

# Tubular Heaters



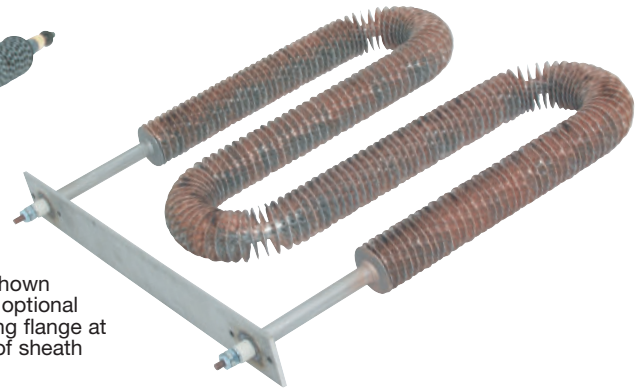
## Finned Tubular Heaters

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Shown with optional bulkhead fittings



Shown with optional mounting flange at end of sheath



### Design Features

- \* Copper brazed steel fins on steel sheath standard. Aluminum based protective coating available.
- \* Stainless steel fins on stainless alloy sheath standard.
- \* .315, .430, & .475 Sheath diameters standard. .260 & .375 diameters optional. .625 diameter is special order in limited lengths.
- \* 5/16" fins standard on .315 diameter units, 3/8" fins on .430 & .475 diameter heaters. See physical specifications for optional sizes.
- \* Monel fins on Monel sheath available on special order only. Consult Tempco for details.
- \* 4.5-5 fins/in standard. 3.5-6 fins/in optional
- \* Crimped brass bulkheads are standard on steel finned catalog heaters. Stainless steel crimped bulkheads are standard on stainless steel catalog heaters. Brazed brass, welded stainless steel or staked bulkheads are available.
- \* Custom Mounting Brackets can be provided. See page 10-16C.

- \* Type T Post terminals standard. .315 dia. heaters have 8-32 threads and 10-32 threads are used on .430 & .475 dia. heaters. Full selection of tubular terminations available See page 10-4.
- \* Catalog units have V2A silicon resin seals as standard. Most all other tubular seal options available. See page 10-16C.
- \* Numerous factory bending formations available. Supply Tempco with dimensional sketch, drawing, or photo. See page 10-9.
- \* Bright annealed, Nickel plating, Hi-heat aluminum, or Hi-heat flat black finishes available Furnace brazed Stainless Steel fins available as an option.
- \* U2 & M2 formations are ideal for duct heating applications
- \* Unfinned sections in bends or straight lengths of heated area can be provided on heaters up to 32wsi sheath watt density.
- \* Catalog listed Steel heaters are UL recognized for use up to 750°F sheath temperature & Stainless construction up to 1000°F at a maximum of 85 wsi on sheath.

### Construction Characteristics

THF finned heaters are constructed using Tempco's robust tubular element as the basis of construction. Fin material is continuously spiral wound tightly onto the element surface to increase the convective surface area for air and non-corrosive gas heating. Fin spacing and size have been tested and selected to optimize performance. Steel finned units are then furnace brazed, bonding the fins to the sheath to increase conductive efficiency. This allows higher wattage levels to be achieved in the same flow area and produces lower sheath temperatures prolonging heater life. For higher temperature or more corrosive applications, stainless steel fins securely wound on alloy sheath are available. Application conditions such as vibration and toxic/flammable media should be taken into consideration when installing heaters. Protective coatings are available for use on steel finned heaters for mildly corrosive or high humidity applications.

Finned tubular elements are safer to operate than open coil heaters as the risk of fire from combustible particles in the flow stream and electrical shock is minimized. Increased service life and less maintenance required due to the rugged finned element construction. Power loading (w/in) of finned tubulars can be matched to any open coil installation. Pressure drop when using finned elements will be slightly more than with open coil but normally not enough to matter. It varies with flow velocity ranging from .04"H<sub>2</sub>O at 500 fpm to about .30"H<sub>2</sub>O at 1500 fpm when elements are banked together in several rows for duct heaters.

The finned tubular elements are normally used in forced or free

convective air applications at low to medium temperatures. Typical applications are for heating indoor clean air from ambient conditions up to 250/275°F for steel finned units & to 550°F for stainless fins. Steel finned heaters can be operated up to 750°F on sheath and stainless steel finned heaters used up to 1200°F (1000°F UL limit) sheath temperatures. Nominal sheath watt density and recommended operating conditions for the cataloged heaters are included in the table headings & footnotes. Lower airflows will require lower watt density ratings. Consideration should be given to using un-finned alloy sheath tubular elements for heating to higher outlet air temperatures or if operating in higher ambient air. Application conditions of flow velocity and inlet/outlet temperatures will govern sheath watt density to be used. The airflow graphs and examples presented will help with determining proper heater watt density. The cataloged designs are suitable for most low temperature applications that will be encountered.



Finned Tubular Heaters are UL recognized and CSA certified up to 85W/in<sup>2</sup> and 750°F for Steel sheath/steel finned and .85W/in<sup>2</sup> and 1000°F for Alloy or SS sheath/SS finned. The UL File Number is E65652 (CCN KSOT2/KSOT8).

If you require UL, CSA, or other NRTL agency approvals, please specify when ordering.

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