

## Components Overview

Component Heaters include the basic types of heating elements:

- Tubular Elements
- Thin Blade Heaters
- Strip Heaters
- Ring & Disc Heaters
- Band & Nozzle Heaters
- Cartridge Heaters
- Flexible Heaters
- Specialty Heaters



Component heaters may be used by themselves to solve many heating problems. They may also be incorporated into more complex heating systems, providing a complete thermal solution for your heating requirements.

Chromalox carries the widest selection of standard component heaters in many shapes, sizes and wattages. Chromalox is the "First Choice for Thermal Solutions".

### *Applications*

With component heaters, most often the shape and size will be the determining factor in most heater applications. Brief descriptions of each heater type follow, with selection guidelines that lead to a detailed description on individual product pages.

**Tubular** heating elements perform exceptional heat transfer by conduction, convection or radiation to heat liquids, air, gases and surfaces. In most heater assemblies, tubular element design configurations vary — round, triangular, flat press and formed. Bends are made to customer requirements. Custom built from 0.200" to 0.475" diameters, a multitude of sheath materials with sheath temperature capabilities up to 1600°F, watt densities to fit many applications and up to 600 volts. Available with over 20 optional terminations and many stocked accessories.

**Thin blade** heater elements provide more surface area than standard tubular elements to offer greater wattage or lower watt densities. Select from many sheath materials with watt densities to 75 W/in<sup>2</sup> and sheath temperatures as high as 1200°F. Heating elements can be as long as 120" and are capable of being formed into many configurations for heating via immersion, direct surface contact or convection. Three wire construction within the element provides uniform heating. Available in single or 3-phase current terminations with a 120 to 240 volt range.

## Components Application Guidelines

### Applications (cont'd.)

**Strip/Ring/Disc** heating elements are rugged and easy to install for heat transfer by conduction or convection to heat liquids, air, gases and surfaces with sheath temperatures up to 1600°F and watt densities to 35 W/in<sup>2</sup>. Common applications include drying, melting, baking and curing. Strip heater sizes range from 0.5" wide to 2.5" and lengths to 72" long. Heaters bolt or clamp to many surfaces. Nested ring heaters can provide concentrated heat in small areas. Select from many sheath materials, termination styles, operating temperatures, sizes, voltages, wattage ratings and mounting devices.

**Band** heaters grip tightly to cylindrical surfaces to supply uniform heat transfer, critical to the heater life. Chromalox band heaters are flexible and come in one or two-piece construction for easy installation and removal. They accommodate diameters as small as 15/16" and as large as 20" and are capable of reaching sheath temperatures up to 1600°F. Stainless steel braids and conduit protect terminations and resist contamination. Completely customize your heater by specifying exact physical dimensions, material, electric ratings and terminations.

**Cartridge** heaters are high efficiency heating elements. Diameters of cartridge heaters range from 0.25" to 1.25". Watt densities from 25

W/in<sup>2</sup> to 200 W/in<sup>2</sup> and sheath temperatures to 1600°F. Optional end seals resist contaminants and moisture from entering inside the heater. Chromalox provides a variety of sizes, wattage ratings, voltages and protective features to meet many challenging applications.

**Flexible** heaters are very versatile and provide solutions to a vast number of low-to-medium temperature applications. Heaters are manufactured with rugged light-weight materials providing chemical and moisture resistance with operating temperatures to 390°F. Wire elements are durable and wound precisely within the structure for optimal performance. A variety of electrical, shape and contour fittings to meet many specifications.

### Tubular Heaters — Section Outline

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Factory Bending	A-8
Terminals	A-10
Customer Bending	A-12

### Tubular Heaters — Selection Guidelines

Type	Sheath	Diameter (In.)	Model	Page	
Round	INCOLOY®	0.475	TRI	A-13	
		0.475	TRID	A-14	
		0.475	TRIW	A-14	
		0.430	TRI	A-15	
		0.375	TRI	A-16	
		0.315	TRI	A-17	
		0.260	TRI	A-19	
		0.246	TRI	A-20	
		0.200	TSSM	A-21	
		Stainless Steel	0.475	TRSS	A-22
	0.475		TRSSH	A-23	
	0.475		TRSSN	A-23	
	Steel		0.475	TRS	A-24
			0.475	TRSCD	A-24
			0.475	TRSC	A-25
0.315			TRS	A-27	
Copper		0.475	TRC	A-28	
		0.475	TRCC	A-28	
		0.315	TRC	A-30	
Heart Shaped	INCOLOY®	0.5	TI	A-31	
		0.375	TI	A-33	
		0.375	RTU	A-35	
		0.375	UTU	A-37	
		0.375	UTU-LT	A-40	
		0.430	UTUA-LT	A-41	
		0.375	URPT	A-42	
		0.375	LMS	A-43	
	Steel		0.5	TS	A-44
			0.375	TS	A-45
Flat Pressed	INCOLOY®	0.375, 0.4375	ATS	A-47	
		0.375, 0.4375	ATU	A-47	
Round/Single End	INCOLOY®	0.475	STRI	A-48	
		0.315	STRI	A-49	
	Steel		0.475	STRS	A-50
			0.315	STRS	A-51
	Copper		0.475	STRC	A-52
			0.315	STRC	A-53
Hopper Heater	INCOLOY®		FSRM	A-54	
Thin Blade	Stainless Steel		CTB	A-55	

## Components Selection Guidelines

### Strip, Ring & Disc Heaters — Section Outline

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### Strip, Ring & Disc Heaters — Selection Guidelines

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		ST	A-64
		PT	A-64
		TH	A-65
		STTH	A-65
Strip	3/4	SN	A-66
	2-1/2	WS	A-66
	1	SNH	A-67
	1	NH	A-67
	3/4	NS	A-68
	3/4	NSL	A-68
	1/2	NSA	A-69
	1-1/8	SSNHM	A-69
	1-11/16	SSE	A-70
	1-11/16	SSEM	A-70
	Explosion-Proof		AEPS
Ring		A	A-72
		HSN	A-73
		HSW	A-73
		RHSW	A-73
Disc		HSP	A-74

### Band & Nozzle Heaters — Selection Guidelines

Type	Size (In.)	Model	Page
One-Piece Band	1-1/2	DB	A-75
	2-1/2	DBW	A-76
Two-Piece Band	1-1/2	HB	A-77
	2	HBT	A-78
One-Piece/Mica Ins.		MB-1	A-83
Two-Piece/Mica Ins.		MB-2	A-86
Ceramic Band		CB	A-87

### Cartridge Heaters — Section Outline

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Modifications and Options	A-95
Thermocouple Leadwire	A-97

### Cartridge Heaters — Selection Guidelines

Type/Sheath	Size (In.)	Model	Page
INCOLOY®	1/4 - 3/4	CIR	A-98
SS	1/8-3/4	C-DD	A-103
Brass	15/16 - 1-19/64	C-HD	A-104
INCONEL® 600	.495, .685, .935	MZ	A-105
Split	3/8 - 1	SST/QST	A-107
Screw Base		SCB	A-109
Sleeve Adapter		Accessory	A-109
Heavy Duty		CTRH	A-110
Stud Heater		CBH	A-111

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### Flexible Heaters — Selection Guidelines

Type	Description	Model	Page
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		SL-N	A-117
		SL-B	A-118
Silicone Rubber	Drum	SLDH	A-119
Heavy Duty Woven	Drum Heaters with Thermostat	PHD PHDT	A-122 A-122
Thermal Insulation	Drum	IBG	A-123