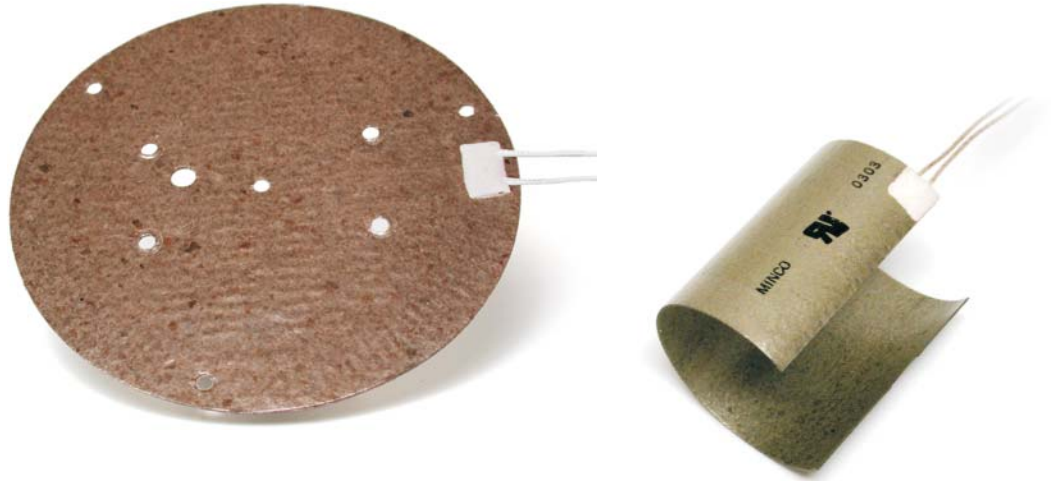


# Mica Thermofoil™ Heaters

High watt density and temperature range



## Overview

Mica Thermofoil™ heaters consist of an etched foil element sandwiched between layers of mica. Installed by clamping to heat sinks, mica heaters provide the ultimate temperature and wattage capability for fast warmup.

- Broad temperature range of -150° to 600°C provides faster processing and cycle times for greater production output
- High watt density capability to 110 W/in<sup>2</sup> (17 W/cm<sup>2</sup>) provides faster processing times than conventional mica strip heaters
- Custom profiled heat density and mechanical clamping offers uniform heat sink temperature which can improve processing yields
- UL certification is available which can save time and money for end-use UL device recognition
- Can be factory formed to curves
- Heaters are suitable for vacuum use after initial warmup

## Typical applications

- Semiconductor processing
- Packaging, strapping, and sealing equipment
- DNA thermocycling
- Food service appliances
- Plastics and rubber molding supplemental heat

## Custom options

- Custom shapes and sizes to 22" × 46" (560 × 1168 mm)
- Custom resistance options up to 25 Ω/in<sup>2</sup> (3.9 Ω/cm<sup>2</sup>)
- Factory forming techniques offer three dimensional packaging capabilities
- Integral temperature sensors
- Contact Access: Minco Sales and Support for design assistance.

# Mica Thermofoil™ Heaters

## Specifications

**Temperature range:** -150 to 600°C (-238 to 1112°F).

Lead tab area: 538°C (1000°F) max.

**Resistance tolerance:** ±10% or ±0.5 Ω, whichever is greater.

### Dielectric strength:

0.010" (0.3mm) insulation: 1000 VRMS.

0.020" (0.5mm) insulation: 2000 VRMS (recommended for over 250 V).

**Mounting:** Must be clamped to heat sink using bolt holes provided in heater and backing plate. See the mounting diagram below. Please refer to Minco Engineering Instruction #347 for detailed installation information.

**Burn-in:** Organic binders will burn off, producing small amounts of smoke, when heaters are first powered. After this, layers can separate so heaters should not be reinstalled.

**Leadwire:** Mica/glass insulated, stranded nickel-clad copper, potted over termination with high temperature cement.

### Maximum heater thickness:

Mica insulation	Over heater element	Over lead termination
0.010" (0.3 mm)	0.030" (0.8 mm)	0.200" (5.1 mm)
0.020" (0.5 mm)	0.050" (1.3 mm)	0.220" (5.6 mm)

### Current capacity (based on 100°C max. ambient temp.):

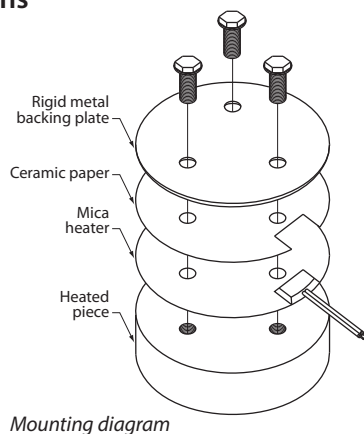
AWG 22 - 8.0 A

AWG 20 - 9.0 A

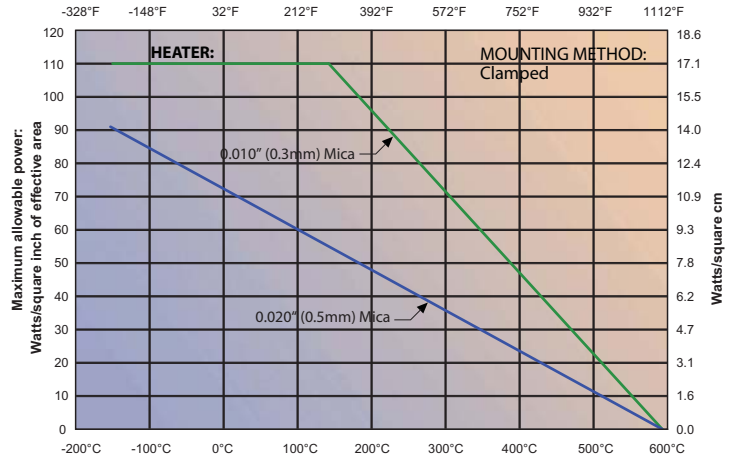
AWG 18 - 11.0 A

## Installation instructions

Minco Engineering Instruction #347 describes mica heater installation in detail. Contact Minco for a copy or download the document at [www.minco.com](http://www.minco.com)



## Mica Heaters Maximum Watt Density



Example: At 300°C, the maximum power of a 0.010" mica heater is 70 W/in<sup>2</sup> (10.9 W/cm<sup>2</sup>).

## Backing plates

Backing plates are 0.0625" (1.6 mm) thick stainless steel with pre-drilled holes matching the bolt pattern of the specified model. These backing plates do not have cut out areas for the lead bulge and may require modification.

## How to order backing plates

Order part number AC6800 for HM6800, etc.

## Ceramic paper and mica sheets

Each mica heater is supplied with two pre-trimmed sheets of 0.125" (3.2 mm) thick ceramic fabric paper for use as a resilient pad between the heater and backing plate. This paper does not have a cut out area for the lead bulge. If the backing plate being used does not have a cut out area for the leads attachment you must use two pieces of this paper and make this cut out in each. Contact Minco to order additional ceramic paper.

## Mica sheets

Additional layers of 0.010" (0.3 mm) mica trimmed to the heater size are also available. Using an additional layer of mica will increase the dielectric strength, but it will also reduce the watt density limit by up to 50% across the temperature range. If used on the lead bulge side of the heater then the mica must be cut to allow for the ceramic and wires bulge on that side. Contact Minco to order mica sheets.

Specifications subject to change