	3	4	400 V 3/N
ELHT 10/18	1800	250 x 250 x 200	12	8	400 V 3/N
ELHT 40/18	1800	350 x 350 x 350	43	20	400 V 3/N
ELHT 70/18	1800	400 x 400 x 400	64	30	400 V 3/N

Other sizes on request





Drying Cabinets with natural air convection

T max 250 °C

- Sophisticated drying cabinets with excellent value for money
- Chamber volume of 55 - 715 litres
- Temperature range starting from +5 °C above ambient temperature up to 250 °C
- Natural, smooth air flow inside the chamber, noiseless operation
- High quality and safe drying, heating and tempering in laboratories and industry
- User-friendly, very accurate temperature control and fast temperature recovering after charging
- Standard version with micro-processor controller, LCD indication of process details
- Wide range of additional accessories and extras
- Interface for PC and recorder
- Possibility of validation (IQ, OQ)

Accessories:

- Window and illumination
- Cable feed through Ø 25, 50, 100 mm
- Door lock
- Door mounted on left side (except model 700)
- Additional PT 100 sensor
- Software for Windows

Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions [mm] Width x Depth x Height	Power [kW]	Voltage [V]	Weight [kg]
KTL 60/02	250	400 x 390 x 350	55	620 x 640 x 680	1,3	230 V 1/N	55
KTL 120/02	250	540 x 390 x 530	112	760 x 640 x 860	1,9	230 V 1/N	75
KTL 240/02	250	540 x 540 x 760	221	760 x 790 x 1090	1,9	230 V 1/N	100
KTL 400/02	250	540 x 540 x 1410	411	760 x 790 x 1910	3,6	400 V 3/N	150
KTL 700/02	250	940 x 540 x 1410	715	1160 x 790 x 1910	4,5	400 V 3/N	215

Drying Cabinets with forced air convection

T max 250 °C

- Very fast and accurate laboratory drying cabinets
- Designed for demanding and precise tests and drying processes and for materials and processes with high amount of humidity
- Chamber volume 23 - 715 litres
- Temperature range starting from +10 °C above ambient temperature up to 250 °C
- Patented system with special air circulation inside the chamber for very homogeneous temperature uniformity during all drying, heating and sterilisation processes
- User-friendly, very accurate temperature control and fast temperature recovering after charging
- Standard version with micro-processor controller, LCD indication for process details
- Wide range of additional accessories and extras
- Interface for PC and recorder
- Possibility of validation (IQ, OQ)

Accessories:

- Also for 300 °C
- Window and illumination (from model 60)
- Cable feed through Ø 25, 50, 100 mm (100 mm not available for model 20)
- Door lock (from model 60)
- Door mounted on left side (except model 700)
- Additional PT 100 sensor
- Software for Windows PC
- HEPA-Filter mounted in the air inlet
- Outer case made of stainless steel



Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions [mm] Width x Depth x Height	Power [kW]	Voltage [V]	Weight [kg]
KTL 20/02/A	250	240 x 320 x 295	23	406 x 580 x 604	1,0	230 V 1/N	31
KTL 60/02/A	250	400 x 390 x 350	55	620 x 640 x 680	1,3	230 V 1/N	55
KTL 120/02/A	250	540 x 390 x 530	112	760 x 640 x 860	1,9	230 V 1/N	75
KTL 240/02/A	250	540 x 540 x 760	221	760 x 790 x 1090	1,9	230 V 1/N	100
KTL 400/02/A	250	540 x 540 x 1410	411	760 x 790 x 1910	3,7	400 V 3/N	150
KTL 700/02/A	250	940 x 540 x 1410	715	1160 x 790 x 1910	4,9	400 V 3/N	215



Vacuum Drying Cabinets

T max 200 °C

- Fast, smooth, ecological - Lab dryer for high demands
- Vacuum-drying cabinets offer noiseless operation, very smooth probe heating
- Most suitable for drying of thermal instable and oxidation sensitive materials, parts with difficult shape, for drying of probes in vacuum
- Chamber volume of 26, 55 und 106 litres
- Temperature range starting from +5 °C above ambient temperature up to 200 °C
- User-friendly, very accurate temperature control and fast temperature recovering after charging
- Standard version with micro-processor controller, LCD indication for process details
- Wide range of additional accessories and extras e.g. base cabinet for vacuum station
- Interface for PC and recorder
- Possibility of validation (IQ, OQ)

Accessories:

- Charge-thermocouple for independent measuring inside the chamber or on the probe
- Inner chamber made of stainless steel
- Outer casing made of stainless steel
- Base cabinet on wheels
- Base cabinet for vacuum station, to integrate vacuum pump and necessary devices
- Illumination
- Chemical resistant vacuum pump (also with emission trap and emission condenser)
- Vacuum control system

Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions [mm] Width x Depth x Height	Power [kW]	Voltage [V]	Weight [kg]
KTL 20/02/V	200	340 x 260 x 300	26	560 x 490 x 700	1	230 V 1/N	65
KTL 60/02/V	200	400 x 320 x 430	55	620 x 550 x 830	1,2	230 V 1/N	98
KTL 120/02/V	200	540 x 410 x 480	106	760 x 640 x 880	1,8	230 V 1/N	130

High Temperature Ovens

T max 450 °C, 650 °C and 850 °C

- Air-circulation chamber furnaces up to 850 °C, suitable for tempering, ageing, pre-heating, drying, shrinking and testing
- Rugged casing made of high grade steel sheets
- Hinged door mounted on the right side
- Inner liner of heat-resistant stainless steel, long service life, extremely resilient, corrosion resistant
- 2 sheet-metal trays included as standard (KU 15/06/A without trays, for 850 °C models sheet-metal trays as option)
- Efficient insulation for low heat losses, low energy consumption and low energy costs
- High-grade heating elements with long service life
- Powerful air-circulation for high temperature uniformity inside the furnace chamber up to +3K acc to DIN 17052
- Base included in standard supply (KU 15/06/A as bench-type furnace without base)

Accessories:

- Lift door with pneumatic drive
- Fresh air valve and exhaust flaps for extended ventilation of furnace chamber
- Controlled cooling system to accelerate cooling times
- Protective gas connection
- Annealing retort system
- Clean-room version



Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions*		Power [kW]	Voltage [V]	Weight [kg]
				Width	Depth x Height			
KU 40/04/A	450	300 x 400 x 300	35	540	1050 x 1270	3,2	230 V 1/N	115
KU 70/04/A	450	350 x 500 x 400	70	590	1150 x 1370	6,4	400 V 3/N	130
KU 140/04/A	450	450 x 600 x 500	135	690	1250 x 1470	9,6	400 V 3/N	205
KU 270/04/A	450	600 x 750 x 600	270	840	1450 x 1620	12,8	400 V 3/N	370
KU 540/04/A	450	750 x 900 x 800	540	990	1600 x 1820	19,2	400 V 3/N	540
KU 15/06/A	650	300 x 350 x 150	15	500	900 x 440	2,4	230 V 1/N	50
KU 40/06/A	650	300 x 400 x 300	35	540	1050 x 1270	4,0	400 V 3/N	125
KU 70/06/A	650	350 x 500 x 400	70	590	1150 x 1370	8,0	400 V 3/N	140
KU 140/06/A	650	450 x 600 x 500	135	690	1250 x 1470	12,0	400 V 3/N	220
KU 270/06/A	650	600 x 750 x 600	270	830	1560 x 1610	16,0	400 V 3/N	390
KU 540/06/A	650	750 x 900 x 800	540	990	1600 x 1820	24,0	400 V 3/N	560
KU 40/08/A	850	300 x 400 x 300	35	850	1360 x 1470	6,0	400 V 3/N	290
KU 70/08/A	850	350 x 500 x 400	70	900	1460 x 1570	10,0	400 V 3/N	360
KU 140/08/A	850	450 x 600 x 500	135	1000	1560 x 1670	14,0	400 V 3/N	580
KU 270/08/A	850	600 x 750 x 600	270	1150	1710 x 1770	20,0	400 V 3/N	770
KU 540/08/A	850	750 x 900 x 800	540	1300	1860 x 1970	30,0	400 V 3/N	920

* Width without controller panel (+260mm), height incl. base; Charging height: approx. 900 mm (not KU 15/06/A)



Customized Furnaces

Special furnace up to 1100 °C

Chamber furnace for testing fire protection plates and fire protection glass. Up to 1000 °C in 10 minutes. Thickness of test plates between 25 - 100 mm. Max. temperature up to 1400 °C and slight over pressure are optional available.



Chamber furnace with protective gas atmosphere up to 1700 °C

Chamber furnace with water cooled, gas tight chamber. The furnace can be used up to 1700 °C with protective gas atmosphere. An oxygen sensor monitors the O₂-content in the exhaust gas. To increase the purity of the atmosphere, a vacuum pump can be used to evacuate the chamber before starting the process.



Furnaces up to 2000 °C

For a temperature range up to 2000 °C in normal atmosphere a special furnace series has been developed. Typical areas for such furnaces are high temperature reaction studies, sintering of advanced ceramics, melting and pouring of special glasses etc.

Available as chamber-, lift-bottom or tube furnaces.



Apparatus for Hot Modulus of Rupture (HMOR) tests

This furnace system was developed to investigate the hot modulus of rupture of new refractory materials. The furnace has a maximum temperature of 1600 °C. The gas tight design allows different gas atmospheres to be used. The oxygen partial pressure is monitored online through an oxygen sensor.

A walking beam system is installed so that 6 samples can be introduced simultaneously. The transport of the samples is semi-automatic. A sample size of 25 x 25 x 150 mm can be tested according to the three-point-bending method. All relevant process and experimental data are registered by the software supplied.

Customized Furnaces

Calibration furnace up to 1700 °C

The furnace shown was designed for high temperature calibration of thermocouples. Several thermocouples can be calibrated at the same time. The heating is splitted in 3 independently zones .

All 3 zones are controlled by a DC power pack, the furnace casing is water cooled.



Rotating tube furnace up to 1600 °C

This rotary tube furnaces can be operated up to 1600 °C under inert gas atmosphere. The ceramic tube has an inner diameter of 80 mm and a total length of 1600 mm. In spite of the inert gas atmosphere, the product can be introduced and discharged continuously through sewer ports. The vacuum pump supplied can be used to evacuate the system before purging the tube with inert gas and start the process.



Multi-purpose furnace 1700 °C / 1200 °C

The photo shows a high temperature box furnace for 1700 °C. Two tube furnaces for 1200 °C are installed on one side of the box furnace. This combination of three different furnaces is used to investigate highly corrosive materials in the glass industry.

The bottom drives up and down electromechanically and can be rotated simultaneously at predefined speeds.

Through the opening in the roof of the box furnace and by means of a lifting and turning mechanism specimens can be transferred between the three furnaces.



Special tube furnace for pyrolysis

This custom designed tube furnace for pyrolysis on a pilot scale contains 4 working tubes. The heated length of 1,5 m is divided into 3 heating zones. The furnace can be operated up to 1250 °C. Each working tube has an inner diameter of 110 mm and a total length of 2,5 m. A special system compensates the thermal expansion of the ceramic tubes.





Furnaces and plants for production

For all important heat treatment applications THERMCONCEPT supplies a wide range of furnaces and plants for production. Please ask for our special catalogues.

- Chamber-, bogie hearth-, hood- and pit-type furnaces
- Electrically heated or fuel-fired
- Large range of standard furnaces as well as tailor made furnace lines
- Normal- and protective gas atmosphere
- From manually up to fully automatic controlled operation

High temperature chamber furnace up to 1600 °C

The shown chamber furnace with lift door is used for sintering of technical ceramics at high temperature. The furnace is heated by MoSi₂-heating elements. The useable volume is 43m³, the useable dimensions are 13200 x 1800 x 1800 mm (wxdxh).



Elevator furnace

Large scale elevator furnace up to 1800 °C, with up to 2000 litres inner volume and 1 t charge weight for sintering of insulation panels.

Both bottom hearths will be driven for loading and unloading to the left and right side. Due to the control system a fully automatic operation is possible.



Bogie hearth furnace up to 1800 °C

Bogie hearth furnaces electrically heated with MoSi₂ elements up to 1800 °C. The furnaces are heated from 3 sides.



Bogie hearth furnace

Electrically heated bogie hearth furnace up to 1400 °C with two electro-hydraulic lift doors and two bogies with chain drive.

Furnaces and plants for production

Tube furnaces up to 1800 °C

Tube furnaces used for production of ceramic powder in protective gas atmosphere. The work tube is equipped with gas-tight, water cooled flanges made of stainless steel. Including gas control station for four furnaces.



6-tube special furnace up to 1600 °C

High temperature tube furnace with 6 ceramic work tubes. The heated length of 2000 mm is splitted into 5 heating zones. MoSi₂-heating elements are mounted freely hanging also between the tubes to optimize the temperature uniformity. To purge work tubes with protective gas like Argon, Nitrogen or Hydrogen, each work tube is equipped with gas-tight, water cooled flanges.



Gas-heated chamber furnace up to 1200 °C

Gas-heated furnace line, consisting of two chamber furnaces for oxidizing of catalytic converter made of Siliconcarbide (SiC) and one chamber furnace to burn out catalyzer honeycombs.



Gas-heated hood furnace up to 1600 °C

The shown gas-heated hood furnace is used for sintering of electric insulators.

Gas-heated furnaces are also available as bogie hearth furnaces or table furnace consisting of 2 fixed furnace tables and a heated furnace casing which drives over both tables alternately.



Catalytic converter and thermal afterburners

For many processes e.g debinding of ceramics or melt out of wax, often waste gas treatment is required. THERMCONCEPT supplies catalytic converter and thermal afterburners, individually adapted to your process.

Catalytic Converter

THERMCONCEPT Catalytic Converter are available in different shapes and sizes as well as for different amounts of harmful substances. Depending on waste gas and pollutants, unburnt hydrocarbons are splitted in non-toxic, natural constituent parts at 200 °C - 650 °C.



1



2



3

(1) Furnace plant for debinding of ceramic parts with catalytic converter model KNV 150

(2) Catalytic waste gas cleaning used in clean room conditions for production of medical parts made of ceramic, modell KNV 300, equipped with honey combs for pre-clearing, catalytic fine-cleaning, filter and separator system as protection against toxic substances, with volume flow rate of 80 nm³/h

(3) Catalytic converter used in ceramic industry. Model KNV 600

Thermal afterburners

For different applications THERMCONCEPT supplies also thermal afterburner systems. Thermal afterburners are used if waste gases include a high amount of pollutants or inorganic substances. Harmfull waste gases are burnt residue-free at 1200 °C.

- Available in vertical, horizontal or suspended version
- With noise protection (installation of sound adsorber or sound insulating cabinets)
- Thermal insulation with high-grade ceramic fibre for temperatures up to 1200 °C
- Gas, oil or electrical heating is possible
- Volume flow rates of 20 nm³/h to 15.000 nm³/h
- Exhaust chimney and completely piping packages are available upon request

THERMCONCEPT service range:

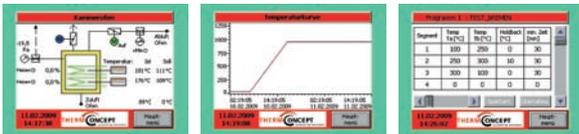
- Design and layout of waste gas cleaning plants for new or existing furnaces.
- Integration in already existing process lines
- Pre-delivery tests can be carried out in our laboratory



(1) Gas fired thermal afterburner with suction fan and switchgear

(2) Gas fired furnace plant for melt-out of wax, with thermal afterburner, programm control and temperatur regulation via Siemens-SPS S7-313 with Touchpanel TP 170

(3) Thermal afterburner modell TNV 600:
volume flow rate 600 nm³/h - pollutant flow 5 kg/h



Process control and documentation

State-of-the-art control technology is fitted as standard in THERMCONCEPT furnaces. Microprocessor controllers ensure precise furnace regulation of both simple and complex processes. The program controllers are extremely user-friendly.

The control system can be extended as required. Software packages for managing the controller and for evaluating the processes are available, as is visualisation software. On request, we can install Siemens S7 control systems featuring Siemens touch panels as user interface.

In addition to our proven standard systems, we also design control panels according to customers wishes, in compliance with special plant standards and equipment regulations.

Programm Controller

A wide selection of standard controllers are adjusted to our different types of furnaces and cover most of our customers demand.

Professional Control Devices

For demanding control requirements we supply PLC-controls based on Siemens S7 hardware

THERMCONCEPT Operator Interface

Our standard operator interfaces usually fulfil most customers needs for simple controls. Further extensions will not only show all furnace functions and the complete process graphically, but can also store and readout process data via different interfaces.

Process Documentation

Several graphic-, line- or dot-recorder are available.

Control- and Analysing Software

- Management of several furnaces simultaneously
- Furnace control from a central PC
- Sensing of time-temperature profiles in accordance with DIN ISO 9000 ff.
- Documentation of batch data

Control Panel Technology

- Heating elements controlled by contactors, solid state relays or thyristors
- DC power packs
- Multi-zone control systems
- Cascade- and probe control
- Remote maintenance systems

Professional Service

With our skilled workforce we are able to provide you from the outset with a wide range of professional services relating to all furnace matters:

- Our consulting is your success. Trust on our very long experience in the furnace business. We turn your special requirements into a successful and reliable solution
- Expert advice on applications and uses, to ensure you make the right investment decisions
- Everything from a single source! As system suppliers, we can also advise you on supplementary aids, tools and systems

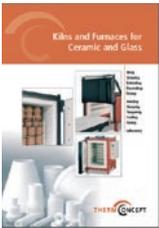
- Installation and commissioning of furnace systems, as well as training of operators
- Upgrades of existing furnaces with additional equipment
- Modernisation of control systems
- DKD calibration / plant calibration on site or in our laboratories
- Temperature uniformity tests with calibrated measuring devices acc. to certified procedures
- Regular maintenance and service at site
- Repairs, modifications and upgrades of furnaces, change of insulation materials or mechanical components. Also available for other furnace brands

- **Fast spare parts service**
- **All necessary spare parts on stock**
- **Also for other furnace brands**

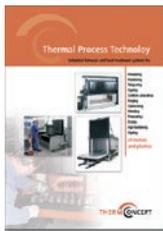
- From the start make the correct choice. Simulate your process in our laboratory
- Check your tests and our equipment prior to ordering
- We aim to make your first experience with THERMCONCEPT a lasting impression



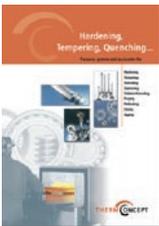
The product range at a glance



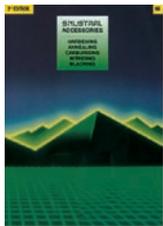
Brochure:
Kilns and Furnaces for
Ceramic and Glass



Brochure:
Thermal Process
Technology



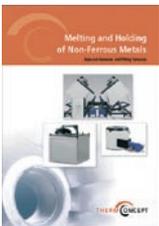
Brochure:
Hardening, Tempering,
Quenching



Brochure:
Heat treatment
Accessories



Brochure:
Heat treatment
Systems



Brochure:
Melting and Holding of
Non-Ferrous Metals

Technical Ceramics, Advanced Materials, Waste Air Purification

THERMCONCEPT furnaces are used for many different applications e.g. for technical ceramics, semi-conductor production, photo voltaics, bio-ceramics etc. We supply also furnaces for debinding and sintering, for crystal growing and thermal analysis. Our chamber-, bogie hearth-, elevator-, hood- and continous furnaces are either electrically heated or fuel-fired. All furnaces can be completed with catalytic converter or thermal afterburner.

Heat Treatment of Metal and Plastics

We supply industrial furnaces and plants for a wide range of different applications. Our furnaces and plants are used for annealing and hardening of metal and also used for tempering, ageing, pre-heating, drying and curing of metals and plastics. The product line consists of electrically heated and gas-fired furnaces.

Annealing, Hardening, Tempering

Here you will find furnaces, heat treatment systems and accessories for a wide range of applications in tool shops and metal processing industry. Nearly all important heat treatment processes can be realised with our demanding equipment.

Foundry

For foundries we supply electrically and fuel fired melting- and holding furnaces for light- and heavy metals. The range of furnaces include bale-out furnaces, tiltable furnaces and bath furnaces. For solution annealing and ageing of aluminium parts we have a wide range starting with air circulation chamber furnaces up to fully automatic heat treatment lines.



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