



HIGH TEMPERATURE HORIZONTAL TUBE FURNACE

HTRH / HTRH-3

www.carbolite.com/products/tube-furnace-range/universal-tube-furnaces/htrh-htrh-3/

HTRH / HTRH-3

HIGH TEMPERATURE HORIZONTAL TUBE FURNACE

The Carbolite high temperature tube furnaces HTRH can be used horizontally up to 1800 °C.

The high-grade insulation materials guarantee low energy consumption and high heating rates due to their low thermal conductivity. The insulation and molybdenum disilicide (MoSi_2) heating elements are installed in the rectangular housing. The heating elements are vertically hanging and can be replaced easily. At higher temperatures and in the presence of oxygen, MoSi_2 develops an oxide (SiO_2) layer, which protects the heating elements against further thermal or chemical corrosion.

Three-zone tube furnaces (HTRH-3) can achieve better temperature uniformity than single-zone versions. In these models each zone is equipped with a dedicated thermocouple and controller, which is especially useful to preheat gases required for reactions inside the system.



The HTRH tube furnaces do not include an integral work tube. The work tube must be selected as an additional item. The work tube length is dependent on the application and will vary if used with or without modified atmosphere or vacuum.

HTRH / HTRH-3

APPLICATION EXAMPLES

CIM, CVD, MIM, ageing, annealing, brazing, calcination, catalyst research, coating, degassing, drying, fuel cell testing, hardening, miniplants, pyrolysis, sintering, soldering, sublimation, synthesis, tempering, thermocouple calibration

HTRH / HTRH-3**STANDARD FEATURES**

- | 1800 °C maximum operating temperature
- | Programmable temperature controller with 24 segments: HTRH fitted with EPC3016P1, HTRH-3 fitted with CC-T1
- | Over-temperature protection
- | Accepts work tubes with outer diameters up to 100 mm for use with modified atmosphere
- | Accepts work tubes with outer diameters up to 200 mm for use in air
- | Heated lengths of 100, 150, 250, 300, 600 or 900 mm
- | Low thermal mass ceramic fibre insulation
- | High quality MoSi₂ heating elements in a vertical, hanging position
- | Rectangular housing with holes for convection cooling
- | Available with 1 - 3 heating zones
- | Furnace comes with separate control box with 3 m cable, plug and socket
- | Ethernet communications

HTRH / HTRH-3**OPTIONS**

Specify these at time of order.

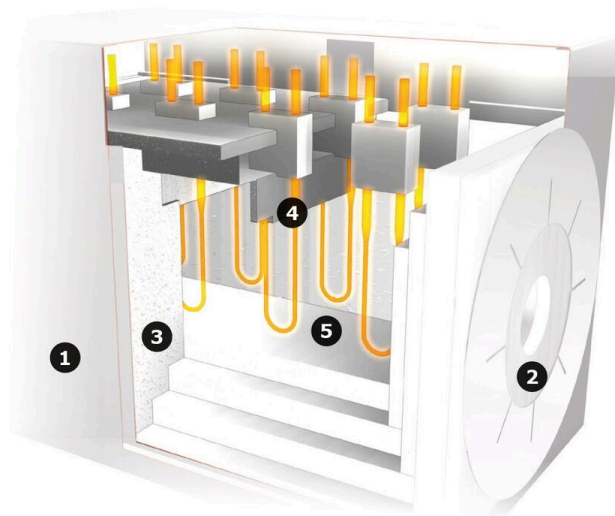
- | A range of sophisticated digital controllers, multisegment programmers and data loggers with digital communication options is available — more information: www.carbolite.com/products/control-options/
- | A range of additional work tubes is available in a variety of materials
- | Insulation plugs & radiation shields are strongly recommended for high temperature vertical tube furnaces to prevent heat loss & improve uniformity
- | Modified atmosphere and vacuum assemblies are available — more information: www.carbolite.com/products/modified-atmosphere/work-tube-packages/
- | Vacuum packages with a choice of rotary vane pump or turbomolecular pump are available for furnaces with tube inner diameters of 60 mm and above
- | Oxygen sensor for inert gas packages
- | Gas packages with manual or automatic valve for up to 3 gases
- | 6 m long cable between furnace body and control box with plug and socket

HTRH / HTRH-3

TECHNICAL DETAILS

VIEW INSIDE

1. Outer case
2. Ceramic fibre end insulation
3. Ceramic fibre case insulation
4. Heating elements
5. Ceramic fibre inner insulation



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EXAMPLES



HTRH 18/40/100 with control box



HTRH 17/70/600 with optional inert gas package, high vacuum flanges and E3508P10 programmer

HTRH / HTRH-3

TECHNICAL DATA

Specification	HTRH __/40/100	HTRH __/40/250
Max temp (°C)	1600	1600, 1700, 1800
Number of heated zones	Single zone	Single zone
Max outer diameter accessory tube (mm)	40	40
Heated length (mm)	100	250
Dimensions: External H x W x D (mm)	510 x 390 x 420	510 x 420 x 540
Furnace weight (kg)	45	45
Tube length for use in air (mm)	380	530
Tube length for use with modified atmosphere (mm)	915	1065
Control module dimensions H x W x D (mm)	500 x 550 x 700	500 x 550 x 700
Control module weight (kg)	50	50
Uniform length $\pm 5^{\circ}\text{C}$ (mm)	50	125
Max power (W)	2200	3600

Specification	HTRH __/40/500	HTRH __/70/150
Max temp (°C)	1600, 1700, 1800	1600, 1700
Number of heated zones	Single zone	Single zone
Max outer diameter accessory tube (mm)	40	70
Heated length (mm)	500	150
Dimensions: External H x W x D (mm)	510 x 420 x 790	620 x 520 x 450
Furnace weight (kg)	60	65
Tube length for use in air (mm)	780	440
Tube length for use with modified atmosphere (mm)	1275	975
Control module dimensions H x W x D (mm)	850 x 550 x 700	500 x 550 x 700
Control module weight (kg)	90	60
Uniform length $\pm 5^{\circ}\text{C}$ (mm)	250	75
Max power (W)	8000	4500

HTRH / HTRH-3

TECHNICAL DATA

Specification	HTRH __/100/150	HTRH __/100/300
Max temp (°C)	1600	1600, 1700, 1800
Number of heated zones	Single zone	Single zone
Max outer diameter accessory tube (mm)	100	100
Heated length (mm)	150	300
Dimensions: External H x W x D (mm)	620 x 520 x 450	620 x 520 x 590
Furnace weight (kg)	75	90
Tube length for use in air (mm)	440	580
Tube length for use with modified atmosphere (mm)	975	1115
Control module dimensions H x W x D (mm)	500 x 550 x 700	850 x 550 x 700
Control module weight (kg)	60	90
Uniform length $\pm 5^{\circ}\text{C}$ (mm)	75	150
Max power (W)	4800	7500

Specification	HTRH __/100/600	HTRH __/150/600
Max temp (°C)	1600, 1700, 1800	1600, 1700, 1800
Number of heated zones	Single zone	Single zone
Max outer diameter accessory tube (mm)	100	150
Heated length (mm)	600	600
Dimensions: External H x W x D (mm)	620 x 520 x 890	670 x 570 x 890
Furnace weight (kg)	140	140
Tube length for use in air (mm)	880	880
Tube length for use with modified atmosphere (mm)	1415	–
Control module dimensions H x W x D (mm)	850 x 550 x 700	850 x 550 x 700
Control module weight (kg)	90	90
Uniform length $\pm 5^{\circ}\text{C}$ (mm)	300	–
Max power (W)	10900	12000

HTRH / HTRH-3

TECHNICAL DATA

Specification	HTRH-3 __/100/600	HTRH-3 __/100/900
Max temp (°C)	1600, 1700, 1800	1600, 1700, 1800
Number of heated zones	Three zone	Three zone
Max outer diameter accessory tube (mm)	100	100
Heated length (mm)	600	900
Dimensions: External H x W x D (mm)	620 x 890 x 520	680 x 1190 x 650
Furnace weight (kg)	120	250
Tube length for use in air (mm)	880	1180
Tube length for use with modified atmosphere (mm)	1415	1715
Control module dimensions H x W x D (mm)	850 x 550 x 700	1100 x 1200 x 700
Control module weight (kg)	180	230
Uniform length $\pm 5^{\circ}\text{C}$ (mm)	350	–
Max power (W)	10900	20000

Specification	HTRH-3 __/150/600	HTRH-3 __/150/900
Max temp (°C)	1600, 1700, 1800	1600, 1700, 1800
Number of heated zones	Three zone	Three zone
Max outer diameter accessory tube (mm)	150	150
Heated length (mm)	600	900
Dimensions: External H x W x D (mm)	670 x 890 x 570	680 x 1190 x 650
Furnace weight (kg)	180	250
Tube length for use in air (mm)	880	1180
Tube length for use with modified atmosphere (mm)	–	–
Control module dimensions H x W x D (mm)	850 x 550 x 700	1100 x 1200 x 700
Control module weight (kg)	180	230
Uniform length $\pm 5^{\circ}\text{C}$ (mm)	350	–
Max power (W)	12000	20000

Dimensions and specifications are shown as provided for each furnace variant. The work tube is an additional item.

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