

Working Tubes



Working tube closed at one end with gas tight flanges as additional equipment

There are various working tubes available, depending on application and temperatures. The technical specifications of the different working tubes are presented in the following table:



Various working tubes as option

Material	Tube outside Ø mm	Max. heat-up ramp K/h	Tmax in air* °C	Tmax in vacuum operation °C	Gas tight
C 530 (Sillimantin)	< 120	unlimited	1300	not possible	no
	from 120	200			
C 610 (Pythagoras)	< 120	300	1400	1200	yes
	from 120	200			
C 799 (99.7 % Al ₂ O ₃)	< 120	300	1800	1400	yes
	from 120	200			
Quartz glass	all	unlimited	1100	950	yes
CrFeAl-Alloy	all	unlimited	1300	1100	yes

*The max. allowed temperature might be reduced operating under aggressive atmospheres

Working Tubes for Rotary Tube Furnaces: Standard (●) and Options (○)

Measurements outer Ø x inner Ø x length	Article No. ¹		Rotary tube furnace, continuous operation										Batch operation				
	work tube	spare tube	RSR										RSR-B				
			1100 °C					1300 °C					1100 °C				
			80-500	80-750	120-500	120-750	120-1000	80-500	80-750	120-500	120-750	120-1000	80-500	80-750	120-500	120-750	120-1000
Ceramic tube C 530																	
80 x 65 x 1540 mm	601404699	691404536	○					●									
80 x 65 x 1790 mm	601404700	691404537		○					●								
80 x 65 x 2040 mm	601404701	691404538					○					○					
110 x 95 x 1540 mm	601404702	691404539			○						●						
110 x 95 x 1790 mm	601404703	691403376					○					●					
110 x 95 x 2040 mm	601404704	691404540						○					●				
Ceramic tube C 610																	
80 x 65 x 1540 mm	601404705	691404541	○					○									
80 x 65 x 1790 mm	601404706	691404542		○					○								
80 x 65 x 2040 mm	601404707	691404543					○					○					
110 x 95 x 1540 mm	601404708	691404544			○					○							
110 x 95 x 1790 mm	601404709	691404561					○				○						
110 x 95 x 2040 mm	601404710	691403437						○					○				
Quartz glass tube																	
76 x 70 x 1540 mm	601404711	691404545	●					○									
76 x 70 x 1790 mm	601404712	691404546		●					○								
76 x 70 x 2040 mm	601404713	691404547					○					○					
106 x 100 x 1540 mm	601404714	691403519			●					○							
106 x 100 x 1790 mm	601404715	691403305					●					○					
106 x 100 x 2040 mm	601404716	691404548						●					○				
Quartz glass tube with pimple																	
76 x 70 x 1540 mm	601404717	691404549	○					○									
76 x 70 x 1790 mm	601404718	691404550		○					○								
76 x 70 x 2040 mm	601404719	691404551					○					○					
106 x 100 x 1540 mm	601404720	691404552			○					○							
106 x 100 x 1790 mm	601404721	691403442					○					○					
106 x 100 x 2040 mm	601404722	691404553						○					○				
Quartz glass reactor																	
76 x 70 x 1140 mm	601402746	691402548										●		○			
76 x 70 x 1390 mm	601402747	691402272											●			○	
106 x 100 x 1140 mm	601402748	691402629												●			
106 x 100 x 1390 mm	601402749	691402638													●		
Quartz glass reactor with pimples																	
76 x 70 x 1140 mm	601404723	691402804										○		○			
76 x 70 x 1390 mm	601404724	691403429											○		○		
106 x 100 x 1140 mm	601404725	691403355												○		○	
106 x 100 x 1390 mm	601404726	691403296													○		○
Quartz glass mixing reactor																	
76 x 70 x 1140 mm	601404727	691403407											○				
76 x 70 x 1390 mm	601404728	691404554												○		○	
106 x 100 x 1140 mm	601404732	691404557													○		
106 x 100 x 1390 mm	601404733	691404558														○	

- Standard working tube
- Working tube available as an option

¹Tubes/reactors incl. mounted sleeves for connection to the rotary drive. Spare tubes come without sleeves.

Gas Supply Systems/Vacuum Operation for Tube Furnaces RD, R, RT, RHTC, RHTH, RHTV, RS and RSR



Gas supply system 1:
Fiber plugs with protective gas connection,
suitable for many laboratory applications

When equipped with various equipment packages, the tube furnace product lines RS, RHTC, RHTH, and RHTV can be adapted for operation with nonflammable or flammable gasses or for vacuum operation.

Gas Supply System 1 for non-flammable protective or reactive gases (no vacuum operation)

This package represents a basic version sufficient for many applications, for operation with non-flammable protective or reactive gasses. The standard working tube made of ceramic C 530 delivered with the furnace can still be used.

- Standard working tube can be used
- 2 plugs of ceramic fiber with protective gas connections
- Gas supply system for nonflammable protective gas (Ar, N₂, forming gas) with shutoff valve and flow meter with control valve (volume 50-500 l/hr), piped and ready to connect (gas intake pressure at 300 mbar to be provided by customer)

Additional equipment

- Extension of gas supply system with a second or third nonflammable type of gas
- Bottle pressure regulator for use with bottled gas
- Automatically controlled gas supply with solenoid valves on the gas supply system, which can be switched on and off through a controller with programmable extra functions (e.g. P 330)



Water-cooled stainless steel flange

Gas Supply System 2 for non-flammable protective or reactive gases/vacuum operation

For increased atmospheric purity requirements in the working tube, we recommend this gas supply system. The standard working tube is replaced by a dense working tube of ceramic C 610 or C 799 in a gas tight design. Besides the longer working tube, the scope of delivery also includes gas tight flanges and a corresponding bracket system in the furnace. The system can also be equipped for vacuum operation.

- Longer, gas tight working tube of ceramic C 610 for furnaces to 1300 °C or of C 799 for temperatures above 1300 °C
- 2 vacuum-tight, water-cooled stainless steel flanges with fittings on the outlet side (cooling water supply with NW9 hose connector to be provided by the customer)
- Mounting system on furnace for the flanges
- Gas supply system for nonflammable protective gas (Ar, N₂, forming gas) with shutoff valve and flow meter with control valve (volume 50-500 l/hr), gas outlet valve, piped and ready to connect (gas intake pressure at 300 mbar to be provided by customer)

Additional equipment

- Extension of gas supply system with a second or third nonflammable type of gas
- Bottle pressure regulator for use with bottled gas
- Automatically controlled gas supply with solenoid valves on the gas supply system, which can be switched on and off through a controller with programmable extra functions (e.g. P 330)
- Water-cooled end flange with quick connectors
- Cooling unit for closed loop water circuit
- Window for charge observation in combination with gas tight flanges



Gas supply system for non-flammable protective or reactive gas with shutoff valve and flow meter with regulator valve, piped and ready to connect



Observation window as additional equipment for gas tight flanges

Vacuum Operation

- Vacuum package for evacuation of the working tube, consisting of connector for the gas outlet, 1 ball valve, manometer, manually operated rotary vane vacuum pump with corrugated stainless steel hose connected to the gas outlet, max. attainable end pressure in working tube about 10⁻² mbar
- Alternative pumps for max. final pressure of up to 10⁻⁵ mbar on request see page 45