



## TSO ROTARY REACTOR TUBE FURNACE RANGE

**Carbolite's versatile new TSO rotary / oscillatory reactor 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 TSO tube 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 insert vessels, such as reactors, with end flanges that would make them difficult to insert into a non-split furnace.

The TSO rotary reactor tube furnace has been specially designed for the processing or testing of powdered or granular materials at high temperatures. A quartz vessel is fitted within the furnace into which materials are placed. A variable speed drive system rotates the vessel within the heated zone by 314° to create an oscillatory motion. Optional accessory packages offer standard or fluted vessels, and the ability to operate under either air or a modified gas atmosphere.



[Kliknutím zobrazíte video](#)

Produktové video: TSO Rotary Reactor Tube Furnace Range

## OVERVIEW

**Maximální teplota**  
1100 °C

**Reactor vessel Ø**  
120 mm

**Topná délka**  
400, 600, 800, 1000  
mm

**Number of heated  
zones**  
1 zone or 3 zones

**Orientation**  
horizontal

### TSO ROTARY REACTOR TUBE FURNACE RANGE

## 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.

The oscillatory motion of the TSO rotary reactor tube furnace helps increase the surface area of the sample material exposed to the atmosphere within the vessel, helping to speed up reaction times and improve the overall yield.

### 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

? KLIKNĚTE NA MĚ! - AR-MODEL

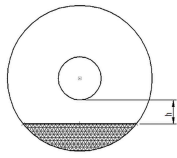



By viewing this webpage on a compatible mobile device you can click the 'cube' icon that allows you to view an augmented reality image of the product.

## TSO ROTARY REACTOR TUBE FURNACE RANGE

### TSO VESSEL CAPACITY

Heated length (mm)	Reaction chamber length (mm)	Capacity (ml)		M n
400	330	620		
600	530	990	16%	2000

Rotary reactor vessel

800	730	1360	16%	2700	20
1000	930	1740	16%	3500	20

TSO ROTARY REACTOR TUBE FURNACE RANGE  
**TEMPERATURE CONTROL & COMMUNICATIONS**



CC-T1 Touch Screen Controller

**TSO rotary 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

**MOŽNOSTI**

- | Over-temperature protection (recommended to protect valuable contents and for unattended operation); 1600°C models are equipped with this option as standard
- | A range of sophisticated digital controllers, multi-segment programmers and data loggers is available. These can be fitted with RS485 or Ethernet communications. Více informací.

TSO ROTARY REACTOR TUBE FURNACE RANGE

**PŘÍSLUŠENSTVÍ**

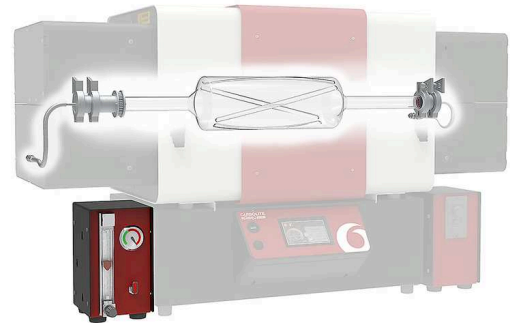
TSO ROTARY REACTOR TUBE FURNACE RANGE

**MODIFIED ATMOSPHERE**

The Carbolite TSO rotary reactor tube furnace range may be equipped with gas connections to accommodate modified atmosphere applications.

## MOŽNOSTI

- | Standard or fluted reactor vessels
- | Gas connection kit to enable operation under modified atmospheres
- | Inert gas package modules allow for the use of up to 3 non-reactive gases (available with either manual or automatic control)



Rotary reactor inside of TSO furnace

## TSO ROTARY REACTOR TUBE FURNACE RANGE

### MOUNTING CONFIGURATIONS



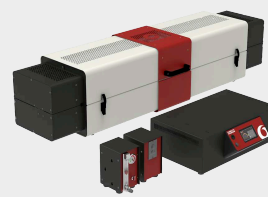
#### FURNACE BODY ON TOP OF CONTROL BOX

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: 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)

## TSO ROTARY REACTOR TUBE FURNACE RANGE

**TECHNICKÉ ÚDAJE**

	<b>TSO1 11/400</b>	<b>TSO1 11/600</b>	<b>TSO1 11/800</b>
<b>Maximální teplota (°C)</b>	1100	1100	1100
<b>Počet topných zón</b>	1	1	1
<b>Rozměry reakční komory (mm)</b>	ø 120 x 330	ø 120 x 530	ø 120 x 730
<b>Objem reakční komory (ml)</b>	620	990	1360
<b>Oscilační frekvence za minutu</b>	1 až 8	1 až 8	1 až 8
<b>Rotace v každém směru</b>	314°	314°	314°
<b>Rozměry: Vnější V x Š x H (mm) se zavřeným víkem</b>	665 x 1115 x 575	665 x 1315 x 575	445 x 1515 x 575*
<b>Rozměry: Vnější V x Š x H (mm) s otevřeným víkem</b>	930 x 1115 x 655	930 x 1315 x 655	705 x 1515 x 655*
<b>Maximální výkon (W)</b>	1860	2510	3160
<b>Váha (kg)</b>	88	106	119

	<b>TSO1 11/1000</b>	<b>TSO3 11/600</b>	<b>TSO3 11/800</b>
<b>Maximální teplota (°C)</b>	1100	1100	1100
<b>Počet topných zón</b>	1	3	3
<b>Rozměry reakční komory (mm)</b>	ø 120 x 930	ø 120 x 530	ø 120 x 730
<b>Objem reakční komory (ml)</b>	1740	990	1360
<b>Oscilační frekvence za minutu</b>	1 až 8	1 až 8	1 až 8
<b>Rotace v každém směru</b>	314°	314°	314°
<b>Rozměry: Vnější V x Š x H (mm) se zavřeným víkem</b>	445 x 1715 x 575*	665 x 1315 x 575	445 x 1515 x 575*
<b>Rozměry: Vnější V x Š x H (mm) s otevřeným víkem</b>	705 x 1715 x 655*	930 x 1315 x 655	705 x 1515 x 655*
<b>Maximální výkon (W)</b>	3810	2510	3160
<b>Váha (kg)</b>	137	106	119

**TSO3 11/1000**

<b>Maximální teplota (°C)</b>	1100
<b>Počet topných zón</b>	3
<b>Rozměry reakční komory (mm)</b>	ø 120 x 930
<b>Objem reakční komory (ml)</b>	1740
<b>Oscilační frekvence za minutu</b>	1 až 8
<b>Rotace v každém směru</b>	314°
<b>Rozměry: Vnější V x Š x H (mm) se zavřeným víkem</b>	445 x 1715 x 575*
<b>Rozměry: Vnější V x Š x H (mm) s otevřeným víkem</b>	705 x 1715 x 655*
<b>Maximální výkon (W)</b>	3810
<b>Váha (kg)</b>	137

**VEZMĚTE PROSÍM NA VĚDOMÍ**

- | Maximum continuous operating temperature is 1100 °C
- | All furnaces are equipped with thermocouple type N
- | \* Furnace with separate control box

**MODEL NAMES EXPLAINED**

- |                 |  |
|-----------------|--|
| TSO1 11/<br>600 | Number of heated zones: 1 zone or 3 zones  |
| TSO1<br>11/600  | Maximální teplota: 1100 °C                 |
| TSO1<br>11/600  | Topná délka: <b>400, 600, 800, 1000</b> mm |

[www.carbolite.com/tso](http://www.carbolite.com/tso)