



INDUSTRIAL HEATERS

PRODUCT CATALOG

Component Heaters

- Air Heater
- Coil Heater
- Printed Heater
- Mica Strip Heater
- Cartridge Heaters
- Ceramic Band Heater
- Silicone Rubber Heater



Component Heaters.

Mica Strip Heater.



Ceramic Band Heater.



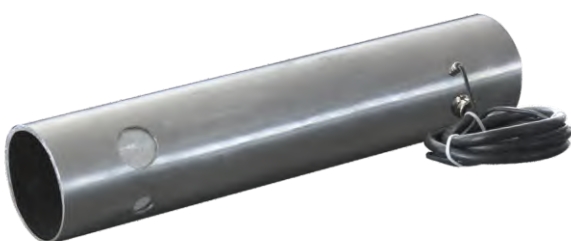
Cartridge Heater.



Coil Heater.



Air Heater.



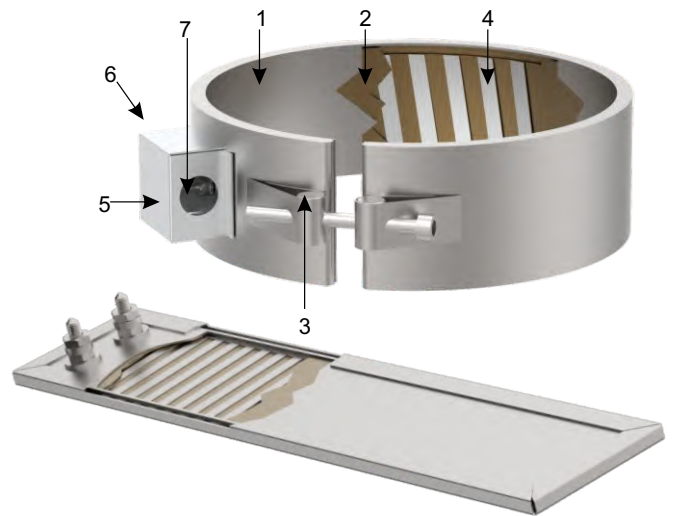
Printed & Silicone Rubber Heater



Mica Insulated Strip and Band heaters / Plate heaters are sheathed in rust-resistance steel or in stainless steel sheath as it provides physical strength and good thermal conductivity.

Construction

1. **Sheath (SS/Aluminized):** High-temp, corrosion-resistant, excellent thermal conductivity.
2. **Mica Insulation:** Superior electrical insulation, moisture-resistant.
3. **Clamping Band:** Ensures tight contact, no air gaps.
4. **Nickel Chromium Resistance:** Evenly coiled for consistent heat.
5. **Terminal Boxes:** Protect exposed terminals.
6. **Lead Protection:** Optional for abrasion.
7. **Stainless Steel Screw Terminals:** Strong connections, high amperage.



Technical Details

Sheath Material	Stainless Steel, Galvanized Iron
Max Sheath Temp.	425 °C
Voltage	120 V & 240 V, single phase, 2 phase and 3 phases
Watt density	up to 45w/in ²
Minimum diameter	2"
Minimum width	1"
Wattage tolerance	+5%, -10%
Resistance tolerance	+10%, -5%

Features And Benefits of Mica Heater.

- Available with or without mounting tabs.
- Easy and economic to install.
- Corrosion and vibration resistant .
- Durable, versatile and easy to control.
- Uniform Heat Distribution.
- Suitable for low to medium temperatures.
- Various shape options in Good lifetime.
- Mica strip heater.
- Low cost.
- Reasonably high temp
- Less in thickness.
- Good efficiency.

Utilization

- Blow Molding.
- Rubber plate that has been heated.
- molding by compression.
- inks that are heated.
- bars for sealing.
- warming food.
- sealing and packaging.
- equipment for laboratories.
- Ovens and hot plates.
- Extrusion and Injection of Plastic.
- Moulding procedures and oil lubricating units.
- External Vessel and Tank.
- Food processing industries, chemical industries, and blown film dies.
- Heating in the Plastic Processing Industry.

Simulation of Heavy Machinery

1. Nickel Chromium Resistance Ribbon wound for even heat distribution.
1. Mica Strip specially selected heater life.
2. Mica Insulation high grade for excellent thermal conductivity.
3. Stainless steel sheath resistance in wide variety of environment. Suitable temperatures as high as 650°C.

Special Heater Design Options

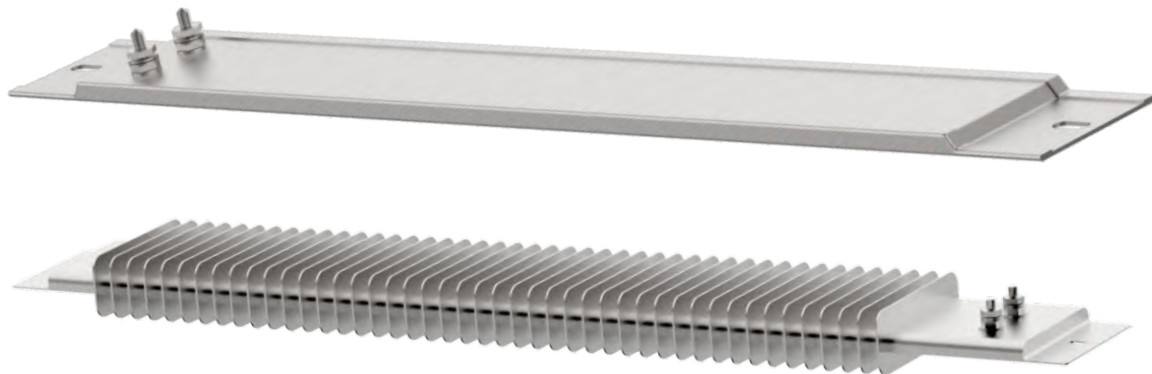
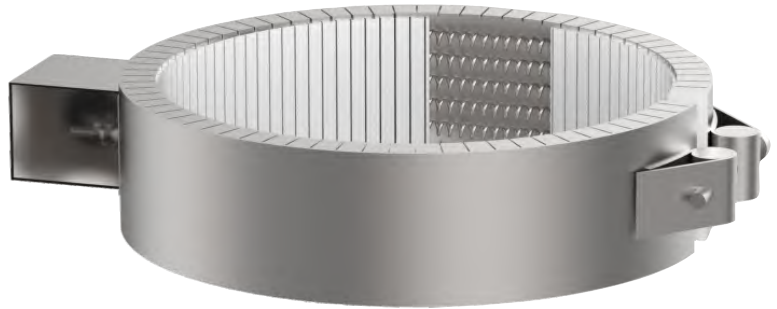
Mica Heaters can also be designed in various shapes such as Disc shaped, ring shaped or any irregular shape.



Ceramic Strip and band heaters are medium-to-high temperature heaters that have 648°C as a maximum working temperature. These durable heaters can have optional in-built ceramic fiber jackets that make them energy efficient. Ceramic band heaters are available with different terminal styles, are fully flexible, and can accommodate holes and cut-outs. In a ceramic band heater, nickel-chrome wire is embedded in a flexible outer wall made of special, interlocking ceramic tiles (KNUCKLES), which are assembled like a brick wall. A ceramic fiber insulating mat and a stainless Steel/Aluminised Steel jacket cover this assembly. This construction prevents heat loss and reduces electrical consumption by 20%.

Construction

1. **Sheath (SS/Aluminized):** Oxidation-resistant; SS 304 or aluminum-coated.
2. **Screw Terminals:** Secure, high-amperage connections.
3. **Terminal Box: Protects terminals from spills:** diverse types.
4. **Resistance Wire:** Uniformly wrapped 80/20 Ni-Cr for even heat, long life.
5. **Ceramic Fiber Insulation:** High-temp resistant.
6. **Ceramic Knuckles:** High-purity aluminum oxide for superior heat transfer, dielectric strength, and thermal conductivity in wrapping.



Utilization

- Blow Molding.
- Rubber plate that has been heated.
- molding by compression.
- inks that are heated.
- bars for sealing.
- warming food.
- sealing and packaging.
- equipment for laboratories.
- Ovens and hot plates.
- Extrusion and Injection of Plastic.
- Moulding procedures and oil lubricating units.
- External Vessel and Tank.
- Food processing industries, chemical industries, and blown film dies.
- Heating in the Plastic Processing Industry.

Features and Benefits Ceramic Heater

- Reduced expenses for operations.
- Good transfer of heat.
- Increased operating temperature.
- Adaptable and simple to install.
- Extended lifespan of the heater.
- Available with mounting tabs or without.
- Installing it is inexpensive and simple.
- Resistant to vibration and corrosion.
- Robust, adaptable, and simple to manage.
- Equal Heat Distribution.
- Ideal for warmer temperatures.

Simulation of Heavy Machinery

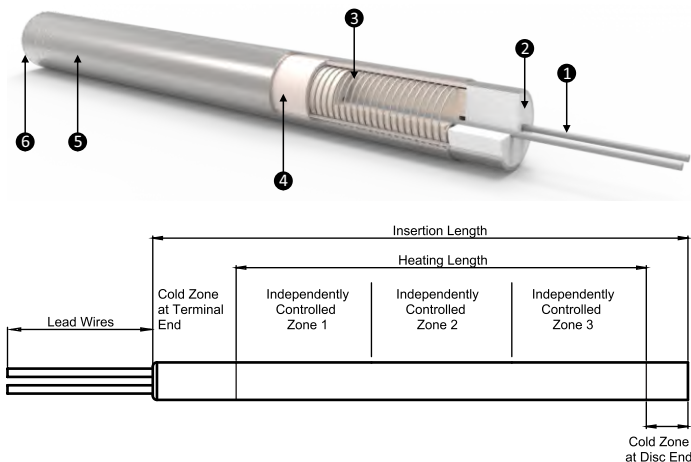
1. Nickel Chromium Resistance Ribbon wound for even heat distribution.
1. Mica Strip specially selected heater life.
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Special Heater Design Options

Ceramic Heaters can also be designed in various shapes such as Disc shaped, ring shaped or any irregular shape.

Hot Rod Cartridge Heaters :

Provide uniform, high heat transfer. Adjustable heating zones allow precise, varied temperature control. Designed with minimal internal space for lower operating temperatures and higher watt densities in smaller units.



Technical Details :

Sheath material : Stainless steel, incoloy.

Design temperatures UPTO 760°C (1400°F).

Watt densities of up to 300 W/in².

Maximum Voltage up to 480 V.

Sheath Length tolerance is $\pm 3\%$.

Wattage tolerance is $+5\%$, -10% .

Resistance tolerance is $+10\%$, -5% e.

Teflon Seal.

- When an efficient seal against moisture and oil contamination is needed, Teflon seal is utilized. To create an efficient barrier, Teflon lead wire and Teflon seal are combined.



Epoxy Seal

- Compared to silicon rubber, epoxy potting creates a better moisture seal with greater mechanical strength. Epoxylite is rated at 600°F (316°C), while regular epoxy is rated at 350°F (177°C).



Silicon Rubber Seal

- When used with silicon rubber lead wires, a high temperature silicon rubber seal effectively seals moisture up to 400°F (200°C). Out of all the moisture sealants, it is the most impenetrable.



Cement

- Although it is not waterproof, it offers defense against some heavier liquids and dust. Additionally, it can shatter in applications with severe vibration or impact because it is rather brittle. used at temperatures as high as 1425°C (2600°F).



Construction

- Lead Wires: Withstand up to 550°C.
- High Impact Ceramic Cap: Resists vibration and contamination; prevents lead fraying.
- Ni-Cr Resistance Wire: Uniformly wrapped for even heat and longevity.
- MgO Fill: Highly compressed for optimal heat transfer, dielectric strength, and thermal conductivity.
- Inconel/SS Sheath: Resists corrosion and oxidation.
- TIG-Welded End Disc: Prevents moisture and contamination.

Thermocouple

Internal thermocouples, which aid in more precise temperature control, can also be accommodated by cartridge heaters. Types of thermocouples include "J" or

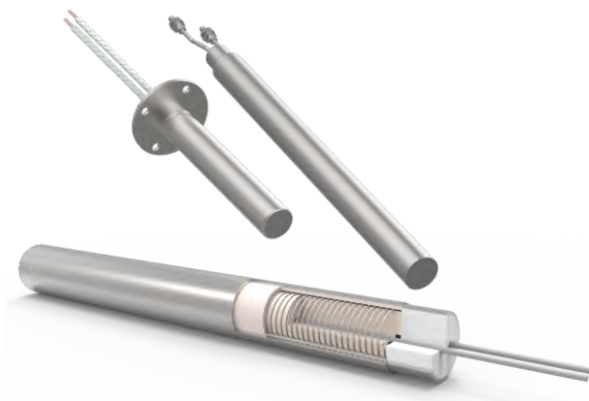
type "K," which can be connected to the heater's disc end or center, and is either grounded or ungrounded.

Unless otherwise noted, thermocouple leads are of the same length and the lead wire is 24 gauge.

Utilization

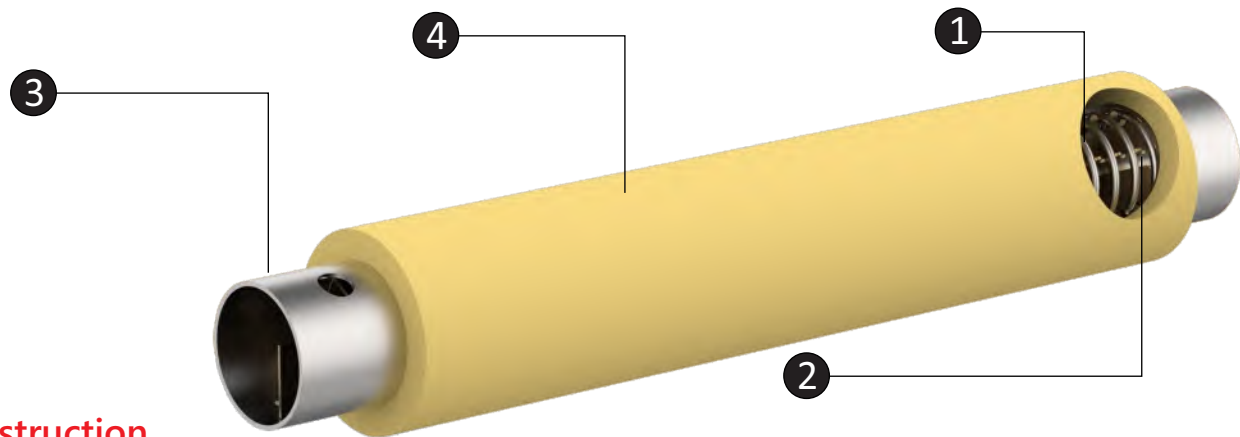
Double Ended

- Additionally, hot rods with electrical termination are offered. heating in a semiconductor chamber.
- die bonding with semiconductor wire.
- Equipment in cold environments or applications should be freeze protected and deiced.
- regulation of humidity.
- Medical gadgets that use heating for patient comfort.
- Die casting of metal
- Equipment for packaging uses seal bars.
- equipment for glass formation at high temperatures.



An open coil of high resistance wire that is electrically isolated within a stainless steel sheath is a feature of air heaters manufactured by NobleHeat. The most cost-effective and efficient form of electric heating is one which uses an open coil. It offers a quick heat-up time and increased efficiency since it exposes the maximum heating element surface area directly to the airflow. Its design makes maintenance easier and replacement parts simple and affordable.

It is made of premium coils of nickel chromium wire. put in the middle of an SS304 sheath, evenly wound on a mica sheet, and electrically isolated by a layer of flexible mica wrapped inside the sheath. Hot air dryers frequently use these heaters.



Construction

1. **Chromium and nickel Coils**, of resistance wires for optimal heater life that are uniformly coiled for uniform heat distribution.
2. **Mica sheets**, which are dielectric, lightweight, durable, and stable at high temperatures, are used to hold coils in place.
3. **Sheath made of stainless steel**, for strength and resistance to corrosion.
4. **Low heat conductivity and excellent thermal resistance**, are achieved using glass wool insulation.
5. **Teflon-coated thermistor and control cables**, provide excellent insulation and are appropriate for high-voltage applications.
6. **Mica insulation** separates the high resistance coil from the sheath thanks to its dielectric properties.

Technical Details

Sheath Material	SS-304/SS-202
Sheath Outer Diameter	63.5 mm, 101.6 mm
Wattage	Various Wattage available ranging from 2 kW to 30 kW
Watt Density	Up to 77 W/inch ²
Glass wool Insulation	Up to 1200°C
Wattage tolerance	+5%, -10%
Resistance tolerance	-5%, +10%

Benefits

- Quick heat-up time.
- Enhanced effectiveness.
- Little upkeep.
- Installation is simple.
- Simple and affordable replacement.

Utilization

- Hot Air Dryer

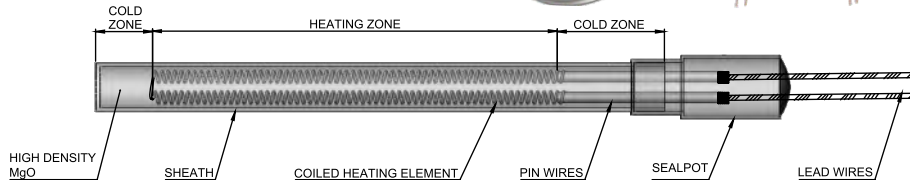
Take note :

For bespoke design needs, please get in touch with us.

Coil heaters are an advance concept of thermal engineering, is also known as high performance tubular heaters or cable heaters. The basic construction of these heaters consist of compacted MgO, high temperature resistance wire and Chrome Nickel Steel tube. These heaters can be constructed with or without built in thermocouples.



Construction :



- For the longest longevity, use a nickel-chromium-resistant wire.
- For optimal dielectric strength and thermal conductivity, high-purity magnesium oxide fill was chosen, and it was compacted to maximize heat transfer.
- Inconel or stainless steel sheaths are resistant to corrosion and oxidation in a wide range of environments.
- Type 'J' and type 'K' thermocouples for accurate temperature control Coil heaters come with different clamping choices, exit styles, coil configurations, and termination options.

Termination of Lead Wire Protection:

- **Stainless Steel Braid:** This type of braid allows the leads to bend within a precise radius while offering superior abrasion protection.
- **Stainless Steel Flexible Conduit:** Although flexible conduit can't bend as sharply as stainless steel braid, it offers the best protection against abrasion for leads.
- **Fiberglass sleeving** gives lead wires greater flexibility and protects them from abrasion.

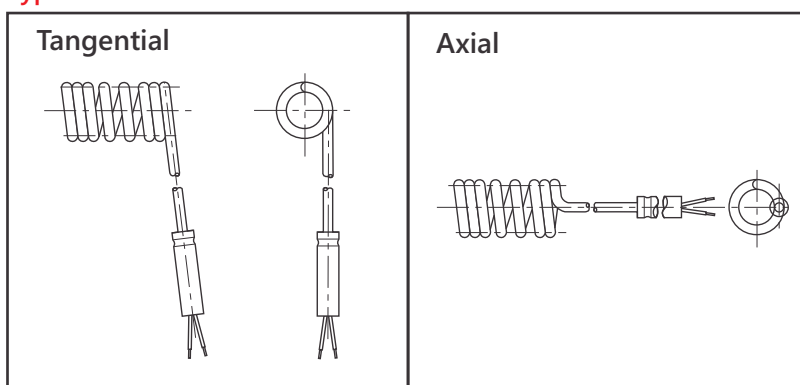
Utilization :

- Die Casting Machine for Zinc.
- Packaging machines with jaws and a sealing bar.
- Machine nozzles used in the die casting and plastics industries.
- Bushings, distribution plates, and nozzles make up the hot runner system.
- Extrusion of tubes.
- Forming pipes.
- heating of a small manifold.

Options for End Seals

- **Teflon Seal:** When an efficient barrier against moisture and oil contamination is needed, Teflon seal is utilized. To create an efficient barrier, teflon lead wire and teflon seal are combined.
- **Silicon Rubber Seal:** Up to 400°F (200°C), a high temperature silicon rubber seal combined with silicon rubber lead wires effectively seals moisture. Out of all the moisture sealants, it is the most impenetrable.
- **Epoxy Seal:** Compared to silicon rubber, epoxy potting creates a better moisture seal with greater mechanical strength. Epoxylite is rated at 350°C, while regular epoxy is rated at 260°C.
- **Although** it is not waterproof, cement potting offers defense against some heavier liquids and dust. Additionally, it can shatter in applications with severe vibration or impact because it is rather brittle. utilized at temperatures as high as 1425°C.
- **Glass Seal:** Suitable for temperatures up to 1200°C, glass seal effectively prevents moisture and oil contamination.

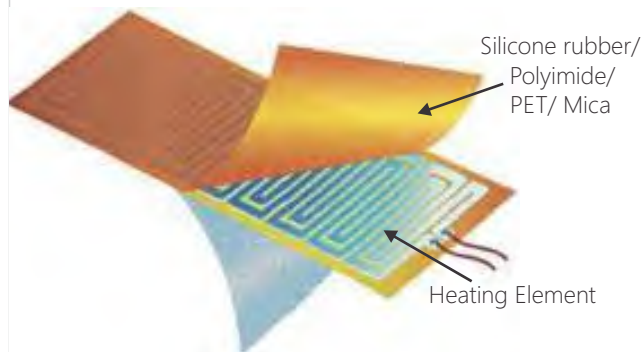
Types of Termination Exits



Benefits :

- high prominence of heating in small areas.
- Excellent performance and cost-effectiveness.
- Accurate temperature regulation.
- quick reaction time.
- A thermocouple that is integrated.
- offered in a range of exit and coiling types.

Nobleheat Silicone rubber and Printed flexible heaters can be customized in various shapes and sizes. Nobleheat developed the flexible heaters through etching, laser cutting, wire wound and screen-printing techniques. The thin design and direct bonding to the application facilitates efficient and rapid heat transfer resulting in faster heating and lower wattage requirement. The PTC printed heater runs off the high voltage battery to maximize the power delivered to the heater.



Types (As per Fabrication)



Wire Wound



Etch Foil

Structure Of Silicone Rubber Heaters

The silicon rubber heaters can be easily structured in any shapes, sizes, and dimensions. Manufactured with wire or etched foil heating circuits placed between two reinforced high-strength fiberglass mesh with silicone rubber. These heating solutions are available in varying watt densities, dual voltages and multiple heated zones. The thermostat/ thermocouple/ RTD is enclosed in a molded silicone rubber housing and permanently attached to the heater.

Base Material:

Silicone rubber/ Polyimide/ PET/ Mica

Heating Element: Steel, Nickel-chrome non-magnetic alloys, Copper, Constantan, Aluminum etc

Design Option

Nobleheat Heater offers several design options to meet various application requirements.

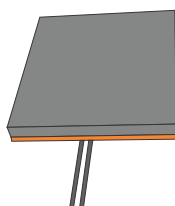
Ground Mesh

For grounding purpose a second layer of insulating material and a conductive grid can be added to the heater. The heater comes with a ground wire



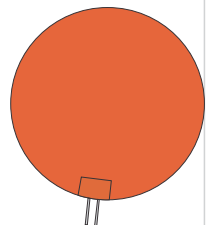
Silicone Rubber Sponge Insulation

To improve heater efficiency, 1/16", 1/8", 1/4", 3/8" or 1/2" insulation can be bonded to the outside of the heater. Closed cell silicone sponge is extremely flexible and has a Temperature range of "-75°C to 250°C".



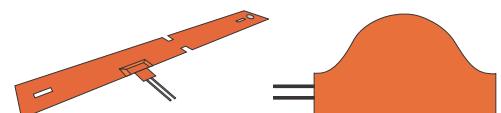
Round Heaters

Round shapes are also available. Round heaters are best attached to tooling with PSA.



Various Shapes for Various Applications

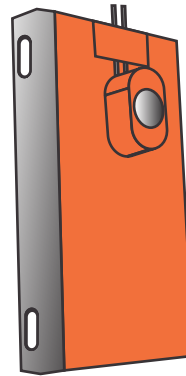
Odd shapes are available to fit those hard to heat devices. Holes and cutouts help fit those irregular shaped tools.



Design Option

Silicone Rubber Enclosure Heaters

Enclosure heaters are used to maintain temperature in any type of electrical box. Typical applications include ATM's, control boxes, traffic signals, utility boxes, cabinets and switch gear. Enclosure heaters are excellent for controlling humidity or moisture within an electrical box. Silicone rubber heaters are typically mounted to an aluminum plate and have an ambient sensing thermostat.



Other Design Options

- Dual Voltage •
- Three Phase •
- Distributed Wattage •
- Thermocouples •
- Thermostats •
- Temperature cut-off •
- Pull tabs •

Mounting Method

Field applied adhesive

SRH may also be attached with field applied adhesive, Marathon Heater will supply the required RTV to adhere the heater to the desired surface. We offer a room temperature curing adhesive. Apply a thin film of RTV on the entire bottom of the heater. After positioning the heater on the part, use a roller to remove all air trapped between the heater and the part. The RTV should be allowed to cure for 24 hour.

Pressure Sensitive Adhesive

There are several options for installation or mounting Silicone Rubber Heaters. An easy mounting method is to peel and stick. PSA is attached directly to one side of the heater. Just peel away the protective liner and attach the heater to the desired tool. It is not recommended for curved surfaces. The heater should be installed within 6 months of manufacture.

Factory Vulcanizing

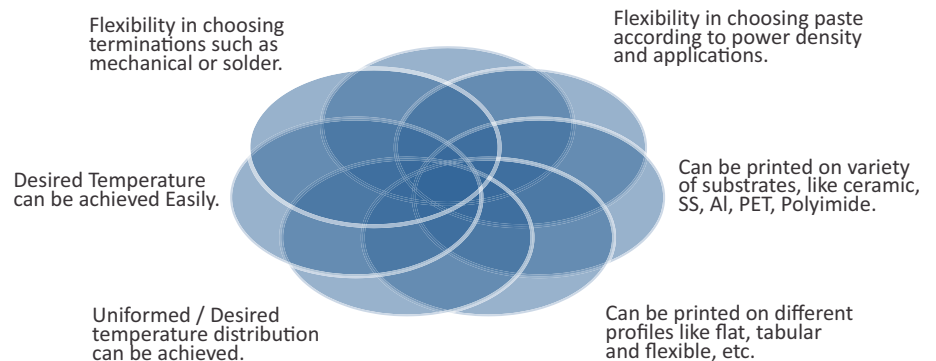
Another method of installation is to send your tool to the Marathon Heater factory. The tool is placed in a vacuum able and the SRH is vulcanized directly to the tool. This is the strongest bond available.

Specifications

	Polyimide (Kapton)	Silicone	PET
Max Operating Temp (°C)	230°C	200°C	100°C
Min Operating Temp	-60°C (-76°F)	-55°C (-70°F)	-40°C
Nominal Thickness	0.15 mm	1 mm & 1.6 mm	0.15 mm
Dielectric Strength	300 V/mil	400 V/mil	1000 V/mil
Watt Density	10 W/in ² (1.55W/cm ²)	10W/in ² (1.55W/cm ²)	3.5W/in ² (0.55W/cm ²)

Flexible Printing & Thick Film Heaters

The Printed heaters are warming elements that are screen printed on flexible materials. Their main goal is to add heat to a product. The use of precision screen printing helps to print conductive or resistive inks onto a flexible material. Printed heaters can have several benefits within the automotive and aerospace industries.





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