

**Joining Technology:
High-Vacuum Brazing and Diffusion Bonding**

MOV

Resistance Heated High Vacuum Heat Treatment Furnace MOV

Special features

- Useable volume 0.1 to 1,200 liters
- Maximum operating temperature 2,400°C
- Stepless, process-optimized regulation of the heating elements via the thyristor controller
- Easy and safe control of the process cycles
- Clearly structured construction of the total furnace with high flexibility from modular extensions and innovative process control
- Ultimate vacuum up to 1×10^{-8} mbar
- Fully automatic control of the heat treatment process
- Temperature homogeneity in the useable space $\leq \pm 5K$

Benefits for users

- Excellent thermal characteristics and utilization of energy in combination with a low leakage rate of $\leq 1 \times 10^{-5}$ mbar l/s
- Uniform and reproducible trail processes
- High efficiency from low-loss feed of the energy and appropriate interpretation of the furnace
- Short evacuation and cycle times
- Reliability, long life span, convenience and therefore high economy levels
- Universal insert at thermal treatment processes with particularly demanding requirements
- Process and menu guidance by PC with data recording and data storage

Executions

Heater material

- Stainless steel, Molybdenum
- Tantalum, Tungsten

Loading executions

- Horizontally
- Vertically: Top- or Bottom Loading



Laboratory Furnace:	024	054	064
Useable volume (liter):	0.1 / 0.66	0.1 / 0.66	0.1 / 0.66
Ultimate vacuum (mbar):	10^{-6}	10^{-6}	10^{-6}
Max. temperature (°C):	1,100	1,700	2,500



Horizontal:	143	243	343	443	743	843
Useable volume (liter):	8	20	30	60	420	1,200
Ultimate vacuum (mbar):	10^{-6}	10^{-6}	10^{-6}	10^{-6}	10^{-6}	10^{-6}
Max. temperature (°C):	1,350	1,350	1,350	1,350	1,350	1,350



Vertical (Top Loader):	141	241	641	741	261 W
Useable volume (liter):	4.4	20	200	3,000	10
Ultimate vacuum (mbar):	10^{-6}	10^{-6}	10^{-6}	10^{-6}	10^{-6}
Max. temperature (°C):	1,350	1,350	1,350	1,350	2,400



Vertical (Bottom Loader):	542	642	842
Useable volume (liter):	150	200	600
Ultimate vacuum (mbar):	10^{-6}	10^{-6}	10^{-6}
Max. temperature (°C):	1,350	1,350	1,350

Resistance Heated High Vacuum Heat Treatment Furnace MOV

High vacuum heat treatment furnaces with power-regulated resistance heater elements made of metal for manufacturing and technological laboratory applications. Universal use for thermal treatments where particularly demanding requirements and sophisticated materials are involved.

Application

Heat treatment

- Bright- and stress-free annealing
- Degassing and cleaning
- Sintering process
- Annealing
- Vacuum and protective gas brazing

Special furnaces

- Diffusion bonding furnaces
- Vacuum heat treatment furnaces with pressing unit

Material application

- Refractory metals
- Super alloys
- Precious metal alloys
- Stainless steel

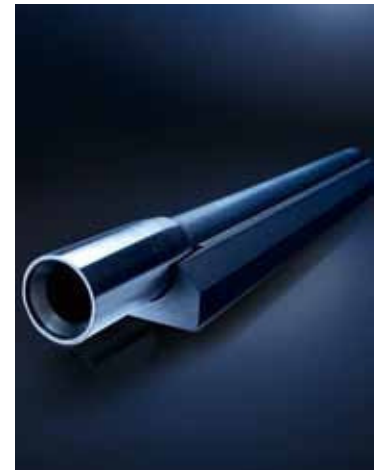


Diffusion Bonding Furnace

Characteristics

MOV systems are cold-wall furnaces with water-cooled double wall vessels of stainless steel. The material to be treated is heated by full metal resistance heater. Here the heat transfer takes place directly via heat radiation from the heater to the thermal treatment product. Thermal insulation is provided by metal sheets and multi layer foils. The all-metal design of the MOV systems is particularly well suited for high vacuum operations.

Due to its high vacuum conduction, short pumping times and low ultimate vacuum pressure are ensured. Appropriate accessory equipment also allows operation under partial pressure or overpressure protective or process gas atmosphere.



PVA Industrial Vacuum Systems GmbH

PVA Industrial Vacuum Systems GmbH is an internationally established supplier of systems and facilities for developing, producing, treating and refining sophisticated industrial materials using:

Vacuum	High temperature	Plasma
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PVA Industrial Vacuum Systems GmbH is a subsidiary of PVA TePla AG. The Wettenberg-based company is a leading manufacturer of highly innovative vacuum systems. With more than 1,000 plants on the market and 50 years of experience in the high-temperature field, PVA Industrial Vacuum Systems GmbH builds and markets thermal process plants and systems for the development, manufacture and treatment of high-quality materials at high temperatures.

In conjunction with its own Application & Innovation Lab, PVA Industrial Vacuum Systems GmbH also supports its customers with individual system and application developments - right up to series production.



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