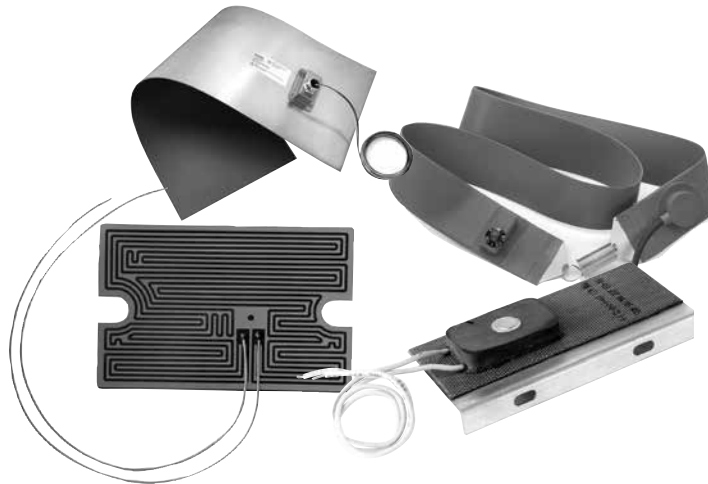


# Flexible Heater Products

## Overview

- Flexible Heaters, Insulation Blankets, Insulation Covers
- Two Different Element Types: Wire Wound or Etched Foil
- Silicone Rubber Standard and Stock Products
- Kapton® Heaters
- Drum Heaters
- Tank Heaters
- Enclosure and General Purpose Air Heaters
- Flexible and Molded Thermal Insulation Products
- Up to 600 Volt
- Extensive Stock Program



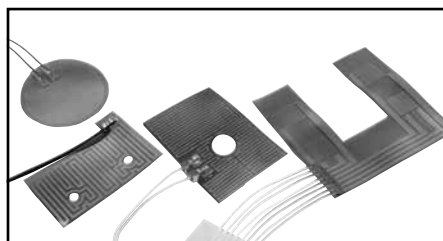
### Description

Flexible Heaters and Thermal Insulation Products are flexible in design and application to fit your specific needs. Chromalox provides dedicated engineering support to customize our Flexible heaters per your requirements. Most size, shape or contour can be used to apply direct and efficient heat without sacrificing dependability.

Various insulating materials are available to suit your application environment. Temperature controlling devices can be molded directly to the elements to provide precise system operation. Power requirements can be minimized and heat-up time optimized by applying heat directly to the part. Cool-down time is shortened and distributed wattages or multiple heater circuit designs are possible with Chromalox flexible heating elements.

### Features

- Flexible Heaters can be made to meet electrical and contour specifications.
- Holes and Slots can be incorporated for positioning on complex surfaces,
- Fast heat-up and cooling with accurate temperature control is possible.
- Wide choice of electrical terminations including solderless connectors, terminals, stranded wire leads, cords and plugs.



- Thin profile depending on choice of construction and insulation barrier.
- Distributed wattage multiple circuits and designs are available.
- Complete system development available which includes heater, sensor and temperature controller.

### Applications

Flexible/Molded Products are suited for application environments in a wide-range of industries:

- Medical
- Semiconductor
- Power Systems/Motors
- Communications
- Food Service
- Laminating/Forming
- Chromatography
- Printing/Copying
- Vending
- Transportation & Aerospace
- Manufacturing
- Military
- Tank/Vessel Heating

# Flexible Heaters

## Technical & Application Data

### Construction

**Type SL Silicone Rubber** heating elements are wire or etched foil heating circuits positioned between plies of Silicone Rubber insulating material which provides flexibility and strength. They are capable of flexing and will conform to contoured surfaces. They can also be pre-formed to complex shapes and can be supplied with distributed wattages and multiple heating circuits.

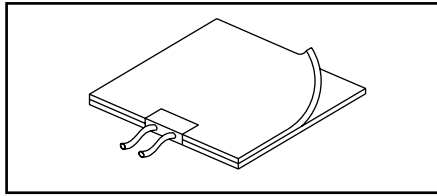
**Type IBG** insulation blankets and insulation covers provide prefabricated removable insulation for your systems. Blankets are made of 1" thick Fiberglas® insulation encased between cured silicone rubber Fiberglas® cloth. Insulation covers are made by attaching either silicone or neoprene foam rubber to a made-to-specification aluminum shell. Foam insulation is available in thicknesses of 1/8" to 1" thick.

### Mounting Methods

Chromalox provides the best and most economical mounting method for your application. Working with your Chromalox Representative to specially design your Flexible Heater product will ensure long life, ease of use, and the lowest cost possible for your heated solution.

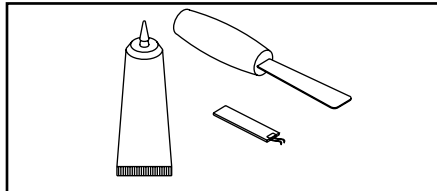
**Pressure Sensitive Adhesive (PSA)** — Silicone, Silicone/Acrylic, or Acrylic Pressure Sensitive Adhesive tape can be factory bonded to your heating element to provide a strong bond to any clean, smooth surface. Chromalox uses a specially manufactured silicone based PSA that allows for our silicone rubber heaters to be even mounted on curved surfaces. Simply peel away the protective backing and roll the heaters into place.

### Pressure Sensitive Adhesive (PSA)



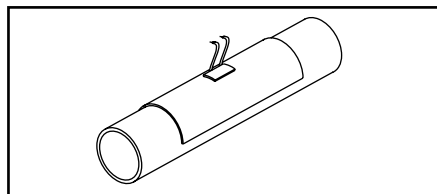
**Field Applied RTV Adhesives** — Room temperature vulcanizing (RTV) adhesives can be used to mount heaters up to 5 W/In<sup>2</sup>. Your local Dow Corning or GE RTV representative can recommend different adhesives based on your application.

### Field Applied RTV Adhesives



**Factory Vulcanized** — Chromalox can factory vulcanize your Silicone Rubber heating element directly onto your part. This provides the greatest bond strength and best heat transfer capability of all mounting methods. Chromalox can either vulcanize to your part or manufacture the part in-house; providing you with unsurpassed value-added work. In some cases, special tooling may be required.

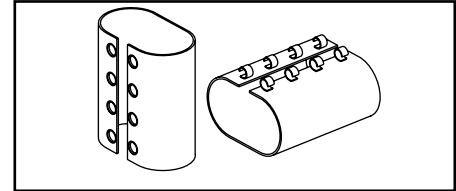
### Factory Vulcanized



**Eyelets, Mounting Bars and Hooks** can be attached or bonded into the heaters to allow for easy lacing of the heaters to the work.

Mounting bars provide the greatest strength and longevity because they are thin strips of aluminum vulcanized between layers of rubber insulation.

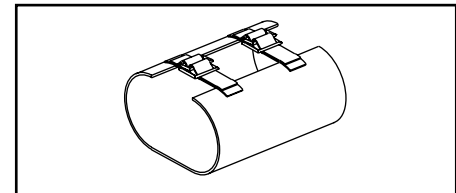
### Eyelets, Mounting Bars & Hooks



**Silicone or Nylon Straps** can be used with D-Rings to provide a simple method of mounting; just slip the straps through and cinch tight. The straps are vulcanized directly to the heaters to provide durability and strength for repeated attachments.

**Velcro®** can be used for lightweight and low temperature heater applications and on insulation blankets. The Velcro® is generally sewn onto silicone rubber straps to provide greater strength and durability.

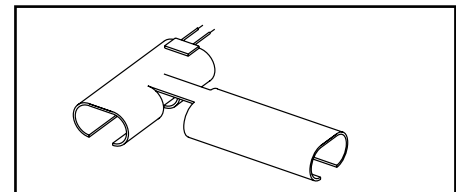
### Straps



**Springs or Spring Clasps** can be used for quick on/off attachment of the heaters. Mounting bars or plates are vulcanized into the heaters for greater strength and serviceability.

**Note** — The exact circumference of the part to be heated is required when using springs or spring clasps.

### Pre-formed Clasps



**Preforming** — Flexible heaters can be pre-formed to exactly fit your part. **Note** — Special tooling may be required to preform the heaters to meet your specifications.

**Insulation Covers** can be strapped into place or fitted with springs or spring clasps.

# Flexible Heaters

## Technical & Application Data *(cont'd.)*

### Temperature Controls

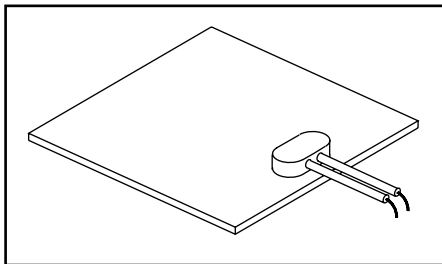
Chromalox provides a wide range of thermostats, thermocouples, RTDs, thermal fuses and thermistors for controlling your heated system. All can be mounted to the heater or be free standing; sensing either heater surface, air, or system surface temperature. Sensors can be used in conjunction with one another to provide controlling temperature and overtemperature protection.

**Preset Thermostats** — Bi-metal thermostats can be molded into the heating elements for part surface, heater surface or air temperature sensing. The thermostats will be mounted in-line with the elements or have their own termination based on the amperage requirements of the heaters.

Thermostats are available in 10°F Increments up to 300°F 125V/15A, 250V/10A

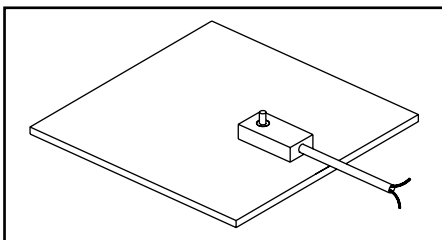
Chromalox maintains a stock of various temperature settings. Check on availability prior to ordering. Non-stock settings may require additional lead-time.

### Preset Thermostats



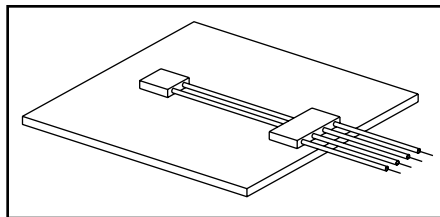
**Adjustable Thermostats** are available in the ranges of 70-140°F, 70-190°F or 70-425°F. They are mounted to the heaters and covered with a durable rubber box. Adjustments can be made with either a factory provided knob or with a screw driver. Other temperature ranges available on request. Thermostats are rated for 1600W maximum.

### Adjustable Thermostats



**Thermocouples, RTDs, Thermal Fuses or Thermistors** can also be molded into the heating elements to sense either heater temperature or surface temperature of your part. Thermal Fuses can be mounted for easy replacement once blown.

### Thermocouples, RTDs, Thermal Fuses or Thermistors

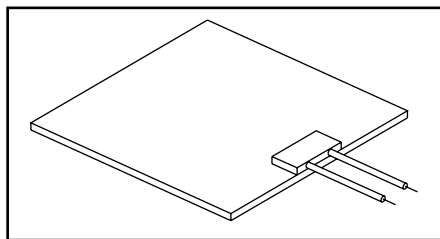


### Termination Styles

Chromalox offers many types of leads and terminal connections for your Flexible Heaters. Internal connections to the elements can be made at any point on the surface of the heater or project from any edge. Internal or mounted strain reliefs are used in all constructions to ensure durability of your flexible product.

**Silicone, Teflon® or Neoprene Insulated Stranded Leads** can be encapsulated in the heaters for direct power connection. Silicone rubber insulated leads for temperatures to 390°F are used as standard for silicone rubber heaters. Lead wires can come with a choice of terminals attached.

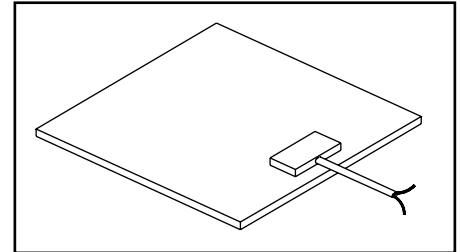
### Lead Wires



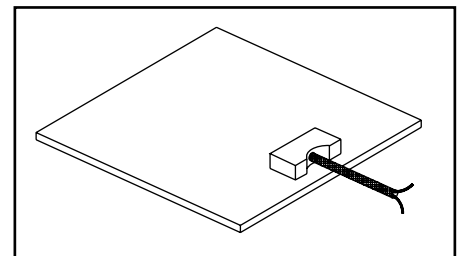
**Silicone, Fiberglass® Sleeving or Armor Braiding** can be molded over the lead-wires to provide greater abrasion resistance.

**Power Cords** can be vulcanized into the heat-

### Silicone Sleeving

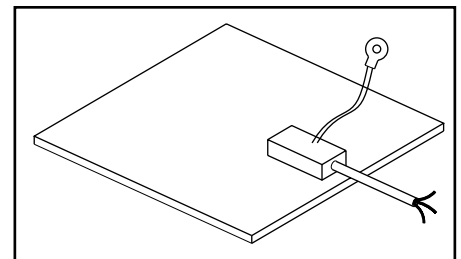


### Armor Braid Sleeving



ers either with or without plugs. Internal and external strain reliefs are used to ensure cord attachment strength and durability of the element. Ground wires, if used, can be mounted to internal grounding screens, mounting plates or foil backing. All "flying" ground wires are a minimum of 6" in length and may have a ring terminal attached for easy field grounding to your part.

### Power Cords



# Flexible Heaters

## Selection Guidelines

### Capabilities

Chromalox is capable of designing and manufacturing complete heated systems to meet your application. Chromalox has a reputation for going beyond the basic heater construction to give you value-added technical service.

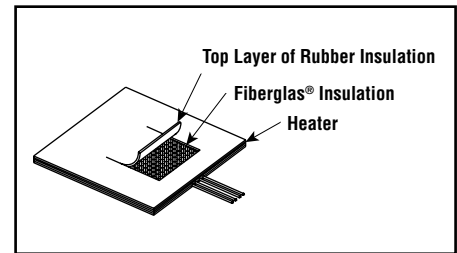
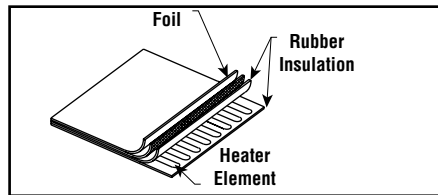
**Grounding** to meet evolving NEC, Military standards or your application requirements can be easily managed with Chromalox Flexible Heaters. Internal grounding screens, surface-piercing mounting plates, or foil backing can be incorporated in the heater construction to ensure system grounding.

**Foil Backing** is also used to improve heat transfer. More heat is drawn and radiated by binding foil to an outer layer of rubber.

**Insulation** of the heater element can be achieved by factory bonding silicone or foam rubber to the element or by encasing Fiberglas<sup>®</sup> insulation as the outer layer of the heating element. Encasing Fiberglas<sup>®</sup> is not recommended for outdoor application since “breathing holes” are used that may allow for moisture absorption.

### Encased Insulation

### Foil Backing



### Flexible & Molded Heaters — Selection Guidelines

Max. Operation Temperature	Application Environment	Product Type	Model	Application	Page
392°F	Most Industrial Indoor/Outdoor	Silicone Rubber Insulated	SL SL-N SL-B	Standard General Purpose Enclosure	A-137 A-138 A-139
392°F	Most Indoor/Outdoor	Kapton/Polyimide	KPH KPM	Equipment/Devices/Instrumentation	A-141
392°F	Most Industrial Indoor/Outdoor	Silicon Rubber Insulated	SLTH SLDH	Tank Drum	A-142 A-144
450°F	Most Industrial Indoor/Outdoor	Fiberglas Woven Silicone Rubber Encased	PHD & PHDT	Heavy Duty Drum	A-146
450°F	Most Industrial Indoor/Outdoor	Silicone Rubber Insulation Blankets Silicone Foam Insulation Coats	IBG Series	Blanket Drum	A-147



FLEXIBLE

# SL Silicone Rubber Insulated Flexible Heater



- SL-N General Purpose Heaters
- SL-B Enclosure Heaters
- Flexible in Design and Application
- UL and CSA Recognized Components
- Square, Rectangular, Round and Custom Shapes
  - Max. size of a single piece: 36" Wide x 120" Long
  - Can join sections into longer length
- Up to 600 Volt
- Silicone Rubber Material Temp. Range -80°F to 390°F
- Myriad of Mounting Methods
- Standard Thickness Ranges from 0.030" to 0.060" Except at Lead Pad Which is 0.15" Thick Depending on Design.
- Standard Resistance Tolerance is -10% +5%.

### Description

Chromalox SL Silicone Rubber Insulated Heaters provide the greatest flexibility in meeting your application requirements. Ruggedness, dimensional stability, flexibility, and superior weather survivability are all characteristics of reinforced silicone rubber heaters. The thin profile and direct contact of the heaters provide fast, efficient heat transfer to your part and require less power than traditional heating methods.

### Features

- Standard Heaters are available or made to order to exact electrical and contour specifications.
- Silicone Rubber can operate from -80°F to 392°F
- Silicone Rubber Material is UL Recognized for watt densities of:
  - 5 W/In<sup>2</sup> in open air
  - 10 W/In<sup>2</sup> attached with factory supplied PSA
  - 15 W/In<sup>2</sup> vulcanized to metal part.
- Up to 40 W/In<sup>2</sup> possible with proper temperature control.
- Fast heat-up and cool down.
- Wide choice of electrical termination: Solderless connectors and terminals, stranded lead wires, cords and plugs.
- Distributed wattage requirements can be met by design.

**Note** — With flexible heaters, less wattage is generally needed due to the direct contact of the elements to the part. In most cases of high watt density, you are adding power but

increasing the number of cycles the heater is going to experience. The same heat-up requirements can be met by decreasing wattage and increasing actual operation time. In addition, by decreasing on-off cycles, you will be lengthening the life of your element.

### Ordering Information

Please refer to the matrix provided on the Flexible Heater Ordering Guidelines page which follows.

### Options

- For Mounting Methods, Temperature Control and Termination Options. Consult the Flexible Heaters section.
- Grounding of the heating element can be easily achieved internally to the element or externally to your equipment. A wire-mesh screen can be vulcanized into the heater to provide a ground plane. Mounting plates, foil backing or flying ground wires are several options available for external grounding.
- Three methods of integral insulation can be provided. The most durable and one of greatest thermal insulation is to vulcanize a layer of silicone foam to the back of the heater. Silicone foam is available in thicknesses of 1/8, 1/4 or 1/2". Finally, Fiberglas<sup>®</sup> insulation can be encased in silicone rubber and serve as the outer two layers of the heating element. This method is not recommended for outdoor use since construction methods allow for moisture to permeate the insulation.

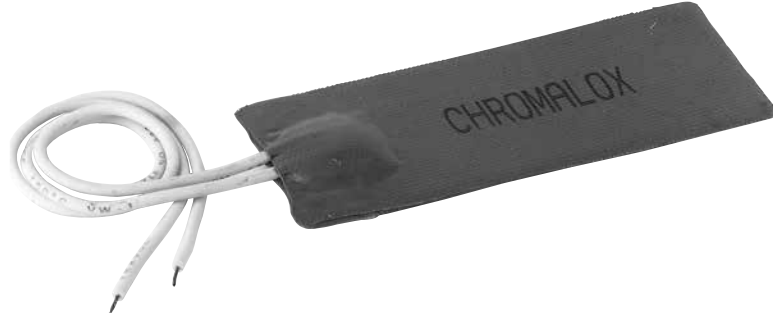


# SL-N

## Silicone Rubber Insulated General Purpose Heater



- Standard Pre-Designed Sizes and Ratings
- Most Models Stocked
- Square, Rectangular and Round Shapes
- Chemical and Moisture Resistant
- 10" Leads
- Flexible
- Standard 1" Square to 12" W x 48" L in 120 Volts
- Custom Designed Models Available



### Description

Standard Chromalox Silicone Rubber heaters are pre-designed and available in a wide array of sizes and ratings to meet customer needs. Some models are stocked and can be shipped within 24 hours from receipt of your order. All standard models incorporate 10" silicone insulated stranded lead wire. Stocked items can be modified to include pressure sensitive adhesive but, will require additional lead time.

- Standard Thickness Ranges from 0.030" to 0.060" except at Lead Pad which is 0.15" Thick Depending on Design.
- Standard Resistance Tolerance is +10%, -5%.
- Silicon Rubber Material Temperature Range -80°F to +390°F

### Specifications and Ordering Information

Watts	Volts	DIM (In.)		Model	Stock	PCN
		Width	Length			
25	120	1	5	SL-N-1-5-O-10-120V-25W	S	121515
50	120	1	10	SL-N-1-10-O-10-120V-50W	S	121523
100	120	1	20	SL-N-1-20-O-10-120V-100W	S	121540
150	120	1	30	SL-N-1-30-O-10-120V-150W	S	121566
200	120	1	40	SL-N-1-40-O-10-120V-200W	S	121582
400	120	1	80	SL-N-1-80-O-10-120V-400W	S	121590
20	120	2	2	SL-N-2-2-O-10-120V-20W	S	121611
50	120	2	5	SL-N-2-5-O-10-120V-50W	S	121620
100	120	2	10	SL-N-2-10-O-10-120V-100W	S	121638
150	120	2	15	SL-N-2-15-O-10-120V-150W	S	121646
200	120	2	20	SL-N-2-20-O-10-120V-200W	S	121654
200	240	2	20	SL-N-2-20-O-10-240V-200W	S	121662
75	120	3	5	SL-N-3-5-O-10-120V-75W	S	121726
150	120	3	10	SL-N-3-10-O-10-120V-150W	S	121734
225	120	3	15	SL-N-3-15-O-10-120V-225W	S	121742
300	120	3	20	SL-N-3-20-O-10-120V-300W	S	121769
300	240	3	20	SL-N-3-20-O-10-240V-300W	S	121777
375	120	3	25	SL-N-3-25-O-10-120V-375W	S	121785
600	120	3	40	SL-N-3-40-O-10-120V-600W	S	121814
200	120	4	10	SL-N-4-10-O-10-120V-200W	S	121822
250	120	5	10	SL-N-5-10-O-10-120V-250W	S	121849
375	120	5	15	SL-N-5-15-O-10-120V-375W	S	121857
500	120	5	20	SL-N-5-20-O-10-120V-500W	S	121865
450	120	6	15	SL-N-6-15-O-10-120V-450W	S	121873
600	120	6	20	SL-N-6-20-O-10-120V-600W	S	121881

**Stock Status:** S = stock NS = non-stock  
**To Order**—Specify model, PCN and quantity.

**Note** — All supplied with standard 10" leads.

# SL-B

## Silicone Rubber Insulated Enclosure & Air Heater

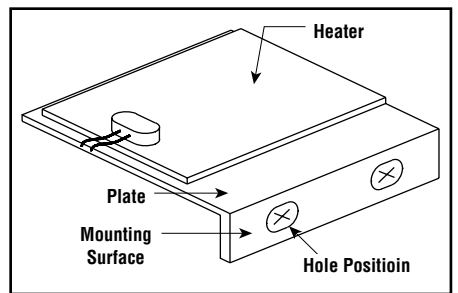


**FLEXIBLE**

- All Models Stocked
- 25, 50, 100 and 200 Watts
- 120 Volts
- Vulcanized to Mounting Plate for Easy Installation
- Custom Design and Thermostats Available
- Air Temperature Sensing Thermostats (40° F close, 55° F open) available

### Features

- 10" Lead Length is standard
- 25, 50, 100 and 200 watt heaters available with or without integral air temperature sensing thermostat.
- All stock heaters operate on 120V. Heaters requiring other voltages up to 600V are available as non-stock items however special thermostats will be required.
- Easy installation. Consult Chromalox with Bracket and Mounting Slots
- Integral or remote air temperature sensing thermostats ensure heater operation in condensation forming and other air heating application conditions.



### Installation

The SL-B enclosure heaters are factory vulcanized to an aluminum mounting plate that allows for easy installation. The mounting surface is perpendicular to the heater and has two tapped mounting Holes. If using the heater with the integral thermostat, vertical mounting with the sensor towards the base of the enclosure is recommended.

### Description

Type SL-B Silicone Rubber Insulated Enclosure Heaters and General Purpose Air Heaters are used for freeze protection and condensate protection in electrical enclosures. They are also installed in equipment to keep mechanical components functioning in applications such as ATM machines and automatic doors. Shipment can be made within 24 hours from receipt of order.

### Applications

Freeze or condensation protection in enclosures containing electronic equipment, such as: Temperature Control Panels, Control Valve Housings, ATMs, Traffic Signal Boxes. Also, General Purpose Air Heating applications.

### Specifications

Watts	Dimensions (In.)		
	Heated Surface	Plate Size	Mounting Surface
25	2 x 5	2.5 x 5	0.5 x 5
50	2 x 5	2.5 x 5	0.5 x 5
100	2 x 10	2.5 x 10	0.5 x 10
200	4 x 10	4.5 x 10	0.5 x 10

Model	Volts	Watts	PCN
<b>Enclosure w/In-line Thermostat, (40°F)</b>			
SL-B-2-5-55P	120	25	122622
SL-B-2-5-55P	120	50	122606
SL-B-2-10-55P	120	100	122585
SL-B-4-10-55P	120	200	123297
<b>Enclosure without Thermostat</b>			
SL-B-2-5-O	120	25	122614
SL-B-2-5-O	120	50	122593
SL-B-2-10-O	120	100	122577
SL-B-4-10-O	120	200	123300
<b>Field Installable Thermostat Kit, (40°F)</b>			
T-N-55P-Kit	—	—	122657

### Determining Minimum Recommended Wattage

°F Above Ambient	Total Surface Area (F <sup>2</sup> )														
	2	3	4	5	6	7.5	9	10	15	20	25	30	40	50	
<b>Uninsulated Enclosures</b>															
20	30	40	55	70	80	100	120	135	205	270	335	405	540	670	
40	55	80	110	135	160	200	245	270	405	540	670	805	1,075	1,340	
60	90	120	160	205	245	300	365	405	605	805	1,005	1,210	1,610	2,010	
80	110	160	215	270	325	400	485	540	805	1,075	1,340	1,610	2,145	2,680	
100	135	200	270	335	405	500	605	670	1,005	1,340	1,675	2,010	2,680	3,350	
120	165	240	320	405	485	600	725	805	1,210	1,610	2,010	2,415	3,220	4,020	
140	190	280	375	470	565	700	845	940	1,410	1,880	2,345	2,815	3,775	4,690	
<b>Insulated Enclosures</b>															
20	10	10	15	20	20	25	30	35	50	65	80	100	130	160	
40	15	20	30	35	40	50	60	65	100	130	160	195	260	320	
60	20	30	55	50	60	75	90	100	145	195	240	290	385	480	
80	30	40	55	65	80	100	115	130	195	260	320	320	515	640	
100	35	50	65	80	100	125	145	160	240	320	400	400	640	800	
120	40	60	80	100	115	150	175	195	290	385	480	480	770	960	
140	45	70	90	115	135	175	205	225	340	450	560	560	900	1,120	

#### Notes -

- 1) Unit conversions: A. °F = (°C x 1.8) + 32 B. Ft<sup>2</sup> = 0.092 x m<sup>2</sup>
- 2) Contact Chromalox for enclosures with surface areas larger than 50ft<sup>2</sup>.
- 3) In most cases multiple heaters should be used in applications requiring wattages greater than 500 watts. This is especially true for heaters with in-line thermostats as they can be affected by thermal gradient. Contact Chromalox for more information.

# Flexible Heaters

## Ordering Guidelines

### Ordering Information

**To Order —**  
Complete the Model Number using the Matrix provided.

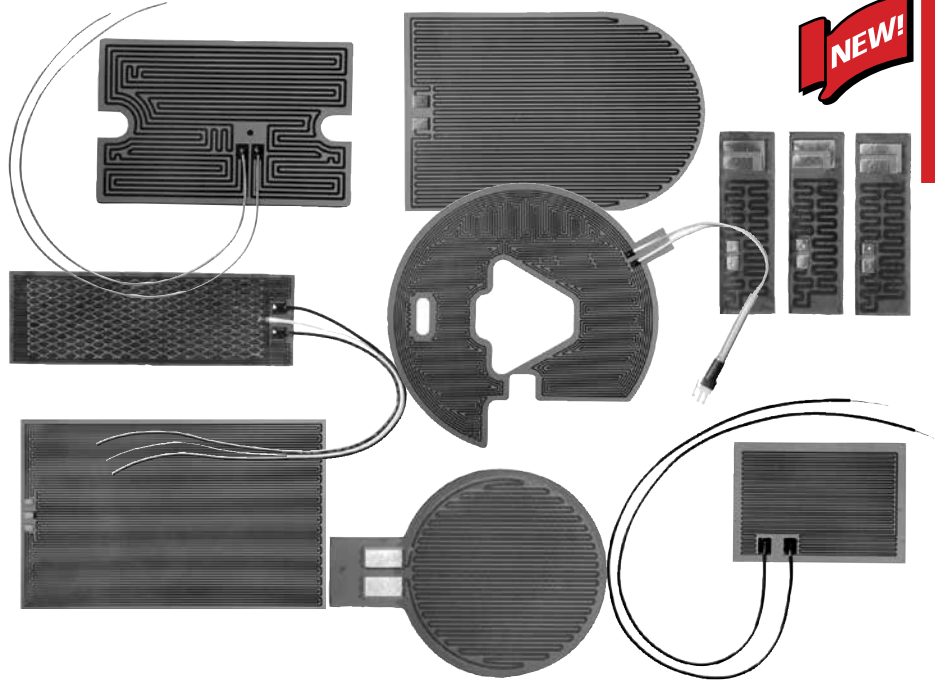
Model	Flexible Heating Elements							
SL-N	General Purpose Heater							
SL-B	Enclosure and Air Heater							
	<b>Code</b>	<b>Special Mounting Features</b>						
	<b>N</b>	None	<b>V</b>	Velcro®				
	<b>A</b>	Adhesive (PSA)	<b>S</b>	Spring				
	<b>B</b>	Vulcanized	<b>SC</b>	Spring Clasp				
	<b>F</b>	Foil Backing	<b>H</b>	Hooks				
	<b>I</b>	Insulation	<b>C</b>	Preformed				
	<b>E</b>	Eyelets/Mounting Holes						
	<b>Code</b>	<b>Physical Dimensions (In.)<sup>1</sup></b>						
	<b>xx.xx</b>	Smallest Dimensions (for circular shaped heaters use designator "xx" only)						
	<b>xx.xx</b>	Largest Dimensions (for circular shaped heaters, add "OD" to the indicated outside diameter, i.e., 8.25OD)						
	<b>Code</b>	<b>Control Options</b>						
	<b>O</b>	None						
	<b>P</b>	Preset Thermostat specify temperature (300°F max.)						
	<b>A</b>	Adjustable Thermostat; range 70-140°F, 70-190°F or 70-425°F						
	<b>J</b>	Type J Thermocouple						
	<b>K</b>	Type K Thermocouple						
	<b>R</b>	RTD: specify rating						
	<b>TF</b>	Thermal Fuse: specify high limit						
	<b>T</b>	Thermistor: specify rating						
	<b>Code</b>	<b>Lead Length (In.): 10" Standard</b>						
	<b>xx</b>	Power Cord Length (Ft.): 6' Standard						
	<b>Code</b>	<b>Lead Type<sup>4</sup></b>						
	<b>T</b>	Silicone Rubber Insulated Leads						
	<b>CGM</b>	Teflon® Insulated Leads						
	<b>CPGM</b>	Power Cord w/o Plug, w/ Mesh Grid						
	<b>CG</b>	Power Cord w/ Plug, w/ Mesh Grid						
	<b>CPG</b>	Power Cord with Integral Grounding, w/o Plug						
	<b>CPG</b>	Power Cord with Integral Grounding, w/ Plug						
	<b>Code</b>	<b>Electrical Specifications</b>						
	<b>V</b>	- Voltage						
	<b>W</b>	- Wattage						
		- Single Phase is Standard (use "3P" for three phase)						
SL-	<b>N</b>	<b>5</b>	<b>25</b>	<b>O</b>	<b>10</b>	<b>120V</b>	<b>100W</b>	<b>Typical Model Number</b>
SL-	<b>AI</b>	<b>25</b>	<b>25</b>	<b>40P/120P</b>	<b>6CPG</b>	<b>480V</b>	<b>400W</b>	<b>Typical Model Number</b>

1. Cutouts, notches, etc., must be indicated with accompanying detail drawings to show angle of curvature.
2. If adding abrasion protection, add designator. "F" for silicone rubber coated Fiberglas® Sleeving or "A" for Armor Braiding.
3. Consult your Local Chromalox Sales office for recommended grounding methods.
4. Custom power cords available. Consult factory.



# Kapton® Heaters

- Etched Foil Elements Encapsulated on Both Sides Between Adhesive (Fep or Acrylic) and a Polyimide Film Insulation.
- Voltage: 24 V, 28 V, 115 V, 240 V Standard.
- Watt Density: 2.5 W/in<sup>2</sup> (Slow Warming), 5 W/in<sup>2</sup> (General Purpose Heating), 10W/in<sup>2</sup> (Quick Warming and High Temperature Range).
- -328°F (-200°C) to 392°F (200°C).
- Bend Radius: 0.032"(0.8 mm) Minimum.
- Resistance Tolerances: ±10%
- Overall Thickness: General 0.007 in. (0.18 mm) (except at lead exit) Depending on Stack/ Configuration.
- Dielectric Strength: 1000 Vac
- Power Design Features: Distributed Wattage, Dual Voltage, Zoning, 3-Phase
- Sizes Up to 12" x 18" (300 mm x 450 mm)



### Description

Kapton®, a polyimide material that has high dielectric strength, allowing for a very thin heater construction. Chromalox uses Kapton® with two types of bonding systems; FEP Teflon® Thermo-flow polymer 392°F (200°C), and Acrylic Thermo-flow 250°F (121°C). Kapton® heaters have superior dimensional stability, light weight, and flexibility.

### Applications

- Medical:**
- Life support
  - Sterilization
  - Blood Analyzer
  - Sleep Apnea, Dialysis
- Analytical Instruments:**
- Diagnostic
  - DNA
  - Tissue processors
  - Chromatographs
- Semiconductor:**
- Wafer processing baths
  - Chucks
- Aerospace, Avionics:**
- Instrumentation
  - Devices
- Electronics:**
- Photocopiers
  - Flat panel displays
  - Semicon vacuum
  - Computers

### Advantages

- Thin, lightweight, low out gassing
- UL: Optional
- Bend Radius: 0.032" (0.8 mm) minimum
- Resistance to most solvents and acids and radiation to 10<sup>6</sup> rads
- Ability to place heat where it is needed, even controlled heat profiles
- Thin construction means fast thermal transfers which equates to quick heat up
- Very small sizes

### Ordering Information

Please contact your Chromalox representative for a quotations. In order to better assist you, please be prepared with the following information:

- Length/Width or Diameter
- Wattage, Voltage
- Lead – length and position
- Operating Temperature
- Sensors
- Special Features (e.g., cutout)

# SLTH Tank Heater

- 120V - 480V
- Maximum 15A
- Silicone Laminate with Stainless Shroud
- Widths: 6", 12" and 24" Other Widths, Consult Factory
- Lengths: 12"- 96"
- UL & CSA



### Description

The Chromalox silicone laminate tank heater is constructed of high temperature resistance wire laminated between two layers of fiber-glass reinforced silicone rubber. It is protected by a thin, flexible, water and chemical resistant stainless steel sheath. It is generally used for heating tanks and vessels. The pad heater is available in two watt densities. The 0.7 watts per square inch is for use on plastic tanks (polypropylene, polyethylene and other heat sensitive vessels). The 2.0 watts per square inch is for use on metal vessels. These heating pads may be used for freeze protection or process temperature control. An optional mounting kit is available for installation.

### Advantages

These can be easily installed in areas that do not require even heat concentration on the vessel. Installation is much quicker than using standard heating cable. They also allow for a greater concentration of heat in a smaller area. These are available in custom sizes up to 24" X 96" for both metal and plastic vessels.

### Applications

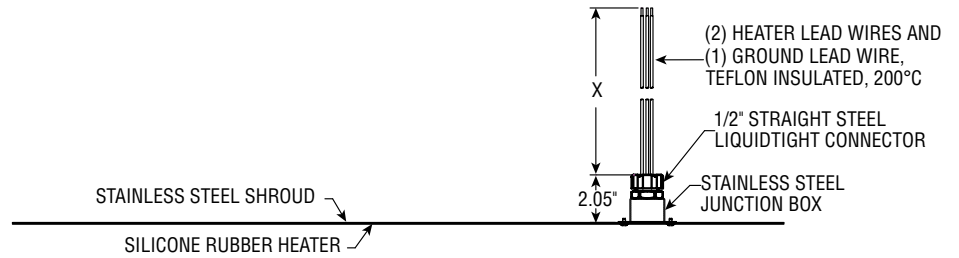
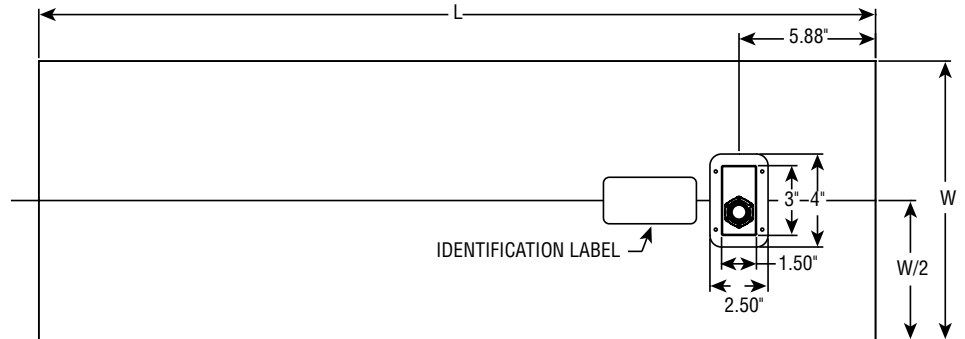
- Chemical Tanks
- Any metal or plastic vessel
- Freeze protection
- Process temperature control

Watts	Volts	Width	Length	Model	Stock	PCN	Wt. (Lbs.)
<b>Metal Vessels</b>							
575	120	12" (305mm)	24" (610mm)	SLTHM11224072	NS	123318	2
575	240	12" (305mm)	24" (610mm)	SLTHM21224072	NS	123326	2
850	120	12" (305mm)	36" (915mm)	SLTHM11236072	NS	123334	3
850	240	12" (305mm)	36" (915mm)	SLTHM21236072	NS	123342	3
1725	240	24" (610mm)	36" (915mm)	SLTHM22436072	NS	123350	4
<b>Plastic Vessels</b>							
200	120	12" (305mm)	24" (610mm)	SLTHP11224072	NS	123369	2
200	240	12" (305mm)	24" (610mm)	SLTHP21224072	NS	123377	2
300	120	12" (305mm)	36" (915mm)	SLTHP11236072	NS	123385	3
300	240	12" (305mm)	36" (915mm)	SLTHP21236072	NS	123393	3
600	240	24" (610mm)	36" (915mm)	SLTHP22436072	NS	123406	4
Mounting Kit					S	123414	2

# SLTH

## Tank Heater

*(cont'd.)*



### Ordering Information

**To Order —**  
Complete the Model Number using the Matrix provided.

Model	Product Description					
SLTH	Silicone Rubber Tank Heater					
	<b>CODE</b>	<b>WSI</b>				
	M	2.0				
	P	0.7				
	<b>CODE</b>	<b>(Lead Length)</b>				
	XXX					
	<b>CODE</b>	<b>(Width) (Available widths: 6", 12", 24")</b>				
	XXX					
	<b>CODE</b>	<b>(length) (Lengths available from 12" to 96")</b>				
	XXX					
		<b>CODE</b>	<b>VOLTAGE</b>			
		1	120V			
		2	240V			
		4	480V			
SLTH	M-	072	12	24	2	Typical Model Number

# SLDH

## Silicone Rubber Insulated Drum Heater



- **Stock Products**
- **For 5, 15, 30 and 55 Gallon Metal and Non-Metal Drums**
- **Adjustable Thermostats**
- **Chemical and Moisture Resistant**
- **Rugged and Flexible**
- **Easy to Store**
- **Internally Grounded Standard**



### Description

Silicone Rubber Insulated Drum Heaters are constructed of silicone rubber reinforced Fiberglas® cloth laminated around resistance wire to provide flexible, moisture and chemical resistant heat. Drum heaters can withstand flexing without fear of premature failure. Stock drum heaters are shipped within 24 hours of receipt of your order.

### Features

- Low watt density electrical resistance heat.
- All stock 120V products come with a 6 foot power cord and three-prong plug. 240V heaters do not include a plug.
- Optional built-in adjustable thermostat, 70 - 425°F for steel drums or 70 - 140°F for plastic drums.
- All models come with a heavy-duty spring assembly for attachment to your drum.
- Complete, ready to install and use as received.
- All grounded models feature a wire-mesh screen for ground-fault protection. Should the heater surface be punctured or damaged in any way, the grounding grid will provide electrical protection.
- Girth extension straps are available from stock so you can use Chromalox heavy duty SLDH on non-standard size drums. They can also be used to adapt stock heaters to larger drums or other cylindrical containers similar in size. They will permit extending the length of the heater to fit sizes 1/2 - 10" larger in circumference. One strap is required per heater.

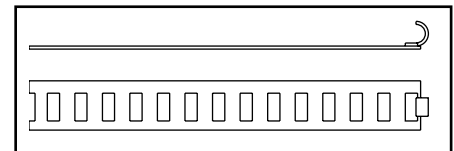
### Applications

- Freeze Protection
- Melting of Low Melting Point Solids such as Paraffin, Resins and Chocolate
- Viscosity Control of Fluids such as Paint, Syrups and Honey
- Maintenance of Materials for Roofing, Chimney and Vent Pipe Work

### Installation

The SLDH heats the contents of the drum by convection. Heating will occur from the point where the heater is installed to the top of the drum. If the entire drum is to be heated, the SLDH should be installed as near to the bottom of the drum as possible. If only part of the material is to be heated, the drum heater should be installed around the center or top section of the drum. This will provide a faster heat-up and save energy. However, care must be given to ensure that the material level in the drum never falls below the location of the heater.

### Girth Extension Straps



### Note:

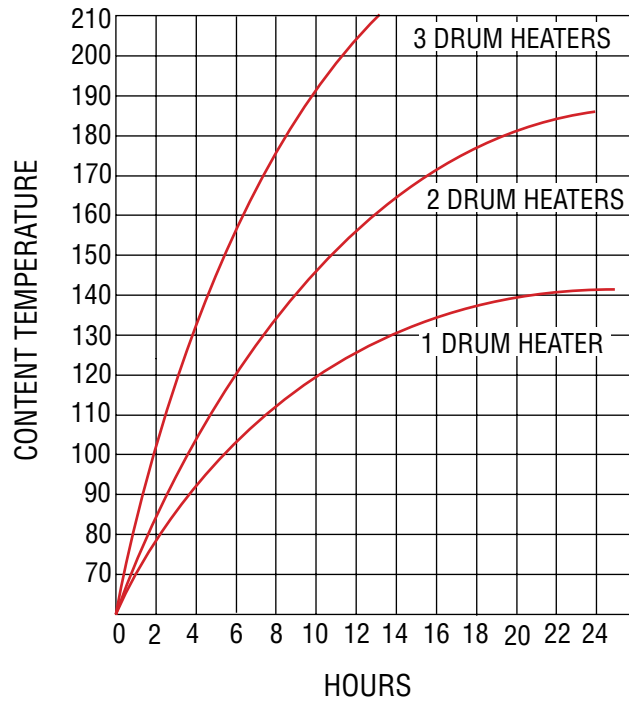
Not for heating flammable materials or for use in hazardous areas.

# SLDH

## Silicone Rubber Insulated Drum Heater

*(cont'd.)*

*1000 watt, 55 Gallon Drum Heater Performance  
(Covered Drum Filled with Water at 70°F ambient)*



### Drum Capacity Cross Reference

Drum Size	Diameter (Inches)	Diameter (Millimeters)	Drum Capacity
55 gal.	22-1/2 (nom.)	570	210 litres
30 gal.	18-1/2 (nom.)	470	115 litres
15 gal.	13-1/2 (nom.)	343	57 litres
5 gal.	11-1/2 (nom.)	290	20 litres

When a single heater is used, place the heater at the bottom of the drum to minimize stratification.

### Specifications and Ordering Information

Drum Size	Drum Type	Adjustable Thermostat	Watts	Model Number 120 Volts	PCN	Model Number 240 Volts	PCN	Heater Width (In.)	Stock Status	Weight (Lbs.)
5 Gallon	<b>Metal</b>	70 to 425°F	550	SLDH-05-A-6CPGM-1-55	123123	-	-	4	<b>S</b>	1.4
15 Gallon	<b>Metal</b>	70 to 425°F	500	SLDH-15-A-6CPGM-1-50	123131	SLDH-15-A-6CGM-2-50	123211	3	<b>S</b>	1.412
15 Gallon	<b>Metal</b>	70 to 425°F	700	SLDH-15-A-6CPGM-1-70	123140	-	-	4	<b>S</b>	1.6
30 Gallon	<b>Metal</b>	70 to 425°F	750	SLDH-30-A-6CPGM-1-75	123158	SLDH-30-A-6CGM-2-75	123220	3	<b>S</b>	1.7
30 Gallon	<b>Metal</b>	70 to 425°F	1000	SLDH-30-A-6CPGM-1-100	123166	-	-	4	<b>S</b>	2
55 Gallon	<b>Metal</b>	70 to 425°F	1000	SLDH-55-A-6CPGM-1-100	123174	SLDH-55-A-6CGM-2-100	123238	3	<b>S</b>	1.9
55 Gallon	<b>Metal</b>	70 to 425°F	1200	SLDH-55-A-6CPGM-1-120	123182	SLDH-55-A-6CGM-2-120	123246	4	<b>S</b>	2.3
5 Gallon	<b>Plastic</b>	70 to 140°F	300	SLDHP-05-A-6CPGM-1-30	123190	-	-	9.5	<b>S</b>	3.4
55 Gallon	<b>Plastic</b>	70 to 140°F	750	SLDHP-55-A-6CPGM-1-75	123203	-	-	9.5	<b>S</b>	5.1

**Stock Status:** S = stock NS = non-stock  
**To Order—** Specify model, PCN and quantity.

# PHD & PHDT

## Heavy Duty Fiberglas® Woven Drum Heaters

- 5, 15, 30 and 55 Gallon Metal Drums
- 4" Width
- Operating Temperatures up to 450°F
- Adjustable Thermostat, 50 - 425°F Optional
- 120 or 240 Volt, Single Phase
- 300 - 1,200 Watts
- Moisture Resistant
- Grounded heating element for Safe Operation

### Description

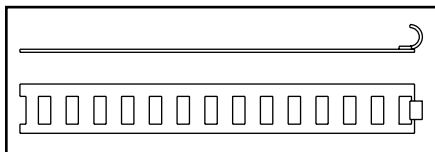
Type PHD Heavy-Duty Fiberglas® Woven Drum Heaters are constructed of Fiberglas® insulated resistance wire woven into a mesh blanket and then encased in layers of silicone rubber. Because of their construction, the Woven Drum Heaters are much stronger and more durable than the standard silicone.

Rubber Drum Heaters are recommended for harsh working environments. All versions use a spring clasp to provide a snug fit around the drums.

### Features

- Low watt density electrical resistance heat.
- All 120V units come with a 6 foot power cord and three prong plug. (No plug is included with 240V heaters.)
- An optional built-in adjustable thermostat, 50 - 425°F, is available as a stock option.
- All models come with springs for attachment to your drum.
- Complete, ready to install and use as received.
- All models feature a grounded heating element for electrical protection.
- Girth extension straps are available from stock to use the heaters on non-standard size drums. They can be used to adapt stock heaters to larger drums or other cylindrical containers similar in size. They will permit extending the length of the heater to fit sizes 1/2 - 10" larger in circumference. One step is required per woven drum heater.

### Girth Extension Straps



### Applications

- Freeze Protection
- Melting of Low Melting Point Solids such as Paraffin, Resins and Chocolate
- Viscosity Control of Fluids such as Paint, Syrups and Honey
- Maintenance of Materials for Roofing, Chimney and Vent Pipe Work

### Installation

The Woven Drum Heaters raise/maintain the temperature of the contents of the drum by convection. Heating will occur from the point where the heater is installed to the top of the drum. If the entire drum is to be heated, the drum heater should be installed as near to the bottom of the drum as possible. If only part of the material is to be heated, the drum heater should be installed around the center or top section of the drum. This will provide a faster heat-up and save energy. However, care must be given to ensure that the material level in the drum never falls below the location of the heater.

### Specifications and Ordering Information

Drum					PHD			PHDT (50 - 425°F Adjustable Thermostat)		
Size	Type	Volts	Watts	Model	PCN	Stock	Model	PCN	Stock	
55 gallon	Metal	120	1200	PHD-55-1-12	123027	S	PHDT-55-1-12	123107	S	
55 gallon	Metal	240	1200	PHD-55-2-12	123035	S	PHDT-55-2-12	123115	S	
30 gallon	Metal	120	1000	PHD-30-1-10	122980	S	PHDT-30-1-10	123060	S	
30 gallon	Metal	240	1000	PHD-30-2-10	122999	S	PHDT-30-2-10	123078	S	
15 gallon	Metal	120	700	PHD-15-1-7	122964	S	PHDT-15-1-7	123043	S	
15 gallon	Metal	240	700	PHD-15-2-7	122972	S	PHDT-15-2-7	123051	S	
5 gallon	Metal	120	550	PHD-5-1-5	123000	S	PHDT-5-1-5	123086	S	
5 gallon	Metal	240	550	PHD-5-2-5	123019	S	PHDT-5-2-5	123094	S	
—	—	—	—	PDES-10 Girth Extension Strap	290132	S	PDES-10 Girth Extension Strap	290132	S	

To Order — Specify model, PCN and quantity.



# IBG

## Flexible Thermal Drum Insulation Blanket

- **Flexible and Easy to Mount**
- **Chemical and Moisture Resistant**
- **Operating Temperatures up to 450°F**
- **Designed for Integrated Use with Flexible Drum Heaters**

### Description

Insulating blankets are energy saving blankets that increase heating efficiency and reduce operating costs. Bulk Fiberglas® insulation is covered with silicone glass cloth. Easy installation is provided with Velcro® fastening device. All blankets are moisture resistant, but not waterproof.

Type IBG are stock insulation blankets designed to use in conjunction with Chromalox stock drum heaters. They are designed to only cover the drum heater; providing thermal protection from the back, heated-surface of the drum heater. Full coverage thermal insulation blankets are available as made-to-order items per customer specifications. All stock products are shipped within 24 hours.

### Applications

- Thermal Protection from Heated Surfaces
- Thermal Insulation to Minimize Heat Loss
- Maximize Effectiveness of Heater

### Ordering Information

Please refer to the matrix provided on the Flexible Heater Ordering Guidelines page which follows.

### Specifications and Ordering Information

Model	Stock	PCN	Wt. (Lbs.)	Stock
IBG-5	S	298070	2	NS
IBG-16	S	299225	2	NS
IBG-30	S	299233	3	S
IBG-55	S	298089	3	S

**Stock Status:** S = stock NS = non-stock  
**To Order**—Specify model, PCN and quantity.