TOP HAT FURNACE - V-L

The V-L soldering tube furnace is suitable for generating the lowest achievable operation pressures. Due to this vacuum capability, the highest purity gas atmosphere can be achieved.

The V-L is a vertically mounted tube furnace with automated controls for the sample loading and unloading, in addition to, raising and lowering the furnace hearth over the integrated quartz tube containing the sample material. The quartz tube is connected to the furnace, so in loading the soldering furnace, the quartz tube and furnace hearth are raised upwards to freely access the sample area. After the sample is loaded, the quartz tube and furnace hearth are lowered and locked into position for the heat treatment process where high vacuum operation is achievable. The furnace hearth can also be raised upward and away from the quartz tube after the heating process for fast cooling of the specimen in vacuum, air, or in an inert gas atmosphere.

The soldering furnace utilizes CrFeAl wire elements and ceramic fibre insulation. The temperature is monitored and controlled via thermocouples. The maximum temperature is limited by the quartz tube and can be as high as 1050 °C under vacuum operation. The quartz tube is closed at the top section with the bottom section open where samples are loaded and vacuum systems can be attached by a polymer sealing. The usable space has a diameter of 180 mm and a height of 300 mm providing an approximate volume of 2 l that can be rapidly evacuated. Additionally, the quartz tube provides a very clean operating space. Lastly, the V-L offers fast cooling possibilities and a high degree of user accessibility to the furnace.

High vacuum levels of 5 x 10^{-6} mbar and better are achievable. Gases are controlled by various dosing and controlling devices. The vacuum is provided by different pumping stations depending on the vacuum requirements.

Click to view video

Product Video: V-L soldering tube furnace

STANDARD FEATURES

- Precise defined atmosphere with highest possible purity (6N or better)
- Best possible vacuum
- Designed for rapid heating and cooling
- Certified safety management for flammable and toxic gases
- Fully automatic operation
- Movable quartz recipient
- Data recording for quality management

APPLICATION EXAMPLES

CIM, MIM, annealing, brazing, debinding, degassing, drying, pyrolysis, quenching, rapid prototyping, sintering, soldering, sublimation, synthesis, tempering

TECHNICAL DETAILS

The soldering furnace is insulated with ceramic fibre with heating elements of CrFeAl wire. The top of the furnace hearth is closed and sealed with a ceramic fibre plug. The furnace has three heating zones controlled by the operating software to achieve the best possible temperature uniformity. The temperature of the soldering furnace is monitored and controlled by mantle thermocouples in each zone, in addition to, an over-temperature thermocouple.

The maximum temperature is limited to 1050 °C, which is the maximum possible temperature for the quartz tube under vacuum. The quartz tube is closed at the top end with the bottom end sealed to a flange at the loading plate. Metallic radiation shields are inserted to insulate the heat towards the loading plate. At the loading plate, the pumping unit is attached.

Located below the loading plate, a gas guiding tube is attached and positioned such that it is 300 mm above the ground plate to ensure gas flow is from the top to the bottom of the quartz tube. The gas outlet is attached to the vacuum flange. From this vacuum flange, several sample thermocouples can be positioned as required in the quartz tube. The furnace is operated by a fully, programmable operating system with a touch panel display for monitoring the process temperature and operating parameters.

EXAMPLES

V-L 180-300/10-1G

V-L 450-600/10-1G

The standard V-L 180-300/10 soldering and brazing furnace is suitable for generating the lowest achievable operation pressures and highest possible temperature uniformity at the same time

TECHNICAL DETAILS (MODELS)

	V-L 180-300/10-1G	V-L 450-600/10-1G
Dimensions: External H x W x D (mm)	2300 x 1400 x 1400	3200 (open) x 2300 x 2000
Usable space		
Volume (l)	7.6	95
Ø x H (mm)	180 x 300	450 x 600
Thermal values		
Tmax vacuum (°C)	1050	1050
-Delta-T (K) according to DIN 17052	± 3 *	± 3 *
Cooling time (min)	30	30
Thermocouple type	K	K
Connecting values		
Power (kW)	12	58
Voltage (V)	400 (3P)	400 (3P)
Current (A)	3 x 30	3 x 110
Series fuse (A)	3 x 35	3 x 150
Controller		
Manual operation	Eurotherm with KP 300 panel	Eurotherm with KP 300 panel
Automatic operation	Siemens	Siemens
Cooling water required		
Flow (l/min)	30	30

Please note

* at a height of 300 mm with a three zone furnace

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