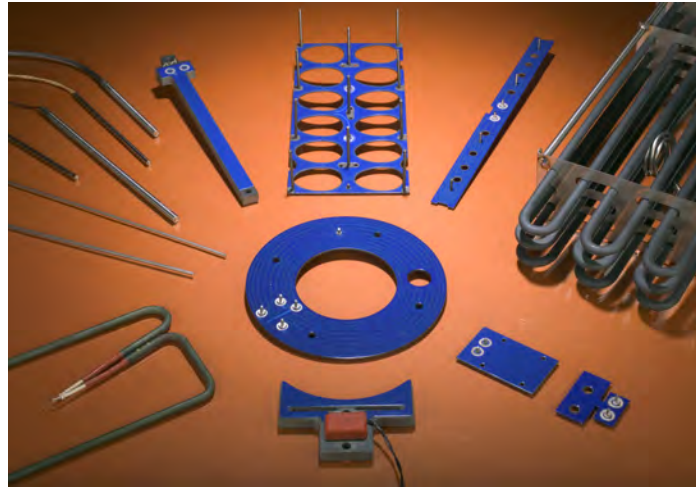


## Watlow's Family of Seal Bar Heating Solutions



Seal bar applications require heaters that deliver quick ramp up times, temperature uniformity and precise temperature control. In today's competitive marketplace, companies are turning to Watlow and its experienced engineers for complete thermal loop solutions to maximize their packaging machinery's efficiency.

Year after year, customers depend on Watlow to solve tough seal bar challenges. Watlow offers customization, global manufacturing and support as well as the ability to solve application problems with a variety of heater solutions. Watlow even has thermal analysis capabilities including Finite Element Analysis (FEA) software. These programs will determine your application's wattage distribution needs, so you can maximize efficiency and minimize cost.

The Watlow family of seal bar heaters provides flexibility and a variety of sizes to fit almost any thermal application. The superior sealing quality, cost-effectiveness and long service life of Watlow's seal bar heaters allow customers to enjoy advantages including increased production yields, greater throughput and bottom line efficiencies.

### Thick Film Heaters

Watlow's thick film heaters can be customized to provide the precise control and temperature profile that demanding packaging applications require. For applications from seal bars to die heads, thick film heater circuitry provides even thermal output across the entire heater surface, helping to control and correct almost any temperature uniformity issue. Depending on the material of the seal bar, Watlow has the ability to place a low profile, thick film pulse heater directly on to an OEM part. Adding the heater directly to the seal bar will allow for very rapid response times.

Flat surfaced or cylindrical, Watlow's thick film heaters are ideal for a multitude of seal bar and blade applications. The heaters provide design flexibility and can be shaped to match any form desired. This versatility allows the heater to adapt to unique machine dimensions and geometry.

Watlow's thick film offers precise control, rapid startup and improved cycle times. Customers also are realizing consistent package quality with a low profile heater.

### Thick Film Features and Benefits

#### Uniform thermal profile and ability to pattern heater layout

- Results in even temperature for improved product quality; eliminates hot and cold spots

#### Low thermal mass

- Provides quicker heat up and less thermal lag between the heater and the part

#### Extremely low profile

- Allows for premium space to be kept at a minimum

#### Moisture-resistant non-porous glass film construction

- Eliminates the need for soft starting, minimizes current leakage and ultimately reduces cost by eliminating special need of GFCI protection



COR-PSB-0807

## FIREROD® Cartridge Heaters

The Watlow FIREROD® offers an ideal solution for seal bar applications. With heater diameters from 0.125 to 0.75 in. (3.175 to 19.05 mm) and lengths from 1 to 40 in. (25 to 1016 mm) and beyond, the FIREROD offers versatility for a broad range of packaging applications. This flexible heater provides superior heat transfer, uniform temperatures and resistance to oxidation and corrosion. The FIREROD also offers wattage distribution along the heater length, yielding a uniform heat profile that is customized to the specific application.

To accommodate equipment with limited space outside the sealing bar, the FIREROD also has very small no heat sections. Watlow's FIREROD can be manufactured with internal thermocouples anywhere along the heater length to control application temperatures. The cartridge heater technology offers the highest possible watt density for fast start up and recovery time.

### FIREROD Features and Benefits

#### Patented Lead Adapter (LA) method

- Allows same day shipment on more than 150,000 configurations of stock FIREROD heaters and lead combinations

#### Nickel-chromium resistance wire

- Assures even, efficient heat distribution to the sheath

#### Conductor pins metallurgically bonded to resistance wires

- Ensure trouble-free electrical continuity

#### Magnesium oxide insulation swaged to the proper density

- Provides high dielectric strength and contributes to faster heat-up

#### Incoloy® sheath

- Resists oxidation and corrosion from many chemicals, heat and atmospheres

#### Minimal spacing between the element wire and sheath

- Results in lower internal temperatures allowing for design with fewer or smaller heaters that operate at higher watt densities

#### UL® and CSA approved flexible stranded wires

- Insulates the wires to temperatures of 450°C (840°F)

#### VDE component recognition

- 230V~(ac) according to VDE 0721 part 1/3.78 and part 2/3.78 Section E in connection with VDE 0720 part 1/11.74

## Cable Heaters

Watlow's cable heaters are a versatile seal bar solution. From the most straightforward seal and cut to more complex materials, a Watlow cable heater can be custom designed for a variety of packaging applications. Watlow cable heaters are designed to fit seal blades ranging in length from 203 mm (8 in.) to 182 cm (6 ft.). Internal element wire wattage distribution, along with internal thermocouple sensing allows

for extremely tight temperature control along the length of the blade. Precise temperature control ensures process repeatability and reduced downtime, resulting in higher machine productivity. The heater sheaths can be formed to fit many common blade/bar configurations including:

- Round - Ø1/8 in. (3.175 mm)
- Square - 0.128 x 0.128 in. (3.25 x 3.25 mm)
- Rectangle - 0.101 x 0.156 in. (2.56 x 3.96 mm)

Sheath materials range from the standard 304 stainless steel to 316L stainless steel and Inconel® 600 to achieve maximum sheath temperatures of 650°C (1202°F) continuous or 815°C (1499°F) for intermittent periods.

### Cable Features and Benefits

#### High ductility

- Allows the heater to be cold-formed into almost any shape

#### The heater's low mass

- Provides a quick response to both heating and cooling

#### Standard 304 stainless steel, or optional 316L stainless steel or Inconel® 600

- Provides high temperature corrosion and oxidation resistance along with ideal thermal expansion properties

#### Internal construction options

- Allows internal thermocouples and no-heat sections (not available in all sizes)

## Tubular Heaters

Today's packaging applications demand exacting temperature tolerances and precise thermal specifications. Watlow's tubular heating elements are reliable, versatile and flexible, making them ideal for numerous packaging industry requirements. Internal thermocouples can also be added on certain diameters for additional versatility. The heaters also provide consistent temperature levels to ensure superior final product quality.

### Tubular Features and Benefits

#### Precise conformity to customer specifications

- Ensures easy installation-bending tolerances as low as ± 0.002 inch

#### Common element diameters

- Includes 0.260, 0.315, 0.335, 0.375 and 0.430 in. (6.6, 8, 8.5, 9.5 and 10.9 mm)

#### Incoloy® sheath material

- For high temperatures, 304 stainless steel for smaller radius bends

#### Superior resistance coil design

- Produces even heating

#### Threaded stud or lead wire termination

- As required

Inconel® and Incoloy® are registered trademarks of Special Metals Corporation.

To be automatically connected to the nearest North American Technical and Sales Office:

**1-800-WATLOW2 • www.watlow.com • info@watlow.com**

**International Technical and Sales Offices:** Australia, +61-3-9335-6449 • China, +86-21-3950-9510 • France, +33 (0) 3073-2425 • Germany, +49 (0) 7253-9400-0 • Italy, +39 (0) 2 458-8841 • Japan, +81-3-3518-6630 • Korea, +82-2-575-9804 • Malaysia, +60-3-7980-7741 • Mexico, +52 (442) 217-6235 • Shanghai, +86-21-3950-9504 • Singapore, +65-6773-9469 • Spain, +34 91 675 1292 • Sweden, +46 35-27-11-66 • Taiwan, +886-7-288-5168 • United Kingdom, +44 (0) 115-964-0777