



LINCOLN ASSOCIATES

A DIVISION OF HEAT TRANSFER COMPONENTS, INC.

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Marketing Bulletin

Steam distributing versus standard steam coils

There are two kinds of basic steam coils:

- Standard steam
- Steam distributing (sometimes referred to as non-freeze)

STANDARD STEAM

Standard steam coils are typically used in reheat applications where entering air temperatures are above 40°F. They are similar in appearance to hot water coils, and the steam enters and leaves just like hot water. The overall construction should be heavier on standard steam than on hot water coils, however, due to the erosive nature of steam. The entering steam pressure dictates the tube wall and fin thickness that should be used. Standard steam coils come in one tube diameter only – 5/8” OD.

TUBE WALL RECOMMENDATIONS

PSI	TUBE WALL
2 - 20	.020 Cu
20 - 50	.025 Cu
50 - 75	.035 Cu
75 - 100	.049 Cu
100 - 150	.020 Cu/Ni
150 - 200	.035 Cu/Ni
200+	.049 Cu/Ni

“WE SELL SOLUTIONS TO PROBLEMS”



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STEAM DISTRIBUTING

Steam distributing coils are sometimes erroneously called non-freeze coils. Under the right conditions, any coil can freeze. The characteristics of steam distributing coils make them less likely to freeze than standard steam coils. Steam distributing coils are typically used in preheat applications where the entering air temperature is below 40°F.

The steam distributing coil is constructed of a “tube within a tube”. The inner tubes have small holes throughout so the steam is distributed evenly across the whole length of the coil. The entering steam is distributed through these inner tubes and headers and slowly released to the outer tubes as the steam turns to condensate. The outer tubes do not have return bends, so the condensate under pressure flows back down the outer tubes in the same direction that the entering steam originated. This counterflow pattern of steam traveling through the inner tube helps keep the condensate traveling through the outer tube from freezing, hence the name non-freeze.

Steam distributing coils come in two diameters – 5/8” OD and 1” OD. The 1” tube diameter is preferable, especially if your application has a high outside air load passing across the coil. The condensate load will be higher on this type of application, since the T_D is greater, so you need more room to get the condensate out of the coil. The 5/8” outer tube has a 3/8” inner tube. This leaves a 1/4” space between the tubes, less the thickness of the outer tube. The actual OD of the 1” tube is 1-1/8”, with a 5/8” inner tube, which allows more room for the condensate to evacuate.

All steam coils should be pitched 1/8” per linear foot toward the steam discharge end. This can be done at the factory (pitched in the casing) or the installer can pitch the entire coil. This allows gravity to assist in the condensate removal.

Low pressure steam systems are especially vulnerable to vacuums. We recommend the use of vacuum breakers on the entering and leaving sides of the coil. The presence of vacuum conditions activates the vacuum breaker and allows air to enter the coil, thus breaking the vacuum, and allowing condensate to flow freely from the coil.

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