INTRODUCTION TO FLEXIBLE HEATERS

Typical Applications of Flexible Heaters

OMEGALUX® is your dependable source of precision flexible heater products, and a unique source of creative application design, engineering assistance, and manufacturing support.

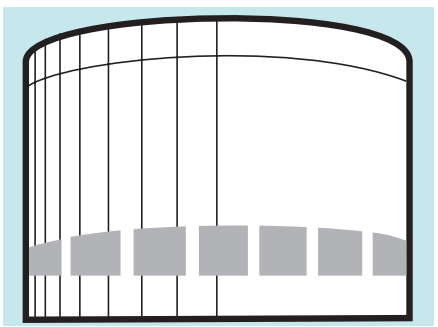
OMEGA makes standard and custom-configured; Flexible Heaters, Assemblies, Drum & Pail Heaters, Flexible Circuits and Flexible Heaters With Control Device Options (e.g. thermostats, thermistors, thermocouples, RTDs and thermal fuses).

OMEGALUX products are available in a wide range of materials and specifications. All undergo rigid quality assurance/quality control testing to insure that OMEGALUX products meet our standards and your application requirements.

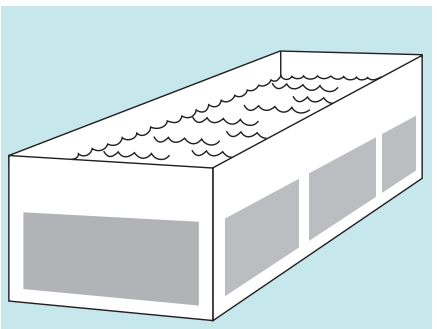
You can improve heat transfer, speed warm-ups and increase the capacity for higher watt density with OMEGALUX Silicone Flexible Heaters.

OMEGALUX Silicone Flexible Heaters are rugged, reliable, accurate, and moisture and chemical-resistant. They can be easily bonded or adhered to other system parts.

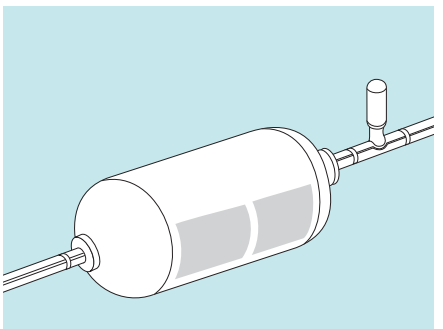
OMEGALUX Silicone Flexible Heating Elements and Assemblies can be supplied in standard, off-the-shelf configurations or custom designed to your individual specifications



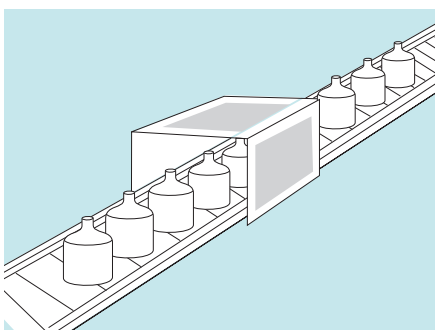
Storage Tanks
Viscosity control and freeze protection for:
Petroleum products
Caustic liquids
Water
Molasses
Most stored liquids



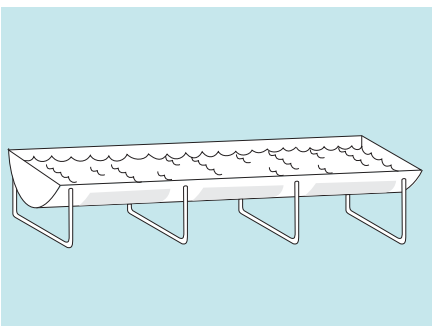
Process Vats and Dip Tanks
Heat raising and maintenance for:
Plating
Degreasing
Rinsing



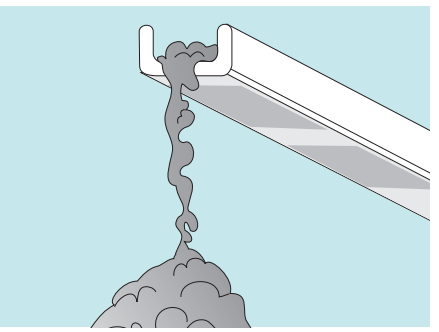
Heat Tracing Systems
Temperature control on special vessels and valves where it is difficult to heat with cable or tape.



Low Temperature Ovens
Process temperature control for:
Curing
Shrinking
Baking



Water and Feed Troughs
Freeze protection for:
Water
Livestock feeds



Conveyors
Freeze protection for:
Coal
Ash
Gravel

APPLICATIONS GUIDE

Silicone Rubber/Fiberglass and Kapton® Insulated Flexible Heaters

Flexible heating elements have a wide range of industrial, commercial, and military applications where reliability, cost effectiveness, minimum cross-section, resistance to deterioration, and basic flexibility are critical.

Silicone Rubber/Fiberglass Heaters (see pages 3 through 4) are the most widely used flexible heaters. Temperature rated from –70°F to +450°F, silicone rubber resists radiation, moisture, compression set, weathering, vacuum, fungus, oils, solvents, and chemical attack. It may be factory bonded or applied with silicone rubber RTV cement or pressure sensitive adhesive systems. Various mechanical fastenings are also available.

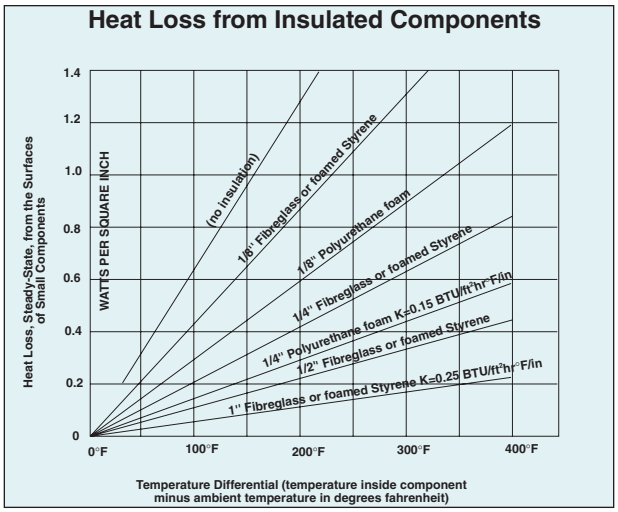
Kapton/FEP Film Insulation (see pages 5 to 6) is ideal for very precise heating requirements such as satellites and aerospace equipment. Kapton, used from –328°F to +392°F, is self-extinguishing, has double the tensile strength of fiberglass reinforced silicone rubber, and is not affected by common solvents and fluids. Kapton is almost 50% lighter than silicone rubber insulation and provides a 0.010" maximum cross-section.

Temperature Control: In the majority of applications for silicone rubber and Kapton insulated heaters, some form of temperature control must be used. See Section P for temperature controls. In some applications, electromechanical thermostats or other types of temperature control may be used. (See section P.)

Custom Engineered Heaters: Flexible heaters can be custom made to meet your requirements for size, voltage and wattage. Built-in thermostats can also be provided on request. For more information, contact our engineering department.

The following information may be helpful in determining precise heater requirements. To determine wattage requirement see Section Z.

Heat Loss from Insulated Components

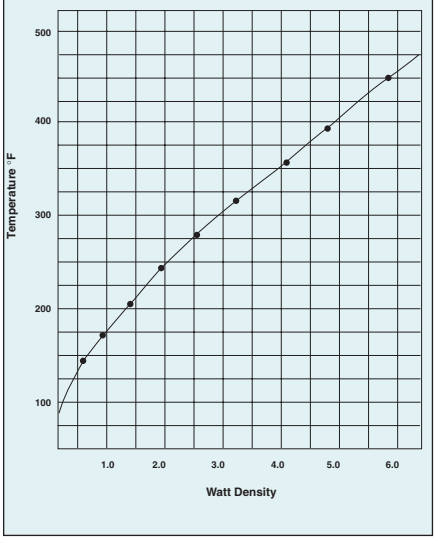


Specific Heats And Densities Of Common Heat Sink Materials

Comparison Of Materials		
Material	**Specific Heat***	**Density (lbs/cu in)**
Aluminum & Its Alloys	0.23	0.1018
Stainless Steels	0.12	0.2895
Carbon Steels	0.11	0.2827
Copper Alloys	0.10	0.3231
Nickel & Its Alloys	0.10	0.3340
Zinc & Its Alloys	0.10	0.2589

*Btu/lb°F for cal/gm°C

Fibreglass Insulated Heater



The temperature shown is the internal metallic element temperature. This would be the hottest point of the heater. The test heater was suspended horizontally in still air at a 70°F ambient temperature.

Watt densities of up to 35 watts/in² are possible when heaters are bonded to a heat sink and controlled with a thermostat or electronic control.

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• Temperature

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• Flow and Level

Air Velocity Indicators, Doppler Flowmeters, Level Measurement, Magnetic Flowmeters, Mass Flowmeters, Pitot Tubes, Pumps, Rotameters, Turbine and Paddle Wheel Flowmeters, Ultrasonic Flowmeters, Valves, Variable Area Flowmeters, Vortex Shedding Flowmeters

• pH and Conductivity

Conductivity Instrumentation, Dissolved Oxygen Instrumentation, Environmental Instrumentation, pH Electrodes and Instruments, Water and Soil Analysis Instrumentation

• Data Acquisition

Auto-Dialers and Alarm Monitoring Systems, Communication Products and Converters, Data Acquisition and Analysis Software, Data Loggers Plug-in Cards, Signal Conditioners, USB, RS232, RS485 and Parallel Port Data Acquisition Systems, Wireless Transmitters and Receivers

• Pressure, Strain and Force

Displacement Transducers, Dynamic Measurement Force Sensors, Instrumentation for Pressure and Strain Measurements, Load Cells, Pressure Gauges, Pressure Reference Section, Pressure Switches, Pressure Transducers, Proximity Transducers, Regulators, Strain Gages, Torque Transducers, Valves

• Heaters

Band Heaters, Cartridge Heaters, Circulation Heaters, Comfort Heaters, Controllers, Meters and Switching Devices, Flexible Heaters, General Test and Measurement Instruments, Heater Hook-up Wire, Heating Cable Systems, Immersion Heaters, Process Air and Duct, Heaters, Radiant Heaters, Strip Heaters, Tubular Heaters

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