

Industrial Ovens and Furnaces

Heat Treat Questions Answered



What is Heat Treating?

A combination of heating and cooling operations applied to a metal or alloy in the solid state to obtain desired conditions or properties.

Heat treating processes require three steps:

1. Heating to a specified temperature
2. Holding at that temperature for the appropriate amount of time
3. Cooling according to prescribed methods

What is the difference between an industrial oven and a industrial furnace?

- The heating temperature
Oven <1,000°F
Furnace >1,000°F
- Air flow management system in the heating chamber will differ between an oven and furnace

What type of ovens are available for industrial use?

- Batch Ovens are used for a wide variety of heat processes including drying, curing, aging, annealing, stress relieving, bonding, tempering, preheating, and forming. Batch ovens process products one at a time or in groups ("batches"). The part(s) are brought into the oven in batches on racks, carts, or trucks, and can be loaded manually or via automated loading.
- Continuous Conveyor Ovens offer labor savings and material handling efficiency over typical batch processes. Conveyors can be overhead, belt (steel or fabric), powered roller, chain or slat. Conveyor ovens perform the same processes as batch ovens, but deliver a higher throughput. Continuous ovens can include multiple zones operating at different temperatures.

Will the oven be customized for my application?

Industrial ovens and furnaces are available in standard or custom models.



Industrial Batch Ovens process products one at a time or in a single group.



Conveyor Oven handle high production rates. Loading product(s) into the oven can be manual or automated.

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What heat processes can be done in an Industrial Oven?

Aging: Aging ovens are used to increase the strength of an alloy.

Annealing: Annealing ovens soften parts by heating to and holding at suitable temperature followed by cooling at a controlled rate. Annealing is used to reduce hardness, increase ductility and help eliminate internal stresses.

Baking: Baking ovens heat objects to a low temperature in order to remove entrained gases

Calcining: Calcining Ovens create phase change or remove moisture.

Composite Curing: Composite curing ovens are used to cure high strength, low weight carbon composite materials.

Curing: Curing ovens raise the product mass and coated material to a specified temperature and holds this temperature for a set time. Curing Ovens cure parts, coatings, and adhesives.

Drying: Drying ovens remove water or other liquid from a material or object.

Preheating: Preheat ovens are used in a variety of processes that require heating the product prior to a secondary process such as forming, coating, fitting or welding.

Powder Coating: After application of the powder coating, the parts enter a curing oven where, with the addition of heat, the coating chemically reacts to produce a heavy duty finish.

Stress Relieving: A heat treatment process used to reduce internal residual stresses in an object or material.

Tempering: Tempering decreases the brittleness of the metal and is usually performed after hardening or quenching.

For ovens and furnaces, ITS develops and confirms the heating process (time, temperature and velocity) to meet the customer's specifications and deliver high-quality, long lasting equipment. ITS is your equipment partner from design-to-installation and throughout the life of the machine.