THERMANSYS®

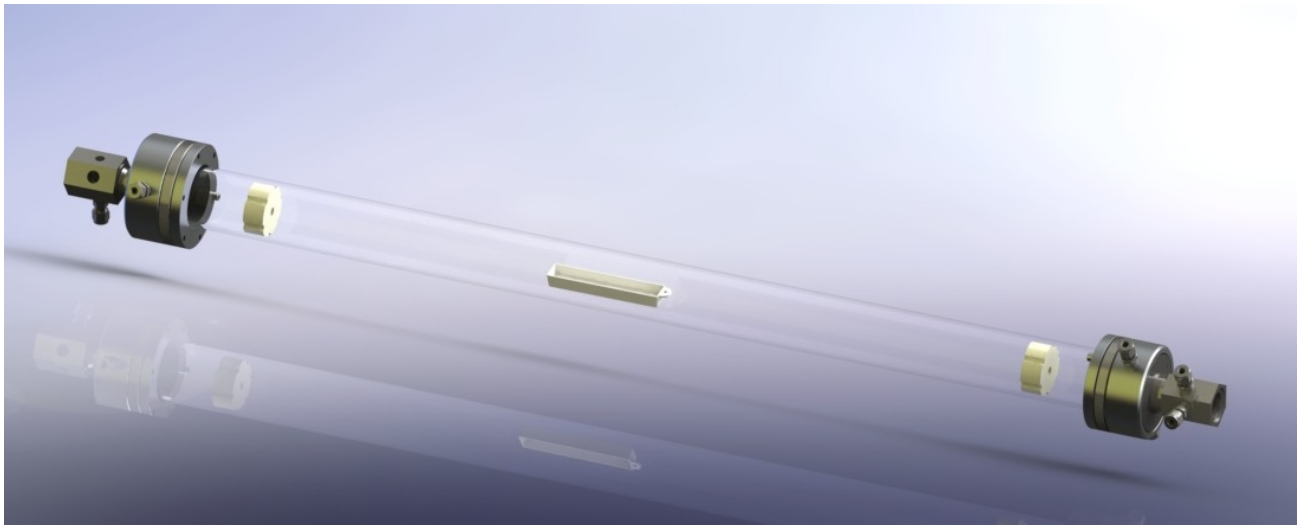
ALUMINA RADIATION SHIELDS
Internal Radiation Shields for Tube Furnace Working Tubes
Model family: SHLD-AL-A1

Description.

Tube Furnaces are designed to heat a working tube that fit inside its tubular heated zone and contain the treated load. Usually tube furnaces are open from both sides and the working tube is protruding from each side. The working tubes are used in combination with gas end sealing flanges to provide controlled atmosphere inside the tubes. These flanges are using elastomeric gaskets to seal and their temperature is restricted to 200-250C because of that. Many times it is advisable the temperature at the ends of the tube to be even lower than 80C for safety reasons since people are moving and working around it.

The temperature at the end of the tube depends on the tube material thermal conductivity, possible gas flow rates inside the tube and the furnace orientation. The radiation that exists inside the hot zone of the furnace under high temperature operation will also increase the end gas sealing flange temperature since is freely facing the flanges through the internal volume of the tube. For this reason it is important for many applications the use a radiation shield inside the tube that will eliminate or reduce this effect.

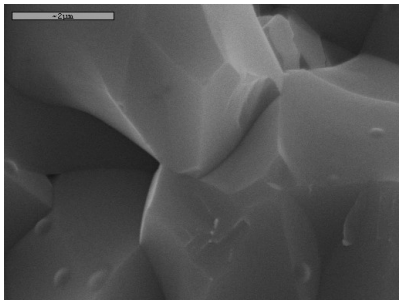
Radiation shield is positioned inside the working tube usually a couple of centimeters outside the hot zone in order to trap the radiation within the hot zone where is generated.

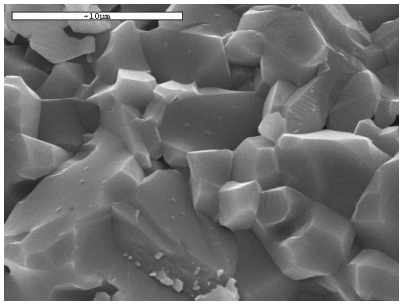


Thermansys is producing radiation shields with a thick disc geometry. The disc have periphery grooves in order process gases to flow through it and a thru hole at the center for a possible thermocouple probe passage, commonly used to sense the temperature at the middle of the working tube. The material of construction is dense high purity crystallized Alumina (99.7% Al2O3). Crystallized Alumina presents high hardness, high abrasion (wear) resistance, fairly high chemical stability and withstand chemical corrosion and erosion for most applications. Alumina considered to be generally inert material at relatively moderated temperatures prevail outside the hot zone, where the shield is positioned.

Chemical Composition.

• Al_2O_3 % wt	99.7
• Fe_2O_3 % wt	0.03
• SiO_2 % wt	0.05
• MgO % wt	-
• Na_2O % wt	0.10
• Other % wt	0.12





Contact details:
Ath. Stagiriti 7- Pilea, Thessaloniki Greece, 55534
tel. 0030 2310 942346, fax. 0030 2310 942336
e-mail: info@thermansys.com
www.thermansys.com

Ordering Information

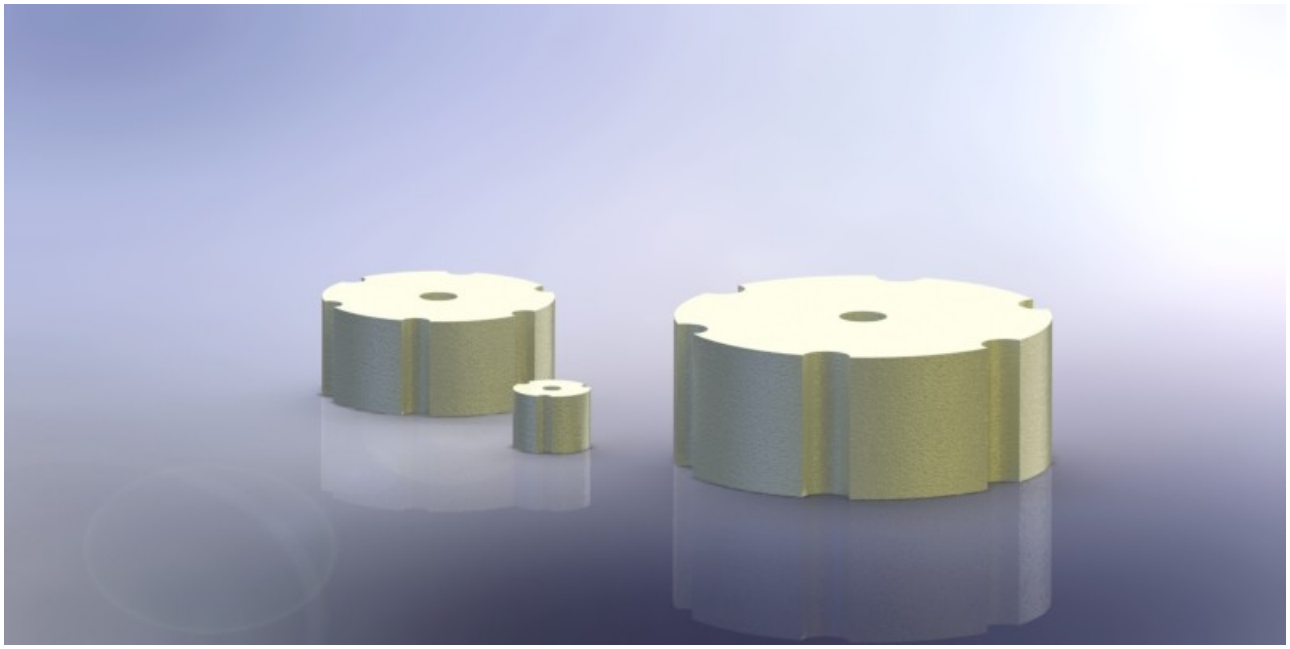


TABLE1. SHLD-AL-A1, Alumina Radiation Shields - Standard Sizes

Part Number	Shield Outside Diameter (mm)	Shield Length (mm)	Central Hole Diameter (mm)	Periphery Grooves No
SHLD-AL-A1-D16L16	16	16	1/8 in	3 x 4 mm
SHLD-AL-A1-D20L16	20	16	1/8 in	3 x 4 mm
SHLD-AL-A1-D25L16	25	16	1/4 in	3 x 4 mm
SHLD-AL-A1-D30L16	30	16	1/4 in	4 x 4 mm
SHLD-AL-A1-D34L20	34	20	1/4 in	4 x 4 mm
SHLD-AL-A1-D42L20	42	20	3/8 in	4 x 6 mm
SHLD-AL-A1-D48L20	48	20	3/8 in	4 x 6 mm
SHLD-AL-A1-D58L30	58	30	3/8 in	6 x 6 mm
SHLD-AL-A1-D68L30	68	30	3/8 in	6 x 6 mm
SHLD-AL-A1-D78L30	78	30	3/8 in	6 x 10 mm
SHLD-AL-A1-D88L40	88	40	1/2 in	6 x 10 mm
SHLD-AL-A1-D98L40	98	40	1/2 in	6 x 10 mm
SHLD-AL-A1-D108L40	108	40	1/2 in	8 x 10 mm
SHLD-AL-A1-D116L40	118	40	1/2 in	8 x 10 mm
SHLD-AL-A1-D126L40	126	40	1/2 in	8 x 10 mm

HELLENIC PRODUCT.

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