

# CERAMIC FIBER HEATERS

FOR ALUMINUM CRUCIBLE FURNACES

THE HOT  
REPLACEMENT  
ALTERNATIVE



*Ceramic Fiber  
Heaters  
From Watlow  
Can Improve  
The Performance  
of Your Aluminum  
Crucible Furnace  
With Simple,  
One-For-One  
Heater  
Replacements!*

**CERAMIC FIBER: THE BETTER FURNACE HEATER TECHNOLOGY**

Watlow, the leader in electric heater design and manufacturing, has pioneered unique uses of ceramic fiber that reduce or eliminate the problems commonly associated with hard ceramic heating methods:

- Difficult installation
- Poor heater life
- Limited performance

Watlow ceramic fiber heaters combine ceramic fiber insulation and self-supported heating elements to produce a complete, "heated insulation" package. Its low thermal mass has faster response, and our unique V-Sinuated element configuration maximizes industry standard ICA alloy element wire performance.

**ELEMENT CONFIGURATION - THE HEART OF THE HEATER**

Watlow's V-Sinuated element design packs the same watt density and operating temperature capabilities into the same size heater without the problems associated with exposed coil elements. Half of the coiled element is embedded into the hard ceramic backing. This has several drawbacks:

- Over time, the exposed coils can sag and distort
- The exposed wire heats up and expands faster than the embedded wire. The difference in expansion rates can mechanically fatigue the wire at the point where it embeds into the hard ceramic backing, causing the wire to break.
- The exposed part of the coil can be contaminated by spilled molten aluminum.

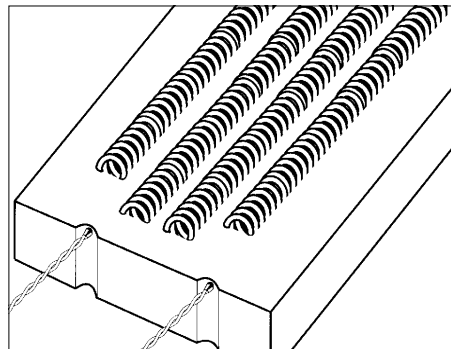
**A PERFORMANCE DIFFERENCE YOU CAN SEE**

- Same sizes
- Same power ratings

*Plus...*

- Lighter weight
- Faster heater response
- Increased insulation for thermal efficiency
- Longer heater life
- Easier installation
- Simplified power hook-up
- Lower shipping costs
- Competitive pricing

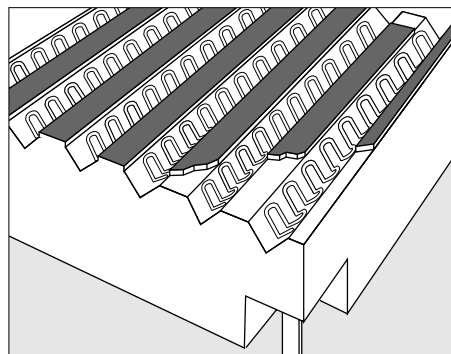
**Hard Ceramic**



**Hard Ceramic Elements**

- Exposed coils sag over time.
- Mechanical stress at embedding point.
- Exposed elements vulnerable to aluminum spills.

**Watlow Ceramic Fiber**



**Watlow Ceramic Fiber Elements**

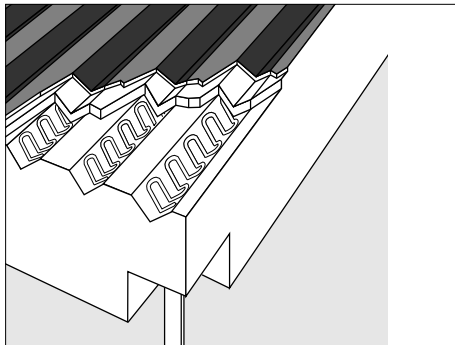
- V-Sinuated elements are fully self supporting.
- No mechanical stress from embedding element in light weight ceramic fiber.
- Fully recessed exposed wire element reduces possible damage due to spills. Embedded element option (fully covered) is also available.

## COMPARISONS

FEATURES	HARD CERAMIC	WATLOW CERAMIC FIBER	COMMENTS
<b>Size</b>	Typical heater is 6 <sup>3</sup> / <sub>8</sub> X 27 <sup>7</sup> / <sub>8</sub> inches.	Same width and height sizes.	Direct replacement sizes available from stock.
<b>Weight</b>	Typical heater weighs 24 pounds.	Same size is only 4½ pounds.	Easier to handle and install. Saves on shipping.
<b>Insulation</b>	More mass, slower response. Poor insulator, prone to spalling and cracking with sudden temperature changes.	Greater efficiency — low thermal mass and insulation qualities produce less thermal load. More resistant to spalling and cracking with sudden temperature changes.	Improved melt rates (pounds per hour) for higher net furnace efficiency.
<b>Leads</b>	Wire leads are stiff. Installation hook up and alignment difficult. Leads become oxidized and brittle. Reinstallation nearly impossible.	Highly ductile lead strips easily formed. Don't become brittle during long service life. Permit reinstallation of removed heaters.	Watlow strip leads much easier to install. Flat shape makes better electrical connection.
<b>Power Ratings</b>	Typical heater rating is 277 volts / 4000 watts. Other sizes and ratings also used.	Same ratings available from stock or manufactured to order.	Comparable Watlow ratings for all OEM sizes are computer designed.
<b>Element Style</b>	Available only as exposed coil.	Available in both exposed and embedded V-Sinuated element configurations.	Exposed coil prone to mechanical damage and contamination. See text below.

### EMBEDDED ELEMENT RESISTS CONTAMINATION

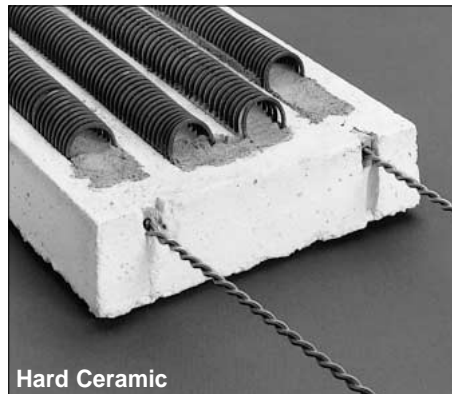
Watlow's embedded V-Sinuated option provides contamination and short circuit resistance with a thin layer of ceramic fiber on top of our element wire. This layer is modified with a high emissivity coating which maintains heating efficiency.



### PERFORMANCE THAT'S BETTER THAN AN OEM

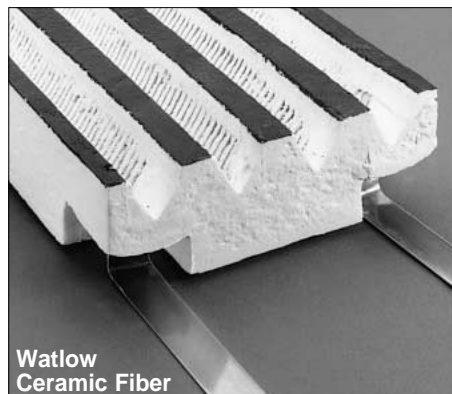
Watlow ceramic fiber heaters are competitively priced, superior one-for-one replacements. And because our ceramic fiber heaters weigh less, they cost less to ship, too.

### BETTER POWER LEADS



Hard Ceramic

When first installed, hard ceramic power leads are stiff and difficult to install. These leads soon become oxidize and brittle, making reinstallation often impossible.



Watlow Ceramic Fiber

Watlow ceramic fiber heater strip leads are ductile and easy to align. Our leads remain flexible, making reinstallation possible.

### FAST SHIPMENT

Our stocking program assures you fast shipment. If your order is received by 11:00 am, we ship same day — overnight if requested.

### WATLOW STANDS BEHIND YOU

When you buy from Watlow, you automatically receive our standard warranty coverage **plus** total technical support and thermal system expertise in heaters, sensors and controls.

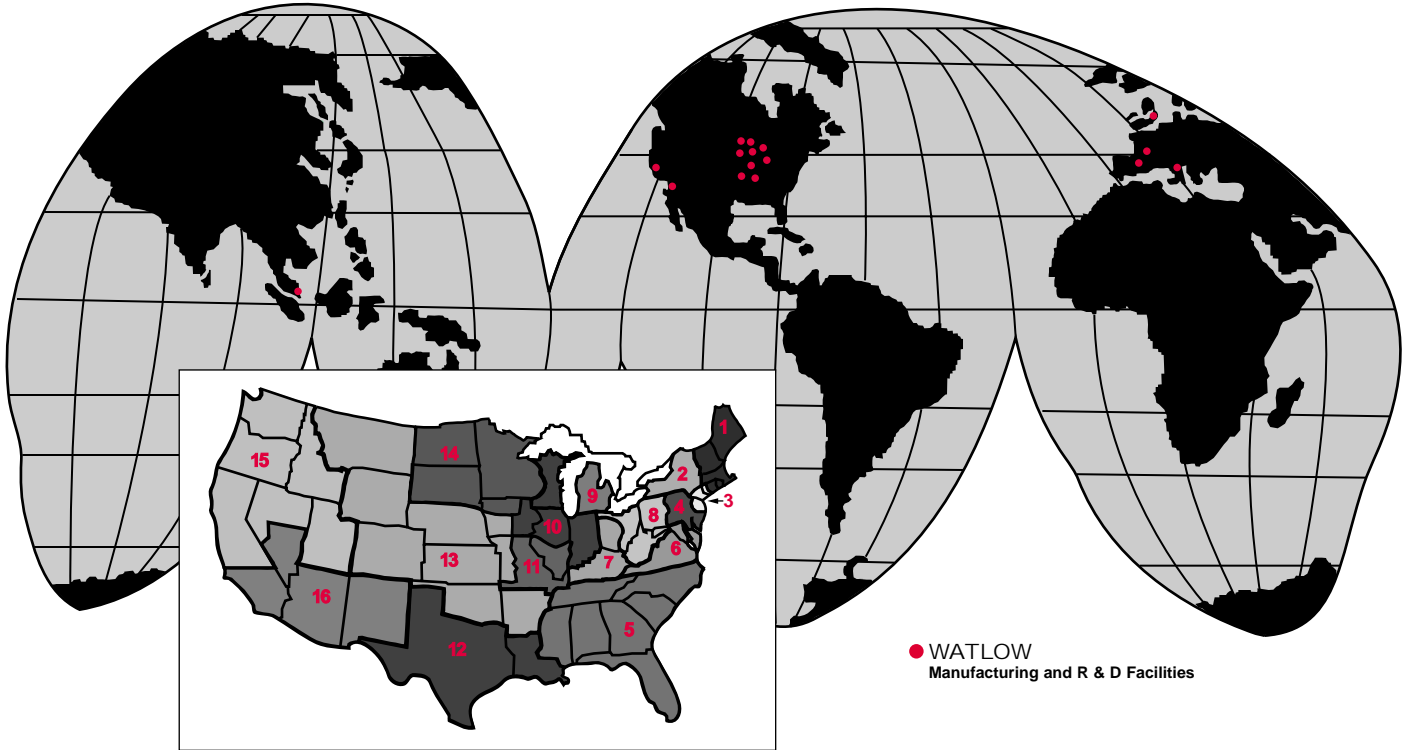
### IMPROVE YOUR FURNACE PERFORMANCE. IT'S EASY!

The next time you need to replace a crucible furnace heater, don't install the same limited performance unit you just took out — install Watlow ceramic fiber heaters. Call your local Watlow representative for complete details and quotation.



Designer and Manufacturer of  
Industrial Heaters, Sensors and Controls

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