

## ANSI Flange and Circulation Heater Design

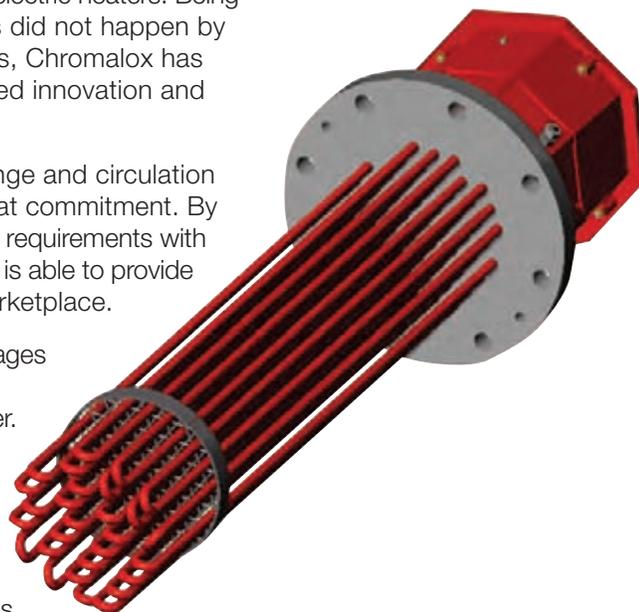
### The Next Generation of Heater Design

Chromalox is the first name in electric heaters. Being in existence for over 90 years did not happen by chance. Throughout the years, Chromalox has stayed committed to continued innovation and reinvention of its products.

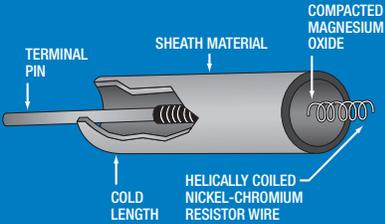
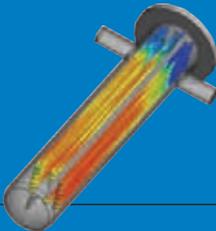
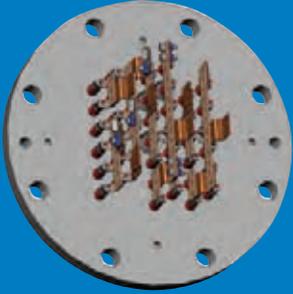
The evolution of the ANSI flange and circulation heater line best represents that commitment. By combining international design requirements with innovative features, Chromalox is able to provide a superior product for the marketplace.

There are considerable advantages to purchasing a Chromalox® ANSI flange or circulation heater. The following information will help to explain the premium standards used in the construction of each unit. It will also describe the Chromalox global third-party certifications, quality testing, and delivery capabilities.

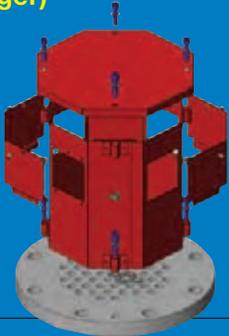
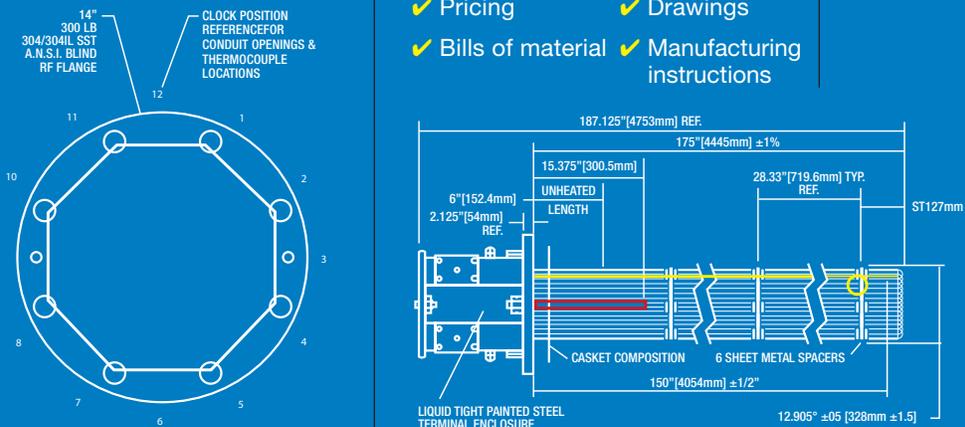
Purchasing a premium heater will ensure years of life in your application. Chromalox is proud to give you that option.



## The Chromalox Difference. . .

Feature	Chromalox Difference	Benefit
<p><b>Heating Element</b></p> 	<ul style="list-style-type: none"> <li>• Each element manufactured to customer's specific needs</li> <li>• Manufactured to exacting standards</li> <li>• Uses only grade A magnesium oxide</li> <li>• Elements compacted by many tons of pressure to ensure excellent resistance properties</li> </ul>	<ul style="list-style-type: none"> <li>• Design ensures greatest efficiency, highest quality, and longest life</li> </ul>
<p><b>Testing/Quality Assurance</b></p> 	<ul style="list-style-type: none"> <li>• Each element undergoes multiple testing procedures                             <ul style="list-style-type: none"> <li>✓ High voltage insulation check</li> <li>✓ Electrical resistance check—before and after welding</li> <li>✓ Hydrotest pressure test</li> </ul> </li> <li>• Meets third-party certifications                             <ul style="list-style-type: none"> <li>✓ ISO 9000</li> <li>✓ UL</li> <li>✓ ASME</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Assurance of superior product every time</li> </ul>
<p><b>Redistributed Triangular Pattern</b></p> 	<ul style="list-style-type: none"> <li>• Allows much better heat distribution pattern throughout bundle</li> <li>• Lower pressure drop</li> <li>• Cooler running</li> <li>• Fewer temperature variations throughout process</li> </ul>	<ul style="list-style-type: none"> <li>• Long-lasting heating elements</li> </ul>
<p><b>Re-Engineered Element Bussing</b></p> 	<ul style="list-style-type: none"> <li>• Straightforward layout                             <ul style="list-style-type: none"> <li>✓ Easy understanding of connection points</li> <li>✓ Clearly-labeled, semi-permanent tagging</li> </ul> </li> <li>• Distributed bus bars operate at coolest temperature                             <ul style="list-style-type: none"> <li>✓ Evenly distribute amperage throughout circuit</li> </ul> </li> <li>• Full ring connector/bolt-and-nut combination allows for most secure connection possible                             <ul style="list-style-type: none"> <li>✓ Opposing force tightening permits sound union every time</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Secure wiring connections, cooler terminal enclosures</li> </ul>

## ...Delivers a Premium Product

Feature	Chromalox Difference	Benefit
<p><b>Improved E1 &amp; E4 Housing—The “Octobox” (6-inch Flange or Larger)</b></p> 	<ul style="list-style-type: none"> <li>• Maximum flexibility for customer wiring options</li> <li>• Works for both NPT and gland-plate-style connectors</li> <li>• Removable plate design allows choice of exact connection sizes to match conduit runs                             <ul style="list-style-type: none"> <li>✓ Multiple approach angle for wiring</li> <li>✓ Complete access to terminal connections</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Fastest and easiest wiring installation possible</li> </ul>
<p><b>Third-Party Certifications</b></p> 	<ul style="list-style-type: none"> <li>• Meets certifications, codes, and standards of process industries around the world</li> <li>• More global third-party approvals than any other company in the industry</li> <li>• Unit carries multiple third-party listings</li> </ul>	<ul style="list-style-type: none"> <li>• Single SKU for many country locations, meaning less inventory</li> <li>• Catalog items carry certifications as a standard</li> <li>• Single delivery point can eliminate shipping time and international shipping costs</li> <li>• Table on the next page outlines certifications carried by housing style</li> </ul>
<p><b>Standardized Spare Parts Kit</b></p> 	<ul style="list-style-type: none"> <li>• Unprecedented number of standardized spare parts available</li> <li>• Most items ship in less than 24 hours for critical processes</li> <li>• Fewer spare parts required to be kept on-hand at job site</li> </ul>	<ul style="list-style-type: none"> <li>• Fast delivery times and ease of on-site repair</li> </ul>
<p><b>Engineering Process</b></p>  <p>14" 300 LB 304/304L SST A.N.S.I. BLIND RF FLANGE</p> <p>CLOCK POSITION REFERENCE FOR CONDUIT OPENINGS &amp; THERMOCOUPLE LOCATIONS</p> <p>187.125" [4753mm] REF.</p> <p>175" [4445mm] ±1%</p> <p>15.375" [300.5mm] UNHEATED LENGTH</p> <p>6" [152.4mm] 2.125" [54mm] REF.</p> <p>28.33" [719.6mm] TYP. REF.</p> <p>ST127mm</p> <p>CASKET COMPOSITION 6 SHEET METAL SPACERS</p> <p>150" [4054mm] ±1/2"</p> <p>LIQUID TIGHT PAINTED STEEL TERMINAL ENCLOSURE</p> <p>12.905" ±05 [328mm ±1.5]</p>	<ul style="list-style-type: none"> <li>• Configurators' ground-up software allows engineering design process to be accomplished in minutes rather than days                             <ul style="list-style-type: none"> <li>✓ Pricing</li> <li>✓ Drawings</li> <li>✓ Bills of material</li> <li>✓ Manufacturing instructions</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Rapid turn-around time for drawings with immediate release to production</li> </ul>

## Housing Certifications

Model	Purpose		North America Designation(s)	Canadian Designation(s)	European Certification(s)	International Certification(s)
E1	General Purpose	General Description	NEMA 1, NEC	NEMA 1	IP32	IP32
		Agencies	UL / CSAus	CSA	CE: Manufacturer's Declaration	CE: Manufacturer's Declaration
		Ratings	General Duty Only	General Duty Only	General Duty Only	General Duty Only
E4	Moisture Resistant	General Description	NEMA 4	NEMA 4	IP66	IP66
		Agencies	UL / CSAus	CSA	CE: Manufacturer's Declaration	CE: Manufacturer's Declaration
		Ratings	Class I Division 2, Groups B, C & D Class II Division 2, Groups E, F: 200°C (T3), G: 165°C (T3B) Class I Zone 2 AEx nA II T1 to T6	Class I Division 2, Groups B, C & D Class II Division 2, Groups E, F: 200°C (T3), G: 165°C (T3B) Class I Zone 2 Ex nA II T1 to T6	II 3 G Ex nA II T1 to T6	Ex nA II T1 to T6
<p>Note: Temperatures over T4 (200°C) require standoffs for third-party listing. Refer to IECex and ATEX certificates for standoff dimensions.</p> <p>WARNING: Addition of a sparking device (such as a thermostat) to an E4 housing will annul hazardous area rating.</p>						
E2	Moisture / Explosion	General Description	Explosion Resistant	Explosion Resistant	Explosion Resistant	Explosion Resistant
		Agencies	CSAus	CSA	ATEX	IECex
		Ratings	Class I Division 1, Groups B, C & D Class II Division 1, Groups E, F & G Class I Zone 1 AEx d IIB + H <sub>2</sub> T1 to T6	Class I Division 1, Groups B, C & D Class II Division, Groups E, F & G Class I Zone 1 Ex d IIB + H <sub>2</sub> T1 to T6	II 2 G EEx d IIB+H <sub>2</sub> T1 to T6	Ex d IIB+H <sub>2</sub> T1 to T6
<p>Note: Temperatures over T4 (135°C) require standoffs for third-party listing. Refer to IECex and ATEX certificates for standoff dimensions.</p>						
E5	Moisture / Explosion	General Description			ITS	IECex
		Agencies			ATEX	Ex de IIC T1 to T6 540°C, 600°C
		Ratings			II 2 G EEx de IIC T1 to T6, 540°C, 600°C	
<p>Flange Size      Alex IIC Labeling Reference</p> <p>3"- 8"              CFP4</p> <p>8"- 12"             CFP8</p> <p>12"- 18"            CFP12</p>						

## Chromalox®

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