

# Silicone Rubber Heaters

## Improve Heat Transfer, Speed Warm Ups and Decrease Wattage Requirements

Rugged, yet thin, lightweight and flexible — the use of Watlow® silicone rubber heaters is limited only by the imagination. With these heaters, heat can be placed where it is needed. In the application process these heaters improve heat transfer, speed warm ups and decrease wattage requirements.

Fiberglass-reinforced silicone rubber gives the heater dimensional stability without sacrificing flexibility. Because very little material separates the element from the part, heat transfer is rapid and efficient. The heaters are constructed with a wire-wound element or an etched foil element. The heater construction creates a very thin heater allowing it to fit applications where space is limited.

### Performance Capabilities

- Operating temperatures up to 500°F (260°C)
- Watt densities up to 80 W/in<sup>2</sup> (12.5 W/cm<sup>2</sup>), dependent upon application temperature
- Wire-wound element thickness — 0.055 in. (1.4 mm)
- Etched foil element — 0.022 in. (0.56 mm)
- UR®, cUR®, VDE and CE recognitions are available on many designs up to 428°F (220°C)

### Features and Benefits

#### Designed to the exact shape and size needed

- Conforms to your component and/or equipment

#### More than 80 designs available immediately from stock

- Reduces downtime

#### Constructed with wire-wound or etched foil elements

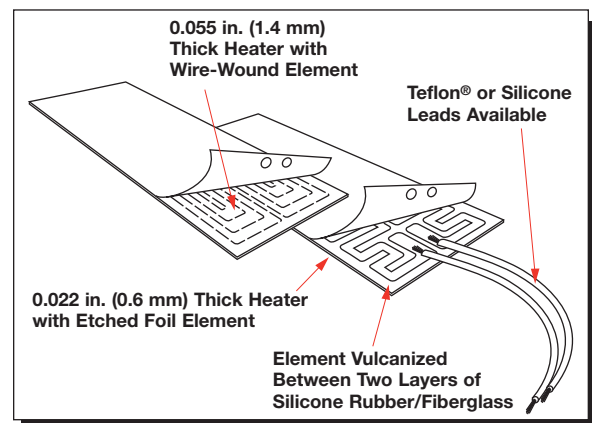
- Delivers a thin, lightweight heater
- Provides the desired flexibility for many dynamic applications
- Delivers low mass and easily repeatable distributed watt densities

#### Moisture- and chemical-resistant silicone rubber material

- Provides longer heater life

#### Vulcanizing adhesives or fasteners

- Allows heaters to be easily bonded to the part



### Typical Applications

- Freeze protection and condensation prevention for many types of instrumentation and equipment
- Medical equipment such as blood analyzers and test tube heaters
- Computer peripherals such as laser printers
- Curing of plastic laminates
- Photo processing equipment
- Semiconductor processing equipment

### Mounting Methods

- Pressure Sensitive Adhesive Surface (PSAS)
- Silicone contact cement kit
- Field applied adhesive
- Mechanical fasteners
- Factory bonding

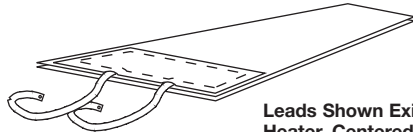


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## Termination Styles

Watlow offers many types of leads and terminations. Leads can project from any position along the perimeter of the unit. **They will be centered on the short side width of rectangular heaters unless otherwise specified.**

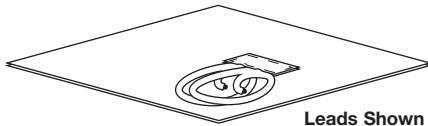
### Teflon® UL® 1180 CSA



Leads Shown Exiting End of Heater, Centered on Short Side

Watlow's leads are 12 in. (305 mm) long, white, Teflon® insulated, flexible, plated copper UL® 1180 CSA wire. They are rated for 392°F (200°C)/300V. The lead connections on or at the heater are insulated with a cap of sheath material, vulcanized to the heater body.

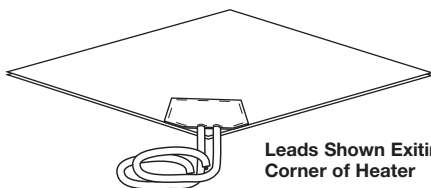
### Teflon® Leads



Leads Shown Exiting Middle of Heater

Teflon® Type E (MIL-W-16878) and Teflon® UL® 1199 rated for 392°F (200°C)/600V are also available.

### Silicone Insulated Leads



Leads Shown Exiting Corner of Heater

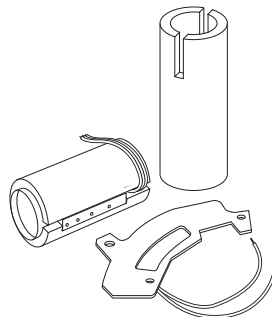
For a better moisture seal, specify UL® silicone insulated lead wires. This lead type is rated for 302°F (150°C)/ 600V. Any lead length is available. **Note:** Silicone rubber heaters are not designed to be waterproof. Excess exposure to moisture may facilitate premature heater failure.

## Option

### Thermal Insulation

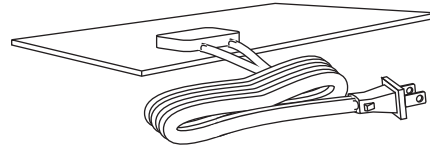
To increase the heating efficiency of your application, silicone rubber heaters can be thermally insulated with silicone sponge rubber, bonded to one side in the following thicknesses: 1/16, 1/8, 1/4, 3/8 or 1/2 in. (1.6, 3.2, 6, 9.5 or 13 mm)

An aluminized surface can be added to the back of the heater to reduce radiated heat losses. This aluminized surface, called "low loss treatment," adds very little to the unit thickness and maintains a very clean appearance.



## Extended Capability Termination Style

### HPN Cord and Plug Set

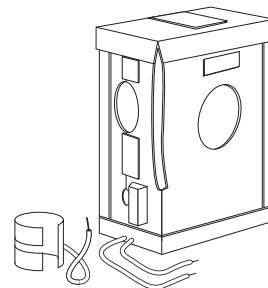


Molded Leads are Shown Exiting Edge of Heater. Capped Leads are also Available

For removable heaters, a 6 ft (1.8 m) HPN cord and plug set provides convenience. It is rated for 194°F (90°C)/ 300V. HPN cord without a plug is also available in any length.

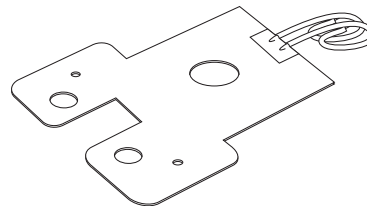
## Extended Capability Options

### Formed Heaters



Many three-dimensional shapes, such as cylinders, cones and boxes, can be factory formed. Semi-rigid shapes can be self-gripping to the part. Special tooling may be required for some designs.

### Holes, Cutouts and Notches



Watlow can provide flexible heaters with special holes, cutouts and notches in nearly any position required for your design. The resistance element can be brought to within 1/8 in. (3.2 mm) of all edges. Standard spacing is 1/4 in. (6 mm) from all edges.

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