

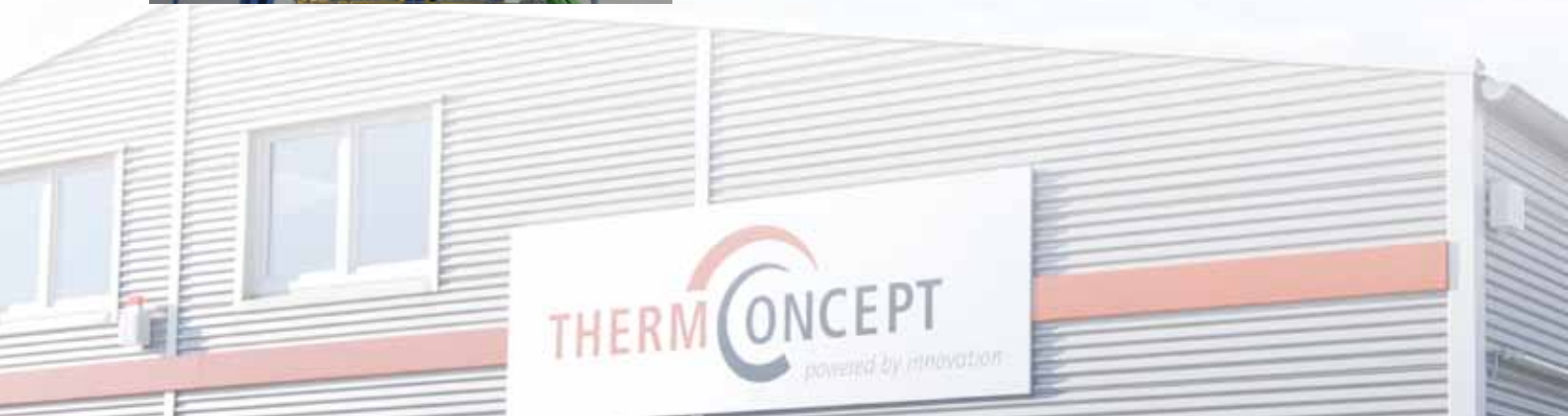
Laboratory Chamber & Tube Furnaces



Testing
Analysing
Ashing
Drying
Preheating
Debinding
Firing
Sintering
Annealing
Melting



Laboratory Chamber & Tube Furnaces



Experts in Furnaces

THERMCONCEPT develops, designs and manufactures furnaces and systems for a broad range of production and research applications. Many in our workforce have decades of experience in furnace engineering. The expertise we have amassed is deployed on a day-to-day basis in order to plan and realise your ideal furnace solution.

Engineering

Our highly-skilled development engineers and designers, hardware and software professionals, technicians and mechanics create cost-efficient and reliable furnace solutions. Direct contact with users enables us to design furnaces that are practical to use. Our aim is to deliver crucial technical and financial benefits.

Fast and flexible

Many applications can be achieved with our extensive range of standard furnaces. The advantages for you are proven, fully-developed models, excellent value for money and quick delivery times. Of course, we also supply customised furnaces specially designed to meet your specific application. In close consultation with you, we develop a furnace system which meets your challenging tasks both reliably and economically.

Global Sales and Service Network

THERMCONCEPT furnaces and systems are proven in daily use at satisfied customers in many countries worldwide. Our international distribution network ensures that our customers receive individual support, rapid responses and expert local service.

THERMCONCEPT *powerd by innovation*

Furnaces and industrial heat treatment systems made by THERMCONCEPT are synonymous for

- top quality
- proven technology
- ractical and service-friendly design
- customer-specific and application-based solutions
- maximum thermal efficiency and value for money
- eco-friendly materials
- professional service.

THERMCONCEPT is your partner for high-performance furnaces and systems for wide-ranging and challenging applications in production and research.

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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 (KLS 45/... in the ceiling)



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 640 x 720	2,7	230 V 1/N
KLS 15/11	1100	220 x 300 x 230	15	560 x 640 x 720	4,0	400 V 3/N
KLS 30/11	1100	280 x 380 x 280	30	590 x 690 x 790	4,0	400 V 3/N
KLS 45/11	1100	300 x 500 x 300	45	660 x 810 x 820	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 640 x 720	4,0	400 V 3/N
KLS 15/12	1200	220 x 300 x 230	15	560 x 640 x 720	4,0	400 V 3/N
KLS 30/12	1200	280 x 350 x 280	27	590 x 690 x 790	4,5	400 V 3/N
KLS 45/12	1200	300 x 500 x 300	45	660 x 810 x 820	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 640 x 720	4,0	400 V 3/N
KLS 15/13	1300	230 x 300 x 230	16	590 x 690 x 790	4,0	400 V 3/N
KLS 30/13	1300	270 x 350 x 270	26	590 x 690 x 790	6,0	400 V 3/N
KLS 45/13	1300	300 x 500 x 300	45	660 x 810 x 820	6,0	400 V 3/N

Laboratory Chamber Furnaces

Wide range of furnaces

THERMCONCEPT laboratory chamber funaces are available in sizes from 5 litres to 45 litres (see Technical Data page 4). The inner dimensions and maximum operating temperatures are adapted to the needs of labora-
tories. Our range of furnaces also includes models with a Voltage of 230 V.
Special dimensions and sizes in between are of course available upon request

Accessories

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

- Vent with fan or with catalytic converter
- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- Protective gas connection at the rear side
- Quartz protection tubes for heating elements
- Pre-heating of process air
- Parallel-guided swing door
- Further accessories see page 13



Compact muffle furnaces

T max 1100 °C

- Compact muffle furnaces with outstanding price-performance ratio
- Suitable for many applications in laboratories
- Compact outer dimensions and design to minimize space requirements
- Powder-coated, double-walled housing with long service life
- Insulation complete made of high-grade fibre material with low thermal mass for short heat-up times
- High quality heating wire with long service life
- Heating wire mounted in quartz glass tubes, protected against mechanical damages and waste gases, service friendly design
- Heating elements switched by solid state relays for precise furnace control, wear-free and noiseless
- Exhaust pipe in the furnace ceiling



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]
KLE 03/11	1100	130 x 180 x 130	3	400 x 450 x 450	1,0	230 V 1/N
KLE 05/11	1100	160 x 200 x 160	5	430 x 470 x 480	1,5	230 V 1/N
KLE 09/11	1100	190 x 250 x 190	9	460 x 520 x 510	2,0	230 V 1/N
KLE 15/11	1100	220 x 300 x 220	15	490 x 570 x 540	3,0	230 V 1/N

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 fan
- Vent with fan and catalytic converter
- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- Further accessories see page 13



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 170 x 130	5	430 x 445 x 425	2,4	230 V 1/N	35
KL 09/12	1200	230 x 240 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

Ashing furnaces

T max 1100 °C and 1200 °C

- Similar to chamber furnaces KLS (page 4), but specially adapted for ashing of organic probes
- Pre-heating of combustion air through ceramic inlet-channels in the furnace bottom
- Heating wire mounted in quartz glass tubes, protected against mechanical damages and waste gases, service friendly design
- Large exhaust outlet in the furnace ceiling and stainless steel stack with a height of 350 mm on top of the furnace
- Double-walled housing with rear-ventilation to ensure low outer-casing temperatures
- Very good temperature uniformity in the furnace chamber
- 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

Accessories:

- Parallel-guided swing door
- Adjustable over-temperature protection of furnace and charge acc. EN 60519-2
- Further accessories see page 13



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/ASH	1100	210 x 200 x 150	6	550 x 580 x 650	2,0	230 V 1/N
KLS 10/11/ASH	1100	200 x 250 x 200	10	560 x 640 x 720	3	230 V 1/N
KLS 05/12/ASH	1200	180 x 200 x 140	5	550 x 580 x 650	2,0	230 V 1/N
KLS 10/12/ASH	1200	200 x 250 x 200	10	560 x 640 x 720	4,0	400 V 3/N

*Height + 350 mm for exhaust stack

Laboratory chamber furnaces

with ceramic muffle

T max 1000 °C, 1100 °C and 1150 °C

- Chamber furnaces with integrated ceramic muffle, high mechanical and chemical resistance
- Furnaces 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
- Heating elements wound around outside the ceramic muffle, heating on all 4 sides for high temperature uniformity inside the chamber
- Heating elements protected against aggressive waste gases atmospheres
- Heating elements controlled by solid state relays for very precise temperature control, wear-free and noiseless
- Exhaust pipe in the rear wall
- KLS 07/11/M with double-walled housing and 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, collar made of fire bricks to ensure high wear resistance against mechanical stress
- KLS 03/10/M and KLS 02/11/M with userfriendly swing door with multilayer insulation made of high grade fibre

Accessories:

- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- Further accessories see page 13



KLS 07/11/M



KLS 03/10/M



KLS 02/11/M

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/M	1000	140 x 200 x 110	3	320 x 350 x 410	1,5	230 V 1/N	20
KLS 02/11/M	1100	100 x 140 x 100	2	320 x 350 x 410	1,5	230 V 1/N	20
KLS 07/11/M	1150	210 x 280 x 110	7	550 x 580 x 650	2,7	230 V 1/N	60

Laboratory chamber furnace

for asphalt tests according ASTM D 6307-98

T max 600 °C



- Chamber furnace especially developed for analysis of asphalt at 540 °C according to ASTM D 6307-98
- With integrated balance for weight loss determination, software and interface for data storage, max. probe weight is 2500 gr.
- Thermal after burner, mounted to the exhaust on top of the furnace, for cleaning of waste gases emerging from the probe
- Very high temperature uniformity in the furnace chamber
- Double-walled housing with rear-ventilation to ensure low outer-casing temperatures
- Swing door with electrical locking at process temperature above 150 °C
- 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
- Powerful heating elements in both sides providing fast heating rates, for fast heat-up in approx. 35 min to 540 °C
- Heating elements on ceramic supporting tubes, mounted in front of the insulation for free heat radiation
- Heating elements covered with quartz glass tubs for protection
- Heating elements controlled by solid state relays for very precise temperature control, wear-free and noiseless
- According to norm with automatic switch off after test has been finished



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]	Weight [V]
KLS 30/06/BIT	600	300 x 300 x 300	27	605 x 595 x 515 / 1130	4	400 V 3/N

Laboratory furnaces with weighing system

T max 1200 °C

- Laboratory chamber furnaces with integrated weighing system for measuring and documentation of mass loss at different temperatures
- Balance mounted underneath the furnace and connected with indicator and charge tray inside the furnace
- Switchgear mounted in a separate housing also underneath the furnace
- Delivery upon request with balance and software for documentation
- Very high temperature uniformity in 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
- 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
- Other dimensions and temperature upon request

Accessories:

Due to a wide range of accessories and extras laboratory chamber furnaces can be easily adapted to different laboratory applications:

- Vent with fan or with catalytic converter
- Adjustable temperature limiter to protect furnace and charge acc. EN 60519-2
- Protective gas connection on the furnace rear
- Quartz protection tubes for heating elements
- Pre-heating of process air
- Parallel-guides swing door
- Further accessories see page 13

Technical Data

Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Power [kW]	Weight [V]
KLS 05/12/WS	1200	180 x 200 x 140	5	2,0	230 V 1/N
KLS 10/12/WS	1200	200 x 250 x 200	10	4,0	400 V 3/N
KLS 15/12/WS	1200	220 x 300 x 230	15	4,0	400 V 3/N
KLS 30/12/WS	1200	280 x 350 x 280	27	4,5	400 V 3/N



Special laboratory furnaces

Chamber furnaces KLS with moveable bottom

Upon request laboratory chamber furnaces KLS 30/.. and KLS 45/.. can be supplied with manually moveable furnace bottom. This design allows access to the bottom from 3 sides and very easy charging.

Chamber furnaces with moveable bottom are available for a max. operating temperature of 1100 °C and 1200 °C, a switchgear in a sep. housing is included.

A suitable work bench adapted to the furnace size is optionally available.

Laboratory furnace for testing and production of fuel cells

Electrically heated chamber furnace up to 1100 °C, individually adapted to customers specification, with double-wing door and pressure indenter for testing and small scale production of fuel cells.

On the top of the furnace a pneumatic pressure indenter with up to 500 kg is mounted to press stacked fuel cells during the heating cycle.

Also bogie hearth furnaces or chamber furnaces of individual sizes and temperatures for large scale production are available.



Furnace accessories

Exhaust systems

Manual or automatic inlet ports for fresh process air for or cooling, upon request also with pre-heating.

Automatic inlet- and outlet flaps, controlled via furnace control system.

Vapor vent for controlled extraction of waste gases and warm air, mounted on the rear of the furnace, can be connected to existing waste gas stack.

Vapor vent with fan, to accelerate extraction of emerging waste gases and warm air from the furnace chamber. Controlled by extra funktion of furnace controller.

Vapor vent with fan and integrated catalytic converter. Organic parts or the emerging waste gases will be split catalytic in CO₂ and steam, smells will be minimized. Also controlled by extra funktion of furnace controller.

Protective gas atmosphere

Protective gas port on the furnace housing, to flush furnace chamber with non-flammable protective gas like Argon or Nitrogen.

Semi-gastight version of the furnace housing with additional silicone sealing, to minimize gas flushing losses and provide a better protective gas atmosphere.

Manual, semi-automatic and fully automatic gassing systems, adapted to individual applications, with flow meter, valve, pressure minimizer, controlled via furnace controller.

Charge tray and crucibles

Stackable charge trays and containers, crucibles and boats made of ceramic, in different sizes and materials.

Bottom plates and collecting pans

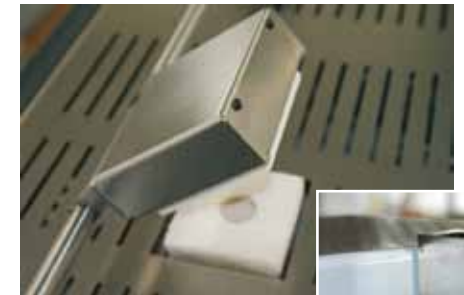
Bottom plates and collecting pans made of ceramic and steel, to protect furnace bottom, available in different sizes.

- Ceramic bottom plates up to 1300 °C
- Ceramic collecting pans up to 1300 °C
- Steel collecting pans up to 1100 °C

Charging tongs and heat-resistant gloves

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

Heat-resistant gloves for short term contact temperature of 600 °C or 900 °C. Charging tongs with length of 300 and 500 mm.



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 insulation panels 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
- Also bogie hearth furnaces or chamber furnaces with individual sizes and temperatures for large scale production are available.



Accessories:

- Parallel-guided door moving side-wards, with hot insulation surface to the rear, away from the operator
- Multi-zone control
- Pre-heating of process air
- Manually or automatically operated exhaust flap
- Controlled cooling system to accelerate cooling times and to remove waste gases
- Protective gas connection
- Manual and automatic gassing system
- Stackable charge trays and containers
- Catalytic and thermal waste gas treatment



Technical Data

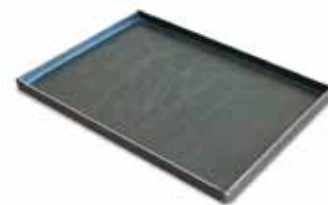
Model	T max [°C]	Inner dimensions [mm] Width x Depth x Height	Volume [l]	Outer dimensions [mm] Width x Depth x Height	Power [kW]	Voltage [V]	Weight [kg]
KC 16/13	1300	250 x 250 x 250	16	650 x 800 x 1400	7	400 V 3/N	160
KC 32/13	1300	320 x 320 x 320	33	700 x 850 x 1450	8	400 V 3/N	190
KC 64/13	1300	400 x 400 x 400	64	780 x 950 x 1520	11	400 V 3/N	250
KC 128/13	1300	500 x 500 x 500	125	880 x 1050 x 1620	15	400 V 3/N	300
KC 16/14	1400	250 x 250 x 250	16	700 x 850 x 1400	8	400 V 3/N	250
KC 32/14	1400	320 x 320 x 320	33	780 x 900 x 1450	10	400 V 3/N	330
KC 64/14	1400	400 x 400 x 400	64	860 x 970 x 1520	12	400 V 3/N	365
KC 128/14	1400	500 x 500 x 500	125	960 x 1080 x 1620	18	400 V 3/N	470



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

* KM 50/13 – KM 90/13: Charging height: 900 mm, other sizes on request

Systems, Tools and Accessories

THERMCONCEPT delivers specially developed hardening accessories that have 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/air-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
- Available with optional thermocouple for continuous measurement of the temperature inside the container

Hardening Box System

Hardening, annealing, 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
- Also available with optional thermocouple for continuous measurement of the temperature inside the container

Accessories and Tools

Hardening foils, envelopes and containers for oxidation-free annealing of steels up to 1200 °C

- Hardening foils, envelopes and containers for oxidation-free annealing of steel 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
- 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!

