# Horizontal & Vertical Tube Furnaces up to 1850°C

*Standard and Customized Tube Furnaces for Research & Industrial Applications*

# Tube Furnaces up to 1850°C

## Single Zone, Multi Zone
## Horizontal, Vertical, Split
## Rotating, Vacuum & Custom Designed

Elite Thermal offers a wide range of standard and custom designed tube furnaces which are widely used in Educational, Research and Industrial organisations throughout the world.

This design and engineering capability enables Elite Thermal, and its representatives, to service contracts ranging from laboratory scale to full scale batch and continuous production of equipment.

The tube furnaces from Elite Thermal are intended for use at up to 1850°C. They come in a variety of tube diameters / lengths single and multi-heated zones, split (horizontal or vertical), rotating, vacuum options and many other configurations.

## Tube Furnaces Single Zone — 1200°C to 1850°C Maximum

Single zone Tube furnaces for temperatures 1200°C, 1400°C, 1500°C, 1600°C, 1700°C, 1750°C, 1800°C & 1850°C

TSH & TSV – This comprehensive range of furnaces offers 83 standard models with an operating temperature range of above ambient to 1850°C.

1200°C, 1400°C, 1500°C & 1600°C models are all bench mounted and have protective outer mesh covers for improved operator safety with all other models being floor standing. 1700°C, 1750°C, 1800°C & 1850°C models are all floor mounted high temperature single zone tube furnaces.

## Horizontal Tube Furnaces — TSH12 — 1200°C Maximum

The TSH12 furnace is a bench mounted tube furnace ideal for most general laboratory thermal processing applications.

### Standard Features:

- The furnace design incorporates an integral elemental tube
- Protective outer mesh covers for improved operator safety
- Low thermal mass insulation is used throughout for rapid response rates and maximum efficiency and stability
- For aggressive processes, a separate work tube is recommended to minimise the risk of contaminating the elemental work tube
- A rugged metal sheathed control thermocouple is protected from accidental damage and allows full use of work tube bore
- Controls are located at the base of the furnace
- 'N' Type thermocouple is used in these furnaces
- High end Microprocessor PID controller

TSH12/38/500

TSH12/50/610

### Options:

- Additional Work tubes of various materials, lengths and diameters for use in the furnace
- The work tubes are available for containment of atmosphere or protection against process contaminants
- A variety of triple flange gas tight end seals for work tubes to allow processing under vacuum or gas atmospheres
- Multi segment, multi program storage controllers
- Over temperature protection controllers

**Heating elements:** Special arrangement via resistance wire wound onto a ceramic worktube which is an integral part of the furnace gives optimum temperature uniformity throughout the furnace.

### Technical Data:

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Length (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions (mm) H x W x D | Net Wt. (kg) | Additional Worktubes (ID x Length) mm Short | Long |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TSH12/25/250 | 1200 | 1150 | 25 | 250 | 0.8 | 230 | 1 | 560 x 335 x 315 | 11 | 16 x 350 | 16 x 500 |
| TSH12/25/500 | 1200 | 1150 | 25 | 500 | 1.2 | 230 | 1 | 560 x 585 x 315 | 16 | 16 x 600 | 16 x 750 |
| TSH12/38/250 | 1200 | 1150 | 38 | 250 | 1.0 | 230 | 1 | 560 x 335 x 315 | 12 | 25 x 350 | 25 x 500 |
| TSH12/38/500 | 1200 | 1150 | 38 | 500 | 1.7 | 230 | 1 | 560 x 585 x 315 | 16 | 25 x 600 | 25 x 750 |
| TSH12/50/300 | 1200 | 1150 | 50 | 300 | 1.7 | 230 | 1 | 560 x 385 x 315 | 14 | 38 x 400 | 38 x 600 |
| TSH12/50/610 | 1200 | 1150 | 50 | 610 | 2.0 | 230 | 1 | 620 x 700 x 330 | 21 | 38 x 700 | 38 x 900 |
| TSH12/75/610 | 1200 | 1150 | 75 | 610 | 2.8 | 230 | 1 | 620 x 700 x 330 | 26 | 60 x 900 | 60 x 1050 |
| TSH12/75/750 | 1200 | 1150 | 75 | 750 | 3.0 | 230 | 1 | 620 x 840 x 330 | 30 | 60 x 900 | 60 x 1050 |
| TSH12/100/940 | 1200 | 1150 | 100 | 940 | 4.3 | 230 | 1 | 650 x 1025 x 370 | 45 | 75 x 1050 | 75 x 1500 |

***Note:*** *The TSH12 comes with an integral work tube. The additional work tubes are for use within the integral work tube.*

**Custom Designed** For all Tube furnaces, Elite Thermal manufactures custom-built furnaces. Please contact us with your requirement.

## Vertical Tube Furnaces | TSV12 | 1200°C Maximum

The TSV12 furnaces come as a bench mounted tube furnace as well as a floor mounted tube furnace ideal for most general laboratory thermal processing applications.

### Standard Features:

- The standard features of TSV12 are same as that of TSH12
- This Vertical furnace comes with a separate control console

### Options:

- Optional accessories for TSV12 are same as that for TSH12

**Heating elements:** The heating elements are same as that for TSH12

TSV12/50/300

TSV12/75/750

TSV12
Furnace with Lift / Lower System

### Technical Data:

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Height (mm) | Nominal Power (Kw) | Volts | Phase |
|---|---|---|---|---|---|---|---|
| TSV12/25/250 | 1200 | 1150 | 25 | 250 | 0.8 | 230 | 1 |
| TSV12/25/500 | 1200 | 1150 | 25 | 500 | 1.2 | 230 | 1 |
| TSV12/38/250 | 1200 | 1150 | 38 | 250 | 1.0 | 230 | 1 |
| TSV12/38/500 | 1200 | 1150 | 38 | 500 | 1.7 | 230 | 1 |
| TSV12/50/300 | 1200 | 1150 | 50 | 300 | 1.7 | 230 | 1 |
| TSV12/50/610 | 1200 | 1150 | 50 | 610 | 2.0 | 230 | 1 |
| TSV12/75/610 | 1200 | 1150 | 75 | 610 | 2.8 | 230 | 1 |
| TSV12/75/750 | 1200 | 1150 | 75 | 750 | 3.0 | 230 | 1 |
| TSV12/100/940 | 1200 | 1150 | 100 | 940 | 4.3 | 230 | 1 |

**Product Quality** All Elite Thermal Tube Furnaces are designed and manufactured to meet the highest standards of Quality, Reliability and Operator Safety.

## Horizontal Tube Furnaces | TSH14, 15 & 16 | 1400°C, 1500°C & 1600°C Maximum

### Standard Features:

- These models are heated by axially mounted silicon carbide elements around the worktube. These ensure fast heat up and excellent temperature uniformity
- Controls are located at the base of the furnace
- This furnace design requires the use of a separate work tube of a grade suitable for the maximum temperature rating of the respective furnace model
- This family of furnaces is ideal for most laboratory high temperature processing applications

TSH14/50/450

### Options:

- Thermal Radiation Plugs
- Multi segment, multi program storage controllers
- Over temperature protection controllers
- A variety of triple flange gas tight end seals to allow processing under vacuum or gas atmospheres
- A wide range of work tubes are available for containment of atmosphere or protection against process contaminants

### Technical Data:

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Length (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions (mm) H x W x D | Net Wt. (kg) | Worktubes (ID x Length) mm Short | Long |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TSH14/25/180 | 1400 | 1350 | 25 | 180 | 1.5 | 230 | 1 | 610 x 585 x 415 | 22 | 25 x 600 | 25 x 750 |
| TSH14/50/180 | 1400 | 1350 | 50 | 180 | 1.5 | 230 | 1 | 610 x 585 x 415 | 22 | 50 x 600 | 50 x 800 |
| TSH14/25/450 | 1400 | 1350 | 25 | 450 | 4.5 | 230 | 1 | 715 x 1000 x 460 | 70 | 25 x 1050 | 25 x 1200 |
| TSH14/50/450 | 1400 | 1350 | 50 | 450 | 4.5 | 230 | 1 | 715 x 1000 x 460 | 70 | 50 x 1050 | 50 x 1200 |
| TSH14/75/450 | 1400 | 1350 | 75 | 450 | 4.5 | 230 | 1 | 715 x 1000 x 460 | 70 | 75 x 1050 | 75 x 1200 |
| TSH14/25/610 | 1400 | 1350 | 25 | 610 | 5.75 | 230 | 1 | 715 x 1150 x 460 | 75 | 25 x 1200 | 25 x 1350 |
| TSH14/50/610 | 1400 | 1350 | 50 | 610 | 5.75 | 230 | 1 | 715 x 1150 x 460 | 75 | 50 x 1200 | 50 x 1350 |
| TSH14/75/610 | 1400 | 1350 | 75 | 610 | 5.75 | 230 | 1 | 715 x 1150 x 460 | 75 | 75 x 1200 | 75 x 1350 |
| TSH15/25/180 | 1500 | 1450 | 25 | 180 | 1.5 | 230 | 1 | 610 x 585 x 415 | 22 | 25 x 600 | 25 x 750 |
| TSH15/50/180 | 1500 | 1450 | 50 | 180 | 1.5 | 230 | 1 | 610 x 585 x 415 | 22 | 50 x 600 | 50 x 800 |
| TSH15/25/450 | 1500 | 1450 | 25 | 450 | 4.5 | 230 | 1 | 715 x 1000 x 460 | 70 | 25 x 1050 | 25 x 1200 |
| TSH15/50/450 | 1500 | 1450 | 50 | 450 | 4.5 | 230 | 1 | 715 x 1000 x 460 | 70 | 50 x 1050 | 50 x 1200 |
| TSH15/75/450 | 1500 | 1450 | 75 | 450 | 4.5 | 230 | 1 | 715 x 1000 x 460 | 70 | 75 x 1050 | 75 x 1200 |
| TSH15/25/610 | 1500 | 1450 | 25 | 610 | 6.0 | 230 | 1 | 715 x 1150 x 460 | 75 | 25 x 1200 | 25 x 1350 |
| TSH15/50/610 | 1500 | 1450 | 50 | 610 | 6.0 | 230 | 1 | 715 x 1150 x 460 | 75 | 50 x 1200 | 50 x 1350 |
| TSH15/75/610 | 1500 | 1450 | 75 | 610 | 7.0 | 230 | 1 | 715 x 1150 x 460 | 75 | 75 x 1200 | 75 x 1350 |
| TSH16/25/180 | 1600 | 1550 | 25 | 180 | 1.5 | 230 | 1 | 610 x 585 x 415 | 22 | 25 x 600 | 25 x 750 |
| TSH16/50/180 | 1600 | 1550 | 50 | 180 | 1.5 | 230 | 1 | 610 x 585 x 415 | 22 | 50 x 600 | 50 x 900 |
| TSH16/25/450 | 1600 | 1550 | 25 | 450 | 5.0 | 400 | 3 | 715 x 1000 x 460 | 70 | 25 x 1050 | 25 x 1200 |
| TSH16/50/450 | 1600 | 1550 | 50 | 450 | 5.0 | 400 | 3 | 715 x 1000 x 460 | 70 | 50 x 1050 | 50 x 1350 |
| TSH16/75/450 | 1600 | 1550 | 75 | 450 | 5.0 | 400 | 3 | 715 x 1000 x 460 | 70 | 75 x 1050 | 75 x 1350 |
| TSH16/25/610 | 1600 | 1550 | 25 | 610 | 7.0 | 400 | 3 | 825 x 1150 x 562 | 75 | 25 x 1200 | 25 x 1350 |
| TSH16/50/610 | 1600 | 1550 | 50 | 610 | 7.0 | 400 | 3 | 825 x 1150 x 562 | 75 | 50 x 1200 | 50 x 1500 |
| TSH16/75/610 | 1600 | 1550 | 75 | 610 | 8.0 | 400 | 3 | 825 x 1150 x 562 | 75 | 75 x 1200 | 75 x 1500 |

**Custom Designed** For all Tube furnaces, Elite Thermal manufactures custom-built furnaces. Please contact us with your requirement.

## Vertical Tube Furnaces TSV14, 15 & 16 1400°C, 1500°C & 1600°C Maximum

### Standard Features:

- The standard features of TSV14, 15 & 16 are same as that of TSH14, 15 & 16 respectively
- The controls for these vertical furnaces come as a separate console

### Options:

- Optional accessories for TSV14, 15 & 16 are the same as that of TSH14, 15 & 16 respectively

### Technical Data:

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Height (mm) | Nominal Power (Kw) | Volts | Phase |
|---|---|---|---|---|---|---|---|
| TSV14/25/180 | 1400 | 1350 | 25 | 180 | 1.5 | 230 | 1 |
| TSV14/50/180 | 1400 | 1350 | 50 | 180 | 1.5 | 230 | 1 |
| TSV14/25/450 | 1400 | 1350 | 25 | 450 | 4.5 | 230 | 1 |
| TSV14/50/450 | 1400 | 1350 | 50 | 450 | 4.5 | 230 | 1 |
| TSV14/75/450 | 1400 | 1350 | 75 | 450 | 4.5 | 230 | 1 |
| TSV14/25/610 | 1400 | 1350 | 25 | 610 | 5.75 | 230 | 1 |
| TSV14/50/610 | 1400 | 1350 | 50 | 610 | 5.75 | 230 | 1 |
| TSV14/75/610 | 1400 | 1350 | 75 | 610 | 5.75 | 230 | 1 |
| TSV15/25/180 | 1500 | 1450 | 25 | 180 | 1.5 | 230 | 1 |
| TSV15/50/180 | 1500 | 1450 | 50 | 180 | 1.5 | 230 | 1 |
| TSV15/25/450 | 1500 | 1450 | 25 | 450 | 4.5 | 230 | 1 |
| TSV15/50/450 | 1500 | 1450 | 50 | 450 | 4.5 | 230 | 1 |
| TSV15/75/450 | 1500 | 1450 | 75 | 450 | 4.5 | 230 | 1 |
| TSV15/25/610 | 1500 | 1450 | 25 | 610 | 6.0 | 230 | 1 |
| TSV15/50/610 | 1500 | 1450 | 50 | 610 | 6.0 | 230 | 1 |
| TSV15/75/610 | 1500 | 1450 | 75 | 610 | 7.0 | 230 | 1 |
| TSV16/25/180 | 1600 | 1550 | 25 | 180 | 1.5 | 230 | 1 |
| TSV16/50/180 | 1600 | 1550 | 50 | 180 | 1.5 | 230 | 1 |
| TSV16/25/450 | 1600 | 1550 | 25 | 450 | 5.0 | 400 | 3 |
| TSV16/50/450 | 1600 | 1550 | 50 | 450 | 5.0 | 400 | 3 |
| TSV16/75/450 | 1600 | 1550 | 75 | 450 | 5.0 | 400 | 3 |
| TSV16/25/610 | 1600 | 1550 | 25 | 610 | 7.0 | 400 | 3 |
| TSV16/50/610 | 1600 | 1550 | 50 | 610 | 7.0 | 400 | 3 |
| TSV16/75/610 | 1600 | 1550 | 75 | 610 | 8.0 | 400 | 3 |

**Product Quality** All Elite Thermal Tube Furnaces are designed and manufactured to meet the highest standards of Quality, Reliability and Operator Safety.

## Horizontal Tube Furnaces TSH17, 18 & 185 1700°C, 1800°C & 1850°C Maximum

### Standard Features:

- The TSH17 & and TSH18 furnace models are floor-mounted, horizontal tube furnaces designed for a wide range of general laboratory thermal processing applications
- These models are heated on both front and rear sides of the chamber by molybdenum Disilicide elements or Molybdenum Tungsten Disilicide elements
- Work tube is not supplied as an integral part of the furnace and therefore needs to be ordered with the furnace as it is an essential accessory
- Single Phase angle fired thyristor unit in conjunction with a low voltage secondary winding isolating transformer providing the correct operating parameters for the heating elements.
- Over temperature protection is fitted as a standard

TSH17/75/450

### Options:

- Work tubes of various materials, lengths and diameters for use in the furnace
- A variety of triple flange gas tight end seals to allow processing under vacuum (up to 1500°C maximum) or gas atmospheres
- Multi segment, multi program storage controllers
- Thermal Radiation Plugs

### Technical Data:

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Length (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions (mm) H x W x D | Net Wt. (kg) | Worktubes (ID x Length) mm Short | Worktubes (ID x Length) mm Long |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TSH17/75/300 | 1700 | 1650 | 75 | 300 | 6.0 | 230 | 1 | 1500 x 625 x 650 | 220 | 75 x 700 | 75 x 1000 |
| TSH17/75/450 | 1700 | 1650 | 75 | 450 | 9.0 | 230 | 1 | 1500 x 775 x 650 | 265 | 75 x 900 | 75 x 1200 |
| TSH17/75/600 | 1700 | 1650 | 75 | 600 | 12.0 | 400 | 3+N | 1500 x 925 x 650 | – | 75 x 1100 | 75 x 1350 |
| TSH18/40/300 | 1800 | 1750 | 40 | 300 | Details upon request | | | | | | |
| TSH18/75/300 | 1800 | 1750 | 75 | 300 | 6.0 | 230 | 1 | 1500 x 675 x 650 | 220 | 75 x 700 | 75 x 1000 |
| TSH18/75/450 | 1800 | 1750 | 75 | 450 | 9.0 | 230 | 1 | 1500 x 825 x 650 | 265 | 75 x 900 | 75 x 1200 |
| TSH18/75/600 | 1800 | 1750 | 75 | 600 | 12.0 | 400 | 3 | 1500 x 975 x 650 | – | 75 x 1100 | 75 x 1350 |
| TSH185/40/300 | 1850 | 1800 | 40 | 300 | 8.1 | 230 | 1 | 1600 x 600 x 575 | 226 | 38 x 650 | 38 x 900 |

## Vertical Tube Furnaces TSV17 & 18 1700°C and 1800°C Maximum

### Standard Features:

- The standard features of the TSV17 and TSV18 are the same as that of TSH17 & TSH18 respectively.
- These vertical furnaces come with a separate console.

TSV18/75/600

### Options:

- Optional accessories for the TSV17 and TSV18 are the same as those for the TSH17 and TSH18.

### Technical Data:

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Height (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions Across Flats (mm) (Hexagon) | Net Wt. (kg) | Worktubes (ID x Length) mm Short | Worktubes (ID x Length) mm Long |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TSV17/75/300 | 1700 | 1650 | 75 | 300 | 4.5 | 230 | 1 | 910 x 650 | – | 75 x 1050 | 75 x 1350 |
| TSV17/75/450 | 1700 | 1650 | 75 | 450 | 5.5 | 230 | 1 | 1060 x 650 | – | 75 x 1200 | 75 x 1500 |
| TSV17/75/600 | 1700 | 1650 | 75 | 600 | 7.0 | 230 | 1 | 1210 x 650 | – | 75 x 1350 | 75 x 1650 |

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Height (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions Across Flats (mm) (Hexagon) | Net Wt. (kg) | Worktubes (ID x Length) mm Short | Worktubes (ID x Length) mm Long |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TSV18/75/300 | 1800 | 1750 | 75 | 300 | 5.0 | 230 | 1 | 910 x 650 | – | 75 x 1050 | 75 x 1350 |
| TSV18/75/450 | 1800 | 1750 | 75 | 450 | 6.0 | 230 | 1 | 1060 x 650 | – | 75 x 1200 | 75 x 1500 |
| TSV18/75/600 | 1800 | 1750 | 75 | 600 | 7.5 | 230 | 1 | 1210 x 650 | – | 75 x 1350 | 75 x 1650 |

**Custom Designed** For all Tube furnaces, Elite Thermal manufactures custom-built furnaces. Please contact us with your requirement.

## Vertical Tube Furnaces TSV175 1750°C Maximum

### Standard Features:

- The TSV175 furnace is a vertical tube furnace with a separate control panel for most common laboratory thermal processing applications
- These models are heated by lanthanum chromite elements suspended parallel to the work tube
- A work tube is not supplied as an integral part of the furnace and therefore needs to be ordered with the furnace as it is an essential accessory
- Temperature Sensor: 'B' Type Thermocouple
- Over temperature protection is fitted as a standard

### Options:

- Work tubes of various materials, lengths and diameters for use in the furnace
- A variety of triple flange gas tight end seals to allow processing under vacuum (up to 1500°C maximum) or gas atmospheres
- Multi segment, multi program storage controllers
- Thermal Radiation Plugs

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Height (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions Across Flats (mm) (Hexagon) | Net Wt. (kg) | Worktubes (ID x Length) mm | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Short | Long |
| TSV175/50/200 | 1750 | 1700 | 50 | 200 | 8.3 | 230 | 1 | – | 100 | 50 x 900 | 50 x 1200 |
| TSV175/75/350 | 1750 | 1700 | 75 | 350 | 12.0 | 400 | 3 | – | 120 | 75 x 1000 | 75 x 1350 |
| TSV175/110/350 | 1750 | 1700 | 110 | 350 | 12.0 | 400 | 3 | – | 145 | 110 x 1000 | 110 x 1500 |

**Product Quality** All Elite Thermal Tube Furnaces are designed and manufactured to meet the highest standards of Quality, Reliability and Operator Safety.

## Split Horizontal Tube Furnaces – Single Zone — 1100°C & 1200°C Maximum

The TSHH split tube furnace is designed to meet the needs of 'in-line' thermal processes, and for when rapid cooling is required.

### Standard Features:

- This furnace is bench mounted and can be supplied with controls mounted as an integral part of the furnace body or in a remote console on two meters of interconnecting cables
- This Horizontal furnace body is split into two halves and hinged at the rear.
- The ability to open the furnace makes it easier for operators to exchange the work tube or insert vessels
- Energy efficient, high quality, low thermal mass insulation provides fast heating and cooling
- A work tube is not supplied as an integral part of the furnace and therefore needs to be ordered with the furnace as it is an essential accessory
- The furnace accepts a range of work tubes up to 90mm outside diameter when used with tube reducer inserts
- 'N' type thermocouple is used in these furnaces
- High end Microprocessor PID controller

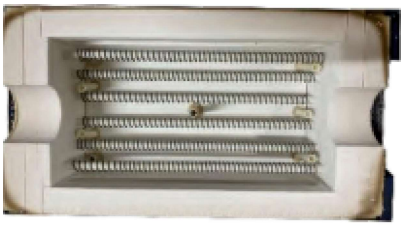
TSHH12/90/305

### Options:

- Work tubes of various materials, lengths and diameters for use in the furnace
- The work tubes are available for containment of atmosphere or protection against process contaminants.
- A variety of triple flange gas tight end seals for work tubes to allow processing under vacuum or gas atmospheres.
- Multi segment, multi program storage controllers
- Over temperature controllers

### Heating elements:

Free radiating high grade resistance wire elements supported on ceramic tubes



### Technical Data:

| Model | Max Temp (°C) | Max Cont (°C) | Furnace Bore Size (mm) | Heated Length (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions (mm) H x W x D | Net Wt. (kg) | Worktubes (ID x Length) mm Short | Worktubes (ID x Length) mm Long |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TSHH11/90/305 | 1100 | 1050 | 90 | 305 | 2.1 | 230 | 1 | 538 x 405 x 660 | 37 | 75 x 450 | 75 x 700 |
| TSHH11/90/457 | 1100 | 1050 | 90 | 457 | 2.8 | 230 | 1 | 538 x 557 x 660 | 46 | 75 x 600 | 75 x 900 |
| TSHH11/90/610 | 1100 | 1050 | 90 | 610 | 4.2 | 230 | 1 | 538 x 710 x 660 | 72 | 75 x 750 | 75 x 1050 |
| | | | | | | | | | | | |
| TSHH12/90/305 | 1200 | 1150 | 90 | 305 | 2.1 | 230 | 1 | 538 x 405 x 660 | 37 | 75 x 450 | 75 x 700 |
| TSHH12/90/457 | 1200 | 1150 | 90 | 457 | 3.0 | 230 | 1 | 538 x 557 x 660 | 46 | 75 x 600 | 75 x 900 |
| TSHH12/90/610 | 1200 | 1150 | 90 | 610 | 5.0 | 230 | 1 | 538 x 710 x 660 | 72 | 75 x 750 | 75 x 1050 |
| TSHH12/90/940 | 1200 | 1150 | 90 | 940 | 6.0 | 230 | 1 | 538 x 1040 x 660 | 90 | 75 x 1050 | 75 x 1500 |

**Product Quality** All Elite Thermal Tube Furnaces are designed and manufactured to meet the highest standards of Quality, Reliability and Operator Safety.

## Vertical Split Tube Furnaces TSVH11 & 12 1100°C & 1200°C Maximum


TSVH11

The TSVH11 & 12 furnaces come as a bench mounted tube furnace as well as a floor mounted tube furnace ideal for most general laboratory thermal processing applications.

### Standard Features:

- The standard features of TSVH11 & 12 are the same as that of TSHH11 & 12
- These vertical furnaces come with a separate control console

### Options:

- Optional accessories for TSVH11 & 12 are the same as that for TSHH11 & 12

**Heating elements:** The heating elements are the same as that for TSHH11 & 12

### Technical Data:

| Model | Max Temp (°C) | Max Cont (°C) | Furnace Bore Size (mm) | Heated Height (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions (mm) H x W x D | Net Wt. (kg) | Worktubes (ID x Length) mm Short | Long |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TSVH11/90/305 | 1100 | 1050 | 90 | 305 | 2.1 | 230 | 1 | 538 x 405 x 660 | 37 | 75 x 450 | 75 x 700 |
| TSVH11/90/457 | 1100 | 1050 | 90 | 457 | 2.8 | 230 | 1 | 538 x 557 x 660 | 46 | 75 x 600 | 75 x 900 |
| TSVH11/90/610 | 1100 | 1050 | 90 | 610 | 4.2 | 230 | 1 | 538 x 710 x 660 | 72 | 75 x 750 | 75 x 1050 |
| | | | | | | | | | | | |
| TSVH12/90/305 | 1200 | 1150 | 90 | 305 | 2.1 | 230 | 1 | 538 x 405 x 660 | 37 | 75 x 450 | 75 x 700 |
| TSVH12/90/457 | 1200 | 1150 | 90 | 457 | 3.0 | 230 | 1 | 538 x 557 x 660 | 46 | 75 x 600 | 75 x 900 |
| TSVH12/90/610 | 1200 | 1150 | 90 | 610 | 5.0 | 230 | 1 | 538 x 710 x 660 | 72 | 75 x 750 | 75 x 1050 |
| TSVH12/90/940 | 1200 | 1150 | 90 | 940 | 6.0 | 230 | 1 | 538 x 1040 x 660 | 90 | 75 x 1050 | 75 x 1500 |

## Vertical Split Tube Furnaces TSVH17 1700°C Maximum


TSVH17/90/250

The TSVH17 model is available in only one standard format as set out in the table below. Alternative heated lengths and/or tube diameters can be manufactured to meet specific customer requirements.

### Standard Features:

- This model is heated by molybdenum disilicide elements
- Work tube is not a standard supply and need to be ordered along with furnace
- Over temperature protection is included in the standard specification

### Optional:

- Separate worktubes with triple flange gas tight end seals allow processing under vacuum (up to 1500° C maximum) or gas atmospheres
- Multi segment, multi program storage controllers

### Technical Data:

| Model | Max Temp (°C) | Max Cont (°C) | Furnace Bore Size (mm) | Heated Height (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions (mm) H x W x D | Net Wt. (kg) | Worktubes (ID x Length) mm Short | Long |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TSVH17/90/250 | 1700 | 1650 | 90 | 250 | 4.5 | 230 | 1 | 570 x 650 x 650 | 70 | 75 x 600 | 75 x 900 |

**Custom Designed** For all Tube furnaces, Elite Thermal manufactures custom-built furnaces. Please contact us with your requirement.

## Multi Zone Horizontal - 3 Zone — 1200°C, 1500°C, 1600°C, 1700°C and 1800°C Maximum

### Standard Features:

- TMH – The TMH furnaces are designed to give a longer uniform centre zone temperature than that of the single zone tube furnace models. All TMH models are controlled by retransmission of set point from the centre zone controller to the end zone controllers
- This system provides a longer uniform zone temperature than that achieved by the use of single zone furnace of the same length
- Independent control of each zone is also available
- Controls are located at the base of the furnace

TMH14(Z3)-15-16 Style-3 Zone

TMH18(Z3)

### *Note:*

- 1700°C & 1800°C models are usually floor standing models
- Over temperature protection is included in the standard specification for 1700°C & 1800°C models

### Options:

- Over temperature protection controllers
- A wide range of furnace worktubes are available
- A variety of triple flange gas tight end seals to allow processing under vacuum (up to 1500°C maximum) or gas atmospheres
- Multi segment, multi program storage controllers

### Technical Data:

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Length (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions (mm) H x W x D | Net Wt. (kg) | Additional Worktubes (ID x Length) mm Short | Long |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TMH12(Z3)/38/500 | 1200 | 1150 | 38 | 500 | 1.8 | 230 | 1 | 560 x 605 x 315 | 16 | 25 x 600 | 25 x 750 |
| TMH12(Z3)/50/610 | 1200 | 1150 | 50 | 610 | 2.0 | 230 | 1 | 620 x 720 x 330 | 21 | 38 x 700 | 38 x 1050 |
| TMH12(Z3)/75/750 | 1200 | 1150 | 75 | 750 | 2.7 | 230 | 1 | 620 x 860 x 330 | 30 | 57 x 900 | 57 x 1050 |
| TMH12(Z3)/100/940 | 1200 | 1150 | 100 | 940 | 5.2 | 230 | 1 | 650 x 1045 x 370 | 45 | 75 x 1050 | 75 x 1500 |

***Note:*** *The TMH12 comes with an integral work tube. The additional work tubes are for use within the integral work tube.*

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Length (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions (mm) H x W x D | Net Wt. (kg) | Worktubes (ID x Length) mm Short | Long |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TMH15(Z3)/50/450 | 1500 | 1450 | 50 | 450 | 4.5 | 400 | 3 | 715 x 1000 x 460 | 55 | 50 x 1050 | 50 x 1200 |
| TMH15(Z3)/75/450 | 1500 | 1450 | 75 | 450 | 5.0 | 400 | 3 | 715 x 1000 x 460 | 55 | 75 x 1050 | 75 x 1200 |
| TMH15(Z3)/50/610 | 1500 | 1450 | 50 | 610 | 5.0 | 400 | 3 | 715 x 1000 x 460 | 65 | 50 x 1200 | 50 x 1350 |
| TMH15(Z3)/75/610 | 1500 | 1450 | 75 | 610 | 6.0 | 400 | 3 | 715 x 1150 x 460 | 65 | 75 x 1200 | 75 x 1350 |
| TMH15(Z3)/90/610 | 1500 | 1450 | 90 | 610 | 7.5 | 400 | 3 | 715 x 1150 x 460 | 68 | 90 x 1200 | 90 x 1450 |
| TMH16(Z3)/50/450 | 1600 | 1550 | 50 | 450 | 4.0 | 400 | 3 | 715 x 1000 x 460 | 60 | 50 x 1050 | 50 x 1200 |
| TMH16(Z3)/75/450 | 1600 | 1550 | 75 | 450 | 6.0 | 400 | 3 | 715 x 1000 x 460 | 60 | 75 x 1050 | 75 x 1350 |
| TMH16(Z3)/50/610 | 1600 | 1550 | 50 | 610 | 6.0 | 400 | 3 | 825 x 1150 x 562 | 70 | 50 x 1200 | 75 x 1500 |
| TMH16(Z3)/75/610 | 1600 | 1550 | 75 | 610 | 6.0 | 400 | 3 | 825 x 1150 x 562 | 70 | 75 x 1200 | 75 x 1500 |
| TMH16(Z3)/90/610 | 1600 | 1550 | 90 | 610 | 9.0 | 400 | 3 | 825 x 1150 x 562 | 70 | 90 x 1200 | 90 x 1500 |
| TMH17(Z3)/50/450 | 1700 | 1650 | 50 | 450 | 9.0 | 230 | 1 | 1550 x 835 x 650 | 280 | 50 x 900 | 50 x 1200 |
| TMH17(Z3)/75/450 | 1700 | 1650 | 75 | 450 | 9.0 | 230 | 1 | 1550 x 835 x 650 | 280 | 75 x 900 | 75 x 1200 |
| TMH17(Z3)/50/610 | 1700 | 1650 | 50 | 610 | 10.0 | 230 | 1 | 1550 x 995 x 650 | 310 | 50 x 1200 | 50 x 1500 |
| TMH17(Z3)/75/610 | 1700 | 1650 | 75 | 610 | 10.0 | 230 | 1 | 1550 x 995 x 650 | 310 | 75 x 1200 | 75 x 1500 |
| TMH18(Z3)/50/450 | 1800 | 1750 | 50 | 450 | 9.0 | 230 | 1 | 1550 x 835 x 650 | 280 | 50 x 900 | 50 x 1200 |
| TMH18(Z3)/75/450 | 1800 | 1750 | 75 | 450 | 9.0 | 230 | 1 | 1550 x 835 x 650 | 280 | 75 x 900 | 75 x 1200 |
| TMH18(Z3)/50/610 | 1800 | 1750 | 50 | 610 | 10.0 | 230 | 1 | 1550 x 995 x 650 | 310 | 50 x 1200 | 50 x 1500 |
| TMH18(Z3)/75/610 | 1800 | 1750 | 75 | 610 | 10.0 | 230 | 1 | 1550 x 995 x 650 | 310 | 75 x 1200 | 75 x 1500 |

**For Multi-zone Tube furnaces, we can supply:**
1.Two or more zones 2.Other temperatures that are not specified 3.Other Tube diameters and lengths that are not specified.

## Multi Zone Vertical - 3 Zone 1200°C, 1500°C, 1600°C, 1700°C and 1800°C Maximum

### Standard Features:

- The standard features of TMV12, 15, 16, 17 & 18 are the same as that of TMH12, 15, 16, 17 & 18 respectively
- These vertical furnaces come with a separate control console

### Options:

- Optional accessories for TMV12, 15, 16, 17 & 18 are the same as that of TMH12, 15, 16, 17 & 18 respectively

TMV15(Z3)

TMV16(Z3)/75/610

### Technical Data:

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Height (mm) | Nominal Power (Kw) | Volts | Phase |
|---|---|---|---|---|---|---|---|
| TMV12(Z3)/38/500 | 1200 | 1150 | 38 | 500 | 1.8 | 230 | 1 |
| TMV12(Z3)/50/610 | 1200 | 1150 | 50 | 610 | 2.0 | 230 | 1 |
| TMV12(Z3)/75/750 | 1200 | 1150 | 75 | 750 | 2.7 | 230 | 1 |
| TMV12(Z3)/100/940 | 1200 | 1150 | 100 | 940 | 5.2 | 230 | 1 |
| TMV15(Z3)/50/450 | 1500 | 1450 | 50 | 450 | 4.5 | 400 | 3 |
| TMV15(Z3)/75/450 | 1500 | 1450 | 75 | 450 | 5.0 | 400 | 3 |
| TMV15(Z3)/50/610 | 1500 | 1450 | 50 | 610 | 5.0 | 400 | 3 |
| TMV15(Z3)/75/610 | 1500 | 1450 | 75 | 610 | 6.0 | 400 | 3 |
| TMV15(Z3)/90/610 | 1500 | 1450 | 90 | 610 | 7.5 | 400 | 3 |
| TMV16(Z3)/50/450 | 1600 | 1550 | 50 | 450 | 4.0 | 400 | 3 |
| TMV16(Z3)/75/450 | 1600 | 1550 | 75 | 450 | 6.0 | 400 | 3 |
| TMV16(Z3)/50/610 | 1600 | 1550 | 50 | 610 | 6.0 | 400 | 3 |
| TMV16(Z3)/75/610 | 1600 | 1550 | 75 | 610 | 6.0 | 400 | 3 |
| TMV16(Z3)/90/610 | 1600 | 1550 | 90 | 610 | 9.0 | 400 | 3 |

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Height (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions Across Flats (mm) (Hexagon) | Net Wt. (kg) | Worktubes (ID x Length) mm Short | Long |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TMV17(Z3)/50/610 | 1700 | 1650 | 50 | 610 | 8.0 | 400 | 3+N | 900 x 800 | – | 50 x 1200 | 50 x 1350 |
| TMV17(Z3)/75/610 | 1700 | 1650 | 75 | 610 | 8.0 | 400 | 3+N | 900 x 800 | – | 75 x 1200 | 75 x 1350 |

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Height (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions Across Flats (mm) (Hexagon) | Net Wt. (kg) | Worktubes (ID x Length) mm Short | Long |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TMV18(Z3)/50/610 | 1800 | 1750 | 50 | 610 | 8.5 | 400 | 3+N | 900 x 800 | – | 50 x 1200 | 50 x 1350 |
| TMV18(Z3)/75/610 | 1800 | 1750 | 75 | 610 | 8.5 | 400 | 3+N | 900 x 800 | – | 75 x 1200 | 75 x 1350 |

**Custom Designed** For all Tube furnaces, Elite Thermal manufactures custom-built furnaces. Please contact us with your requirement.

**For Multi-zone Tube furnaces, we can supply:**
1.Two or more zones
2.Other temperatures that are not specified
3.Other Tube diameters and height that are not specified

## Vacuum Tube Furnaces – Single Zone

1200°C and 1500°C Maximum

Elite Thermal's laboratory scale vacuum furnaces provide high specification systems at very competitive prices. The specifications can be tailored for high vacuum or low vacuum processing specifications with an ultimate vacuum $10^{-5}$ mbar (with clean empty tube).

The standard systems are only supplied in horizontal format.

TSHvc12/75/600

### Standard Features:

- Vacuum vessel – ceramic tube with SS triple flange gas tight end seals
- Rotary pump – 2 stage rotary vane pump
- Turbo molecular pump
- Pirani gauge – Full range vacuum monitoring

### Technical Data:

| Model | Max Temp (°C) | Max Cont (°C) | Tube Diameter (ID) (mm) | Heated Length (mm) | Nominal Power (Kw) | Volts | Phase | Ext Dimensions (mm) H x W x D | Net Wt. (kg) | Radiation Screens | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Ceramic | Metalic |
| TSHvc12/50/600-HV | 1200 | 1150 | 50 | 600 | 4.0 | 230 | 1 | 1450 x 1850 x 700 | 195 | ✓ | ✓ |
| TSHvc12/50/600-LV | 1200 | 1150 | 50 | 600 | 4.0 | 230 | 1 | 1450 x 1850 x 700 | 195 | ✓ | ✓ |
| TSHvc12/75/600-HV | 1200 | 1150 | 75 | 600 | 4.0 | 230 | 1 | 1450 x 1850 x 700 | 195 | ✓ | ✓ |
| TSHvc12/75/600-LV | 1200 | 1150 | 75 | 600 | 4.0 | 230 | 1 | 1450 x 1850 x 700 | 195 | ✓ | ✓ |
| TSHvc15/50/450-HV | 1500 | 1450 | 50 | 450 | 5.8 | 230 | 1 | 1500 x 1700 x 700 | 195 | ✓ | ✓ |
| TSHvc15/50/450-LV | 1500 | 1450 | 50 | 450 | 5.8 | 230 | 1 | 1500 x 1700 x 700 | 195 | ✓ | ✓ |
| TSHvc15/75/450-HV | 1500 | 1450 | 75 | 450 | 5.8 | 230 | 1 | 1500 x 1700 x 700 | 195 | ✓ | ✓ |
| TSHvc15/75/450-LV | 1500 | 1450 | 75 | 450 | 5.8 | 230 | 1 | 1500 x 1700 x 700 | 195 | ✓ | ✓ |
| TSHvc15/75/600-HV | 1500 | 1450 | 75 | 600 | 5.8 | 230 | 1 | 1500 x 1850 x 700 | 195 | ✓ | ✓ |
| TSHvc15/75/600-LV | 1500 | 1450 | 75 | 600 | 5.8 | 230 | 1 | 1500 x 1850 x 700 | 195 | ✓ | ✓ |

### Optional:

- 3 zone control
- Semi/fully automatic vacuum and Heating cycles
- Low vacuum systems
- Gas control/safety systems
- Gas inlets

TSHvc15/75/450

**Product Quality** All Elite Thermal Tube Furnaces are designed and manufactured to meet the highest standards of Quality, Reliability and Operator Safety.

## Multi Position Tube Furnace TSU

The TSU furnace is a versatile Universal Tube Furnace that can be configured in both horizontal and vertical positions. This flexibility makes it suitable for a range of applications, including sample firing, chemical vapor deposition (CVD), and quenching tests. Position the furnace horizontally or at an angle for growing electronic crystals used in the semiconductor industry, or rotate it vertically for sintering applications.

Available in temperature ranges from 1200°C to 1600°C. This furnace employs silicon carbide heating elements.

### Standard Features:

- The furnace includes an elemental tube designed for use up to 1200°C
- The TSU is a vertical-mounted universal tube furnace with a separate control console
- For temperatures above 1200°C, a work tube is not included with the furnace and must be purchased separately as it is an essential accessory
- A modified standard and specially designed tube furnace mounted on a pivoting mechanism allowing positioning of the furnace at any angle from horizontal to vertical with a solid stop mechanism
- Furnace supplied with a special stand for use in both horizontal and vertical mode
- Protective outer mesh covers for improved operator safety
- For aggressive processes, a separate work tube is recommended to minimise the risk of contaminating the elemental work tube
- High end microprocessor PID temperature controller to maintain the required temperature

### Optional Features:

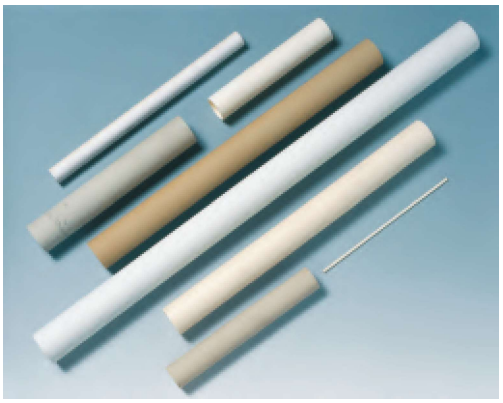
- Additional Work tubes of various materials, lengths and diameters for use in the furnace
- The work tubes are available for containment of atmosphere or protection against process contaminants
- A variety of triple flange gas tight end seals for work tubes to allow processing under vacuum or gas atmospheres
- The system can be equipped with an electrically driven rocking device for applications requiring constant motion of a loaded sample, with full guarding provided for the moving parts
- Multi segment, multi program storage controllers
- Over temperature protection controllers

## Work Tubes

A work tube is an essential accessory for use with Tube Furnaces. All tube furnaces other than those designed with an integral tube need a work tube as a mandatory component to accomplish thermal treatment of samples. Even those furnaces with an integral tube require an additional internal work tube for containment of atmosphere or for protection against process contaminants. The work tube, being a critical part of the furnace, plays an essential role in containing the sample while withstanding high temperatures and maintaining chemical resistance. Different materials are chosen for work tubes based on the intended use, temperature range, and chemical compatibility.

Quartz work tube

Work tubes are available in a variety of materials in various lengths and diameters. The primary criteria for selecting work tube is the working temperature followed by the physical and nature of samples being treated. Work tubes are selected based on their temperature resistance, chemical stability, and mechanical properties. Quartz and alumina are commonly used for moderate temperature ranges (up to around 1200°C - 1800°C). The right choice of ceramic tube material is essential for ensuring the longevity and performance of tube furnaces in a variety of industrial and laboratory applications.



Alumina work tubes

Work tubes can be supplied with closed one end (COE) or both ends open (OBE) as per the requirement of the application.

### Technical Data:

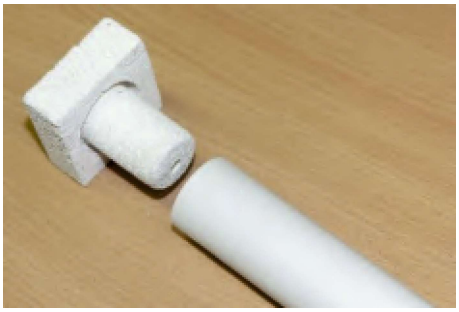
| Tube material | Physical & chemical properties | | | Maximum temperatures [°C] | | |
|---|---|---|---|---|---|---|
| | | | | in air | | under vacuum pressure |
| | Porous/ Impervious | Resistance to thermal shock is partly dependent upon specific tube dimensions | Chemical resistance | Horizontal | Vertical | Horizontal and Vertical |
| **Sillimanite Tubes** | Porous | Good | Good chemical resistance but porous | 1500 | 1600 | - |
| **Impervious aluminous** | Impervious | Very good | Good chemical resistance against gases, with the exception of fluorine. Resistant to flux sulphurous or carbonaceous atmospheres | 1450 | 1550 | 1350 |
| **Recrystallised alumina Tube** | Impervious | Good | Highly resistant to chemical attack, with the exception of fluorine | 1800 | 1900 | 1500 (Ø 75 mm)<br>1450 (Ø > 75 to 88 mm) |
| **Quartz Tube** | Impervious | Excellent | Generally good but reactive with sodium & at upper temperature limit with metals, carbonates & halides | 1150 | 1200 | 1150 |

## Insulation End Caps & Plugs

End caps are specialized components designed to seal the tube ends of a furnace. Their primary function is to minimize heat loss at the ends of the furnace and help maintain a more consistent and stable temperature profile during heating. End caps are custom-made to suit specific furnace dimensions and the composition requirements for each application.

End Cap

Insulation Plugs



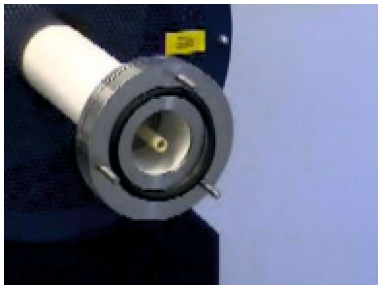
End Cap

Plugs are designed to be inserted into the furnace or work tubes to prevent heat loss and improve the uniformity of the temperature distribution inside the furnace. Their primary role is to act as insulators to help contain the heat within the furnace and ensure that the heating process is uniform throughout. Insulation plugs are available in a variety of materials and can be customized for different work tube sizes.

## Radiation Shields or Screens

Radiation shields/screens serve as an alternative to insulation plugs, particularly in longer work tubes. They are designed to protect against thermal radiation and heat loss by reflecting heat back into the system, thus maintaining a stable temperature within the heated length of the tube. Radiation shields are especially used in vacuum applications where the out gassing of fibre plugs would be undesirable. These shields can be made from materials like alumina and refractory metals that are capable of withstanding high temperatures.

Radiation Shields



Insertion of the radiation shields in to the work tube

Radiation screens/shields and plugs can be used in combination with gas-tight end seals to not only reduce heat losses from the tube ends but also to provide enhanced protection to O-rings in flanged gas tight end seals. The triple flange design ensures a secure, airtight seal, which is essential for maintaining controlled atmospheric conditions in high-temperature environments.

Radiation screens/shields are also used in long work tubes with small heated length.

## Triple Flange Gas Tight End Seals

Triple Flange Gas Tight End Seals/Work Tube End Seals are required to contain a modified atmosphere and to work with vacuum systems. Vacuum levels of up to 10^-6 mbar are possible. These are triple flange end seals made of stainless steel and are intended for use with extended work tubes only. They are available to fit work tubes with the following outside diameters: 32, 46, 60, 86, 100, 150, and 200 mm. Other sizes are available at an additional cost.

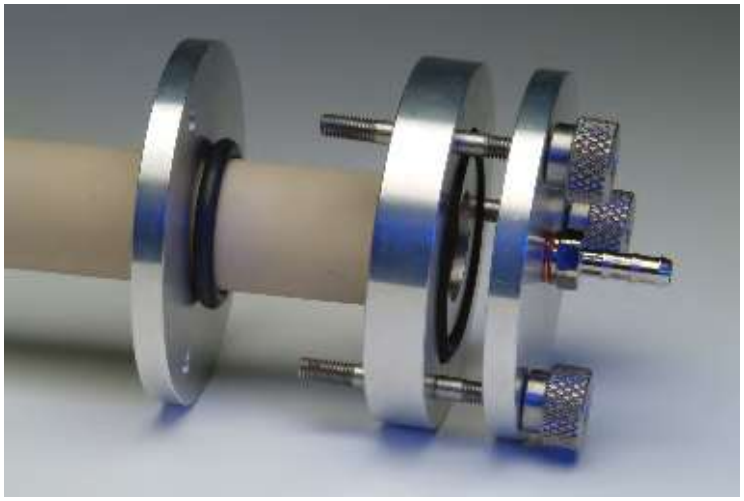
The following fittings are available for use with the end seals: blank seal, gas nozzle (inlet/outlet), vacuum flanges (NW16, NW25 or NW40), and thermocouple glands (ø1.5 mm, 3 mm, and 10 mm). Where the end seal diameter is large enough, combinations of the above fittings are possible, e.g., gas inlet/outlet nozzle + thermocouple gland.

Triple flange end seal with thermocouple gland

The end seals are designed for use in combination with insulation plugs or radiation shields. Water-cooled end seals are available upon request. To accommodate the additional weight of the end seals, tube supports are available as optional accessories.


Triple flange with gas in/out nozzles

Water cooled flange



Triple flange assembly

Water cooled flange assembly


Gas and Vacuum triple flanges

Other triple flanges

## Crucibles, Boats, Ignition dishes and Plates

- A wide variety of shapes and sizes are available in various grades of ceramics and metals

## Personal Safety accessories

- Heat-resistant gloves/thermal gloves protect hands from thermal risks caused by heat. They are suitable for operators working in very hot environments where a high level of protection is required
- Heat resistant aprons provide protection to the body of the operators working in hot environments or handling hot materials in close proximity to the body
- Heat resistant safety goggles and safety shield provide protection to the operator from exposure of eyes to hot/corrosive vapours during loading/removing hot samples to/from furnaces
- A variety of robust charging tongs provide protection to the operator

## Flammable Gas control/Safety system

- A full safety system for use with Hydrogen and other combustible gases is available providing timed purging and gas monitoring

## Tube supports

Tube supports have two functions:

- To support extended work tubes
- To support extended work tubes with the additional weight of triple flange gas tight end seals

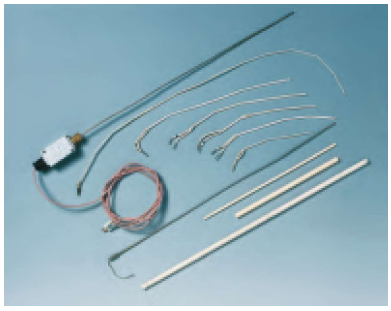
## Flowmeter

- With control valve for air or inert gases. For use with gas inlets and work tubes with triple flange gas tight end seals

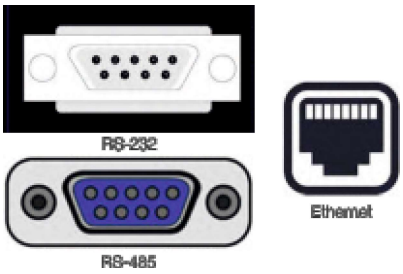
## Temperature Indicator


- An independent digital temperature indicator is built into the furnace control panel and wired to a panel mounted thermocouple socket (for use with an independent monitor thermocouple)

## Monitor thermocouple



- An independent thermocouple for use in conjunction with a digital temperature indicator



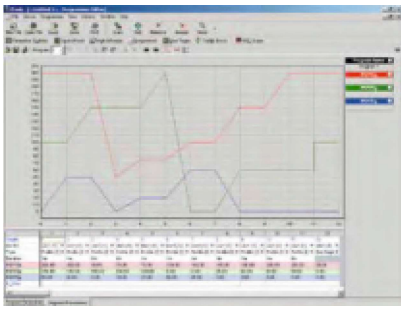

## Digital communications

- Digital Communications ports can be fitted to furnaces for external programming or data logging from the temperature controller/programmer(s)
- Connections provided for single instrument RS232 or RS485 standards
- Multi instrument RS485 standard
- Ethernet connections available on certain temperature controllers

## Time Switch

- A digital 7 day/24 hour time switch for programmed switch on/off when using basic temperature controllers. A time switch may not be necessary if more sophisticated controllers are fitted

## Digital communications Software



- We offer the i-Tools software package for communication between a computer and control instruments
- This software allows setting of instrument control parameters and time/temperature programs from a computer plus starting & stopping of programs and data logging from one or more controllers


## Chart recorders

- Various chart recorders can be supplied ranging from a simple single pen with 100mm wide chart paper to multipoint paperless models

## Furnace stands

- A range of horizontal, vertical and universal stand options are available for bench and floor standing furnaces

## Horizontal split tube Furnaces

- Temperature: 1100°C
- Capacity: 75mm diameter x 600mm heated length
- Application: For general research work

## Tube Furnaces with Lift/lower system

- Temperature: 1100°C
- Application: For use with proprietary electrical test probe equipment

## Tube Furnaces with Lift/lower system with probe

- Temperature: 1000°C
- Application: For use with proprietary electrical test probe equipment

## 3 zone vertical tube furnace

- Temperature: 1500°C
- Capacity: 65 mm diameter x 610 mm heated height
- Application: For biomass fuel research

## Research Furnace

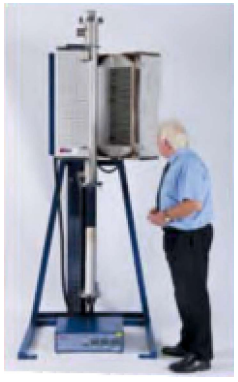
- Temperature: 1500°C
- Capacity: 75 mm diameter x 900 mm heated length
- Application: For research and production of carbon nanotubes

## Research Furnace

- Temperature: 1700°C
- Capacity: 75 mm diameter x 450 mm heated length
- Application: Horizontal furnace for general high temperature research

## 3 zone tube furnace

- Temperature: 1300°C
- Capacity: 200 mm diameter x 600 mm heated length
- Application: For treatment of semi conductor wafers



## Split tube furnace with load device

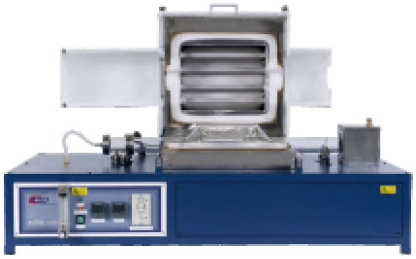
- Temperature: 1050°C
- Capacity: 90 mm diameter retort x 600 heated height
- Application: For testing of thermal insulation materials

## Vertically split Furnaces

- Temperature: 1200°C
- Capacity: 50 mm diameter retort x 305 heated height
- Application: For use with materials testing probe system

## Rotary reactor Furnaces

- Temperature: 1000°C
- Capacity: 15 litres
- Application: Refractory metal reaction vessel for research in use of coal & coke by-products



## Rotary reactor Furnaces

- Temperature: 1100°C
- Application: Quartz reactor for R &D in novel powders

## Quartz reactor Tube Furnace

- Temperature: 1200°C
- Application: Quartz reactor for determination of oxygen content of copper powders

## Twin tube furnace

- Temperature: 1200°C
- Application: Twin 3 zone vertical furnaces used with a winding RIG for annealing fine precious metal wires

## 3 zone research Furnace

- Temperature: 1700°C
- Capacity: 75 mm diameter x 900 mm heated length
- Application: 3 zone horizontal furnace for general high temperature research

## Vertical split tube Furnaces

- Temperature: 1100°C
- Capacity: 75mm diameter x 600mm heated height
- Application: For general research work

## Multi Tube Furnace

- Temperature: 1400°C
- Capacity: Four combustion tubes, each with a diameter of 50 mm and length of 720mm
- Application: For baking fluxes and crucibles

## 3 zone vertical Split furnace

- Temperature: 1200°C
- Application: For use in tensile, fatigue and creep testing equipment

## Special Furnaces for Electrical cable insulation

- Temperature: 1200°C
- Application: For determination of evolved gases from heated electrical cables insulation