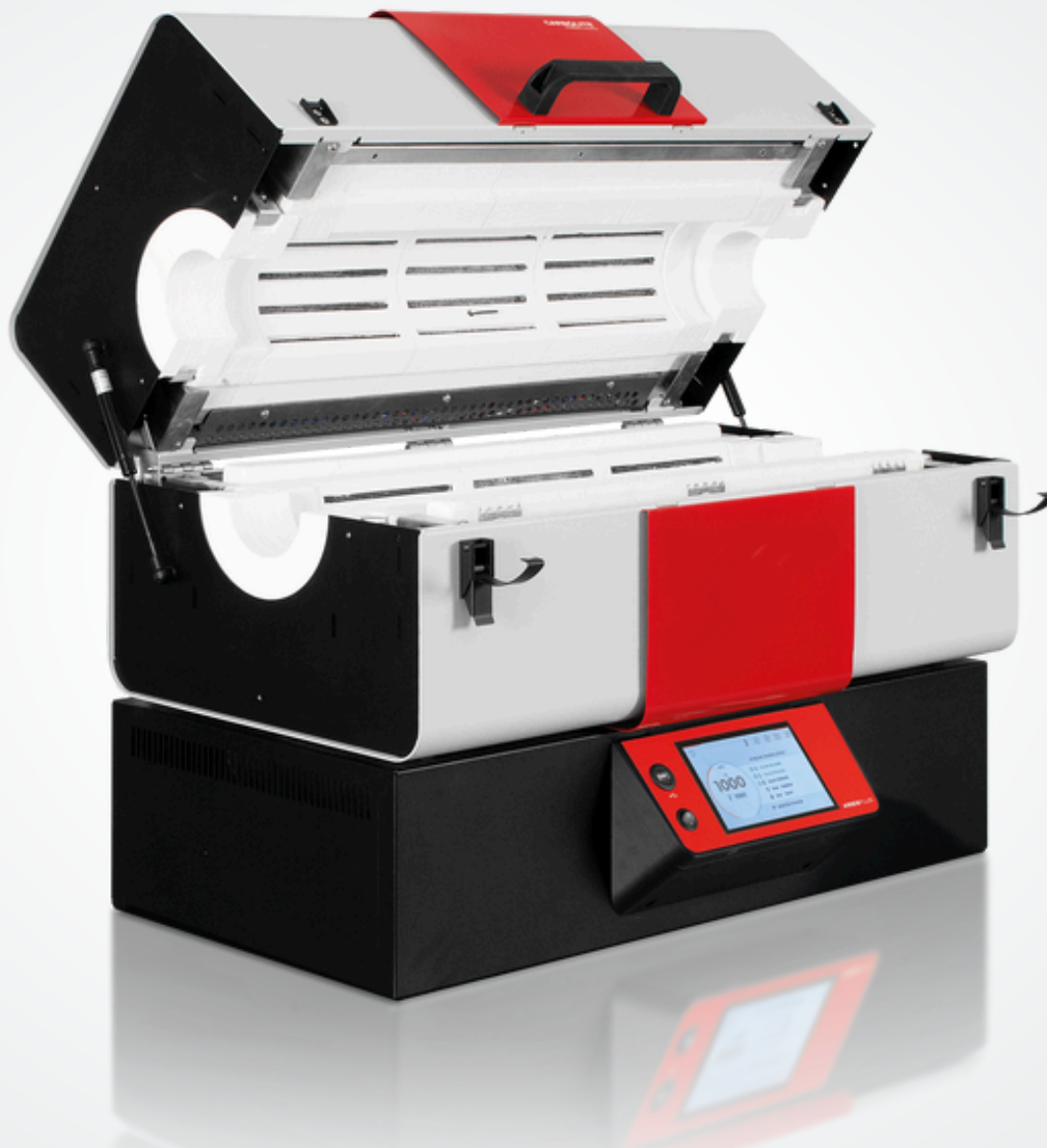




SPLIT TUBE FURNACE RANGE

TS

www.carbolite.com/products/tube-furnace-range/split-tube-furnaces/ts-range/

TS

SPLIT TUBE FURNACE RANGE

Carbolite's versatile new TS split tube furnace range incorporates high-quality heating elements and innovative thermal insulation design to achieve first class performance while maintaining both reduced case temperatures and power consumption.

The TS furnace body is split into two halves and hinged at the rear; pneumatic dampening struts at either end provide a smooth opening action. The ability to open the furnace makes it easier for operators to exchange work tubes, or insert vessels, such as reactors, with end flanges that would make them difficult to insert into a non-split furnace.



The TS split tube furnace range has been designed with flexibility in mind. Accessory work tubes and the use of tube adapters allow a single furnace to accommodate a variety of tube diameters, whilst the work tubes themselves can easily be exchanged to meet the different physical or chemical requirements of a process. Optional work tube packages enable users to equip the TS for operation under vacuum or modified atmosphere.

OVERVIEW

- | | |
|---|---|
| Max temp: 1200 °C | Number of heated zones: 1 zone or 3 zones |
| Furnace Ø: 60, 125, 200 mm | |
| Heated length(s): 150, 300, 450, 600, 800, 1000, 1200 mm | Orientation: All models available orientated either horizontally or vertically |

TS

LEADING HEAT TECHNOLOGY

Carbolite's new tube furnace range is at the pinnacle of furnace design. The culmination of over 80 years of experience in thermal engineering; combining the latest technological developments with solid construction, high-quality components and a sleek, modern aesthetic.

HIGH QUALITY HEATING ELEMENTS

- Excellent temperature uniformity
- Fast heat-up and cool-down rates
- Unsurpassed temperature uniformity along the entire heated length



HIGH QUALITY THERMAL INSULATION

- Low energy consumption
- Low external case temperature
- Designed for longevity

TS

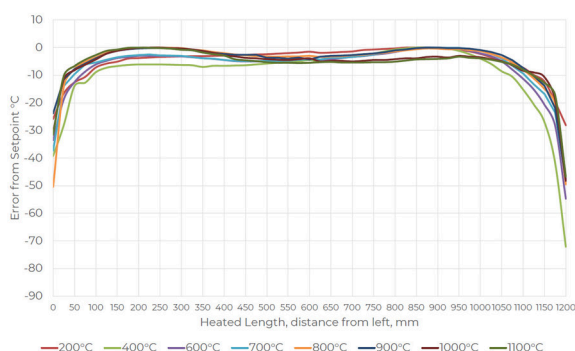
EXCELLENT TEMPERATURE UNIFORMITY

Carbolite's tube furnace range boasts a variety of technical features to maximise the heated length of the furnace, ensuring that as much of the work tube as possible is heated to the setpoint temperature. These include heating elements evenly distributed around the work tube and low thermal mass insulation.

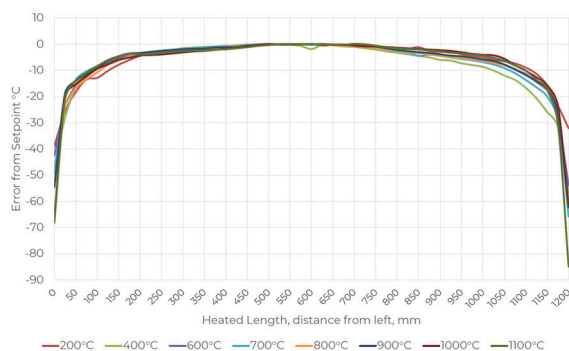
To achieve the longest possible heated length, our 3-zone models feature increased power boosting at the ends of the furnace, ensuring the best possible temperature uniformity throughout the working volume.

Combining your furnace with work tube packages that include thermal insulation plugs or radiation shields helps prevent thermal losses from the ends of the work tube.

TS3 12/200/1200



TS1 12/200/1200



Measured under controlled laboratory conditions. Results may vary depending on process-specific variables, e.g. gas flow rates, vacuum levels, and sample material, size/density.

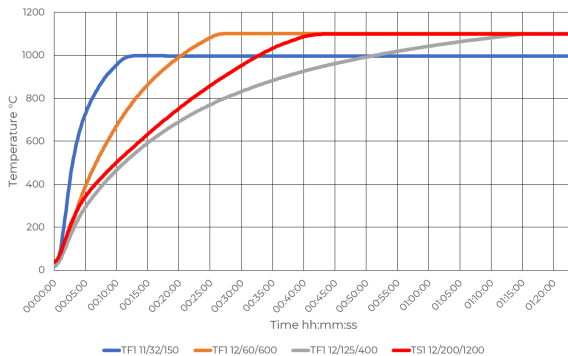
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RAPID HEATING RATES

Carbolite tube furnaces are equipped with high-quality heating elements designed to achieve fast heat-up rates.

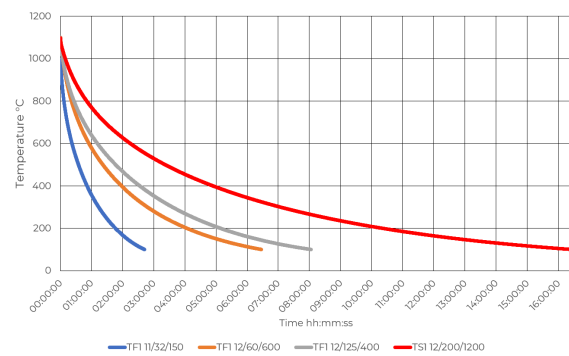
Optimise your lab time by speeding up your heat treatment processes! Precise temperature measurements are carried out in the Carbolite testing laboratory and available for all models.

MAXIMUM HEATING RATES



Measured with a quartz work tube and insulation plugs fitted.

COOLING RATES



Measured with a quartz work tube and insulation plugs fitted.

TS

TEMPERATURE CONTROL & COMMUNICATIONS

TS split tube furnaces are equipped with ethernet communications and a programmable controller with 24 segments as standard:

- | Single zone furnaces fitted with Carbolite EPC3016P1 controller
- | Three zone furnaces fitted with Carbolite AriesPlus touch-screen controller

OPTIONS

- | Over-temperature protection (recommended to protect valuable contents and for unattended operation)
- | A range of sophisticated digital controllers, multi-segment programmers and data loggers is available. These can be fitted with RS485 or Ethernet communications.



Temperature controller AriesPlus

TS

MOUNTING CONFIGURATIONS

This range of tube furnaces is supplied in one of two standard mounting configurations.

- For heated lengths up to 600 mm the furnace body is mounted on top of the control box. The furnace body can easily be detached and separated for remote operation.
- For heated lengths of 800 mm and above the furnace body and control box are always separate.

Both configurations include a 2 metre cable (furnaces with 125 mm Ø incl. plug and socket) between the furnace body and control box. This flexible arrangement allows for easy conversion to optional mounting arrangements e.g. attaching to a vertical stand, a mounting bracket or inside a fume cupboard.



FURNACE BODY ON TOP OF CONTROL BOX

Configuration for heated lengths up to 600 mm



DETACHABLE FURNACE BODY

Easy conversion to optional mounting arrangements



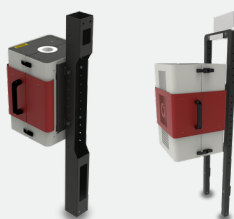
FURNACE BODY AND SEPARATE CONTROL BOX

Configuration for heated lengths of 800 mm and above



OPTION: VERTICAL STAND

Vertical mounting stand for the furnace body



OPTION: MOUNTING BRACKET

Used to mount the furnace body to customer equipment



OPTION: 4 M CABLE EXTENSION

4 m long extension results in a total of 6 m between furnace body and control box (125 mm Ø models include plug and socket)

HIGH-QUALITY THERMAL INSULATION

LOW ENERGY CONSUMPTION

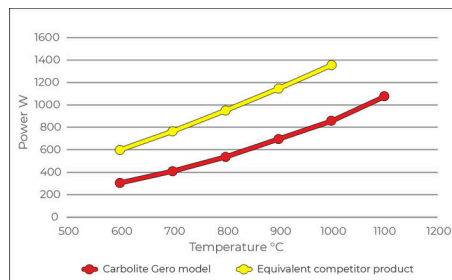
Carbolite's new tube furnaces are very energy-efficient. Their high-quality thermal insulation is designed for longevity, low case temperature and most of all outstandingly low energy consumption.

Using a Carbolite tube furnace reduces your energy cost as well as the carbon footprint.

UP TO 50% LESS ENERGY REQUIRED!

Comparison with equivalent competitor product

Energy consumption for exemplary Carbolite TS1 12/60/600 model (red) and equivalent competitor product (yellow); measured at each temperature after 2 hours soak.



TS

MODIFIED ATMOSPHERE & VACUUM EQUIPMENT

Carbolite tube furnaces may be equipped with many different options to accommodate modified atmosphere and/or vacuum applications.

OPTIONS

- | A range of additional work tubes, end seals and complete work tube packages
- | Vacuum packages with a choice of rotary vane pumps or turbomolecular pumps
- | Inert gas package modules allow for the use of up to 3 non-reactive gases (available with either manual or automatic control)
- | Laboratory Gas Safety System for safe use with hydrogen above 750 °C

MODIFIED ATMOSPHERE & VACUUM EQUIPMENT →

www.carbolite.com/products/modified-atmosphere/

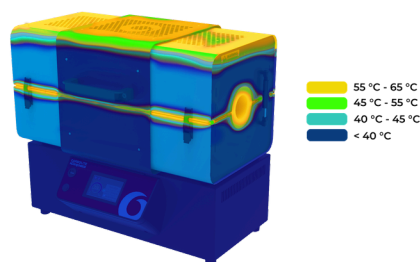
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THAT'S COOL! LOW CASE TEMPERATURE

Carbolite tube furnaces are designed with user safety in mind.

The robust construction and high-quality thermal insulation ensure that external case temperatures are much lower than other models.

Not only does this help mitigate the risk of injury to the operator, the reduction in the amount of heat escaping the furnace ensures a comfortable working environment, and also means that less energy is wasted during use. When the heat is on, Carbolite can help you keep a cool head!



TS

ACCESSORIES



LARGE SELECTION OF WORK TUBES

Wide choice of tube diameters, lengths & materials



INSULATION PLUGS & RADIATION SHIELDS

Prevent heat loss & improve temperature uniformity

TS

FURTHER INFORMATION

PRODUCT DATA SHEET →

www.carbolite.com/files/450679/product-data-sheet-ts-range.pdf

CONTROL OPTIONS →

www.carbolite.com/products/control-options/

TECHNICAL DATA

Models, temperature and furnace dimensions. Values are reproduced from the product data table.

SPLIT TUBE FURNACES / TS

Model	Heated zones	Max temp (°C)	Furnace Ø (mm)	Heated length (mm)	Heat-up time (mins)
TS1 12/60/150	1	1200	60	150	99
TS1 12/60/300	1	1200	60	300	46
TS1 12/60/450	1	1200	60	450	--
TS1 12/60/600	1	1200	60	600	--
TS1 12/125/400	1	1200	125	400	134
TS1 12/125/600	1	1200	125	600	150
TS1 12/125/800	1	1200	125	800	147
TS1 12/125/1000	1	1200	125	1000	147
TS1 12/125/1200	1	1200	125	1200	154
TS1 12/200/600	1	1200	200	600	62
TS1 12/200/1200	1	1200	200	1200	62
TS3 12/60/450	3	1200	60	450	--
TS3 12/60/600	3	1200	60	600	63
TS3 12/125/800	3	1200	125	800	141
TS1 12/125/1000	1	1200	125	1000	147
TS1 12/125/1200	1	1200	125	1200	154
TS1 12/200/600	1	1200	200	600	62
TS1 12/200/1200	1	1200	200	1200	62
TS3 12/60/450	3	1200	60	450	--
TS3 12/60/600	3	1200	60	600	63
TS3 12/125/800	3	1200	125	800	141
TS3 12/125/1000	3	1200	125	1000	134
TS3 12/125/1200	3	1200	125	1200	138
TS3 12/200/600	3	1200	200	600	62
TS3 12/200/1200	3	1200	200	1200	80

TS

TECHNICAL DATA / CONTINUED

Model	Tube length in air (mm)	Tube length modified atmosphere (mm)	External H x W x D (mm)	Uniform length $\pm 5^{\circ}\text{C}$ (mm)	Max power (W) / weight (kg)
TS1 12/60/150	430	600	575 x 485 x 480	77	750 / 31
TS1 12/60/300	580	750	575 x 495 x 480	200	1500 / 37
TS1 12/60/450	730	900	575 x 645 x 480	303	2000 / 49
TS1 12/60/600	880	1050	575 x 795 x 480	460	2500 / 56
TS1 12/125/400	750	1000	665 x 665 x 575	--	1860 / 71
TS1 12/125/600	950	1200	665 x 865 x 575	--	2510 / 89
TS1 12/125/800	1150	1400	445 x 1065 x 575	--	3160 / 102
TS1 12/125/1000	1350	1600	445 x 1265 x 575	--	3810 / 120
TS1 12/125/1200	1550	1800	445 x 1465 x 575	--	4460 / 134
TS1 12/200/600	1300	1300	540 x 1015 x 670	--	6600 / 127
TS1 12/200/1200	1900	1900	540 x 1615 x 670	--	11400 / 192
TS3 12/60/450	730	900	575 x 645 x 480	335	2000 / 49
TS3 12/60/600	800	1050	575 x 795 x 480	470	2500 / 56
TS3 12/125/800	1150	1400	445 x 1065 x 575	--	3160 / 102
TS1 12/125/1000	1350	1600	445 x 1265 x 575	--	3810 / 120
TS1 12/125/1200	1550	1800	445 x 1465 x 575	--	4460 / 134
TS1 12/200/600	1300	1300	540 x 1015 x 670	--	6600 / 127
TS1 12/200/1200	1900	1900	540 x 1615 x 670	--	11400 / 192
TS3 12/60/450	730	900	575 x 645 x 480	335	2000 / 49
TS3 12/60/600	800	1050	575 x 795 x 480	470	2500 / 56
TS3 12/125/800	1150	1400	445 x 1065 x 575	--	3160 / 102
TS3 12/125/1000	1350	1600	445 x 1265 x 575	--	3810 / 120
TS3 12/125/1200	1550	1800	445 x 1465 x 575	--	4460 / 134
TS3 12/200/600	1300	1300	540 x 1015 x 670	--	6600 / 127
TS3 12/200/1200	1900	1900	540 x 1615 x 670	--	11400 / 192

PLEASE NOTE Heat up time is measured to 100 °C below max, using an empty quartz tube & insulation plugs. Heat up rate when using an optional ceramic work tube must be limited to 5 °C/min. Uniform temperature lengths are measured with insulation plugs fitted at 100 °C below maximum temperature. Maximum continuous operating temperature is 100 °C below maximum temperature.

TS SPLIT TUBE FURNACE RANGE

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