Since 1972

Finned Tubular Heaters

Typical Applications

- *Convective air & gas heating in ducts*
- *Load resistor banks*
- *Moisture removal (dehumidification)*
- *Curing ovens & plastics dryers*
- *Low/medium temperature heat treating*
- *Convection ovens for food preparation*
- *Exhaust gas heating*
- *Forced air electric heaters*
- *Heat pump auxiliary systems*
- *Return air heating*
- *Inert Industrial process gas heating*
- *Organic Resins & Paint curing, baking, & drying*
- *Autoclaves*
- *Film & ink drying*
- *Hopper heating*
- *Chemical processing & core drying*
- *Food Roasting & baking*
- *Textile & Varnish drying*
- *Heating for rail & marine applications*

TUBULAR ELEMENT SIZES & MATERIALS

Sheath Diameter: .315", .375", .430" and .475"

Sheath Material: Steel, 304L SS, 316L SS, Incoloy 840 and Incoloy 800

Sheath Lengths: 12" to 196" depending on sheath diameter

Sheath Material Selection

Standard steel finned heaters are ideal for use in low temperature clean air applications not containing toxic contaminants or high humidity. When coated with one of the optional coatings available they are suitable for high humidity, organic vapors, or mildly corrosive applications. Stainless steel finned heaters should be employed for higher temperature uses or if the air/gas contains vapors known to be corrosive to steel. Optional nickel plated heaters can also be provided.

PERFORMANCE RATINGS

Maximum Temperature:

Steel fins on steel sheath—750°F (400°C)

Steel fins on Incoloy or SS sheath—750°F (400°C)

Stainless Steel fins on stainless, Incoloy 840 or Incoloy 800 sheath—1200°F (650°C)

Maximum Element Power Density Limits:

.315 dia.—84 watts/linear inch
.375 dia.—100 watts/linear inch
.430 dia.—115 watts/linear inch
.475 dia.—127 watts/linear inch

These values are for heaters with 3/8" fins at 4.5-5 fins/inch. De-rate to 83% for heaters with 5/16" fins or that have less than 4.5 fins/inch.

ELECTRICAL RATINGS

Maximum Voltage: Up to 600VAC (480V for UL)

Resistance Tolerance: +10%, –5%

Wattage Tolerance: +5%, –10%

Sheath watt density range: 20-85 wsi (2-13 w/cm2), @ 4.5-5 fins/in

OPTIONAL FEATURES

Bulkhead Fittings: Brazed brass are standard. Welded or brazed Steel & SS optional. UNF threads standard, metric or special threads available.

Custom mounting brackets: (type MF or special). Dimensional sketch or drawing needed with material specs.

Locator washer: (type LC) specify location

Adjustable mounting collar**:** (type MC) w/set screw

Full selection of tubular termination options: Bulkhead fittings & type T post terminals standard.

Moisture Seals: V2A Silicon resin seal standard

SPECIFICATIONS AND PHYSICAL SIZE OF FINS

Fin Materials and Attachment Method:

Steel & 304 SS

Steel wound with copper wire between fins for oven brazing to sheath. Stainless steel is mechanically wound but can be oven brazed as an option if a bright annealing atmosphere is used.

Fin Strip Width:

5/16" on .315, .375 and .430 diameters
3/8" on .315, .375 .430 and .475 diameters

Fin Thickness:

26 Ga. (.018) for Steel and 304 SS. Optional 24 Ga. (.024) for steel only

Finned OD's:

.315" dia. with 5/16" fins—.92" OD
.315" dia. with 3/8" fins—1.05" OD
.375" dia. with 5/16" fins—.98" OD
.375" dia. with 3/8" fins—1.11" OD
.430" dia. with 5/16" fins—1.04" OD
.430" dia. with 3/8" steel fins—1.15" OD, SS fins 1.16" OD
.475" dia. with 3/8" fins—1.21" OD

Fin Pitch Standards:

5±.5 for 5/16 material, 4.5-5 for 3/8 material (up to 6 per inch maximum

SURFACE FINISHES

Oven brazed steel finned units - standard

Copper brazed stainless steel fins using inert atmosphere - special

Bright annealed steel or stainless steel finned heaters

High heat aluminum painted steel — 700°F Maximum

High heat flat black painted surface — 1000°F Maximum

Nickel plated finish — 500°F Maximum

FORMING LIMITATIONS

Minimum Element Centerline Bend Radius:

.315" dia. with 5/16" fins . . . . . 3/4"
.315" dia. with 3/8" fins . . . . . 7/8"
.375" dia. with 5/16" fins . . . . . 7/8"
.375" dia. with 3/8" fins . . . . . 1.00"
.430" dia. with 5/16" fins . . . . . 1.00"
.430" dia. with 3/8" fins . . . . . 1.00"
.475" dia. with 3/8" fins . . . . . 1.00"

The above values are for factory formed heaters. Consult Tempco for field bending limits.