



**SmithHeat™**

## Etched Foil Heating Element

### COMPOSITION

Etched foil heaters have standard sizing and can also be made to custom designs. Stock heaters include pail, drum, tote and gas cylinder heater as well as heat tapes. Some hard to heat application, however require custom heaters with flexibility, resistance to wear reliability and cost effectiveness. With no order minimum and the ability to choose material, size, voltage, wattage, cutouts, attachments options and built in controlling options. Etched- foil heaters are so personalized that virtually any application could be satisfied.

### APPLICATION

Storage Tanks, Low temperature ovens, Heat Tracing systems, Humidity control systems, Heated tabletops, Food service equipments, Wall radiant Heating, Epoxy Curing Equipment, process Vats and dip tanks, Water and feed throughs, conveyors, refrigerator Defrost, Fluid line Freeze protection, Medical and laboratory devices, Satellite and communications, alternative to direct immersion.

### PRODUCT DATA

MICA	SILICONE RUBBER	POLYAMIDE	PTFE
HIGH TEMPERATURE UPTO 600° C, HARD AND FLEXIBLE	240°C FLEXIBLE AND MOST SUITED FOR LARGER INDUSTRIAL APPLICATION	200° C FLEXIBLE, VERY THIN AND LIGHT WEIGHT	150° C MOST SUITABLE FOR IMMERSION IN ACIDIC AND CORROSIVE AND CHEMICAL

## Mica Foil Heaters

### COMPOSITION

It consists of an etched foil resistive element laminated by two layers of mica, installed by clamping to heat medium that provide high temperature and wattage capabilities for fast heating.

- High Temperature range upto 600° C
- High Watt density upto 110 W/in<sup>2</sup> (17 w/in<sup>2</sup>)
- Resistance Upto 250hm/in<sup>2</sup>
- Maximum Sizes and shapes upto 1000 X 1200 mm
- Integrated Thermal fuses and Sensors

### APPLICATION

- Laminator Equipment
- Xerox Image equipment
- Medical Equipment
- Drum and vessel Heating
- Food Heating
- Engine Heating

### PRODUCT DATA

TEMPERATURE RANGEI	RESISTANCE TOLERANCE	MICA INSULATION THICKNESS	LOADTERMINA L WIRE	POTTING
HEATING SURFACE (-150° C TO 600° C)	± 8%)	0.30 MM TO 0.50 MM = 1.5 KVA TO 2.5 KVA	0.30 MM TO 0.50 MM = 1.5 KVA TO 2.5 KVA	HIGH TEMPERATURE CEMENT

## Silicon Rubber Foil Heaters

### COMPOSITION

It consists of an etched foil resistive element laminated by two layers of fibre glass reinforces silicone rubber which is rugged, flexible elastomeric material with good thermal properties. It is most suited to larger industrial heater application.

- High Temperature range upto 240° C
- Most economical in large sizes
- Maximum Sizes and shapes upto 500 mm X 2000 mm
- Integrated Thermal fuses, sensors and controllers

### APPLICATION

- Catering and food service equipments
- Packaging and sealing equipment
- Semiconductor processing
- Medical thermo cycling
- Heating Appliances
- Industrial application

### PRODUCT DATA

MATERIAL	TEMPERATURE RANGE	RESISTANCE TOLERANCE	MICA INSULATION THICKNESS	LOAD TERMINAL WIRE	MINIMUM BEND RADIUS
FIBRE GLASS REINFORCED SILICON RUBBER	HEATING SURFACE (-45° C TO 240° C)	± 10%	0.20 MM = 1 KVA	PTFE GLASS INSULATED NPC WIRE	3.5 MM

## Polyimide Foil Heaters

### COMPOSITION

Polyimide is a thin, semitransparent with excellent dielectric strength. The resistive foil circuit are sandwich between layer of polyimide and sealed by high temperature adhesive. Most suitable for the application where space and weight has limitation as well as highly resistant to oil and chemicals.

- Thin and lightweight design fit in any critical space.
- Space and size upto 500mm x 1000mm
- Resistance option upto 450Ohm/in<sup>2</sup> (700Ohm/cm<sup>2</sup>)
- Integrated Thermal fuses, sensors and controllers

### APPLICATION

- Aircraft electronics and mechanical devices
- Satellite components
- Medical testing and diagnostic instruments
- Optoelectronics components
- LCD screen
- Food warming

### PRODUCT DATA

TEMPERATURE RANGE	MATERIAL	RESISTANCE TOLERANCE	DIELECTRIC STRENGTH	LOAD TERMINAL WIRE	MINIMUM BEND RADIUS
(-200 TO +200° C)	POLYIMIDE FILM	± 10%	1 KVA(thickness-0.05 mm insulation)	PTFE GLASS INSULATED NPC WIRE	0.8 MM

## Ptfe Foil Heaters

### COMPOSITION

PTFE is chemical resistant & flexible material, the heater is made of etched foil. Resistive circuit sandwiched between layers of PTFE insulation. It is used in many applications where you require non-stick, clean and chemical resistant

- Fluid sealed construction allow to immerse in liquids
- Size and shapes up to 250mm x 1000mm
- Resistance option upto 200Ohm/in<sup>2</sup> (310hm/cm<sup>2</sup>)
- Integrated Thermal fuses, sensors and controllers

### APPLICATION

- Direct heating of all acids & chemicals except fluorine
- Electroplating solution temperature maintenance
- Oil and Lubricant heating
- Rugged industrial heating

### PRODUCT DATA

TEMPERATURE RANGE	MATERIAL	RESISTANCE TOLERANCE	DIELECTRIC STRENGTH	LOAD TERMINAL WIRE	MINIMUM BEND RADIUS
(-200 TO +150° C)	PTFE sheet	± 10%	1 KVA(thickness-0.75 mm insulation)	PTFE INSULATED NPC WIRE	4.5 MM

All values are attributes of the used raw materials.

The physical data contained in this table are typical values. They are obtained on test specimens under specific conditions and represent average values of a large number of tests. The results obtained on these test specimens cannot be applied to finished parts without reservations, as behaviour is influenced by processing and shaping.