

Plastics

Tempering, Curing, Vulcanization and Degassing of Plastics, Rubber, Silicone, and Fiber Composite Materials

Many plastics and fiber composite materials must be heat-treated for product improvement or to ensure that they have the required product properties. In most cases, chamber dryers or furnaces with air circulation are used for the respective process. The following examples outline the processes which these furnaces can perform.

PTFE (polytetrafluoroethylene)

One application is the heat treatment of PTFE. This process can be used to improve the adhesive properties, the mixture hardness or the sliding properties of the coating. In most cases, chamber dryers are used which, depending on the type of plastic, may or may not include safety technology based on EN 1539.

Silicone

One reason why silicone is tempered is to reduce the amount of silicone oil in the silicone to a certain percentage, i.e. to drive it out, in order to meet relevant food regulations. During the tempering process the silicone oil is vented out of the furnace chamber by continuous air exchange. To optimize the temperature uniformity in the furnace chamber, the fresh air supply is preheated. Depending on the furnace size, a heat-recovery system with heat exchangers can result in significant energy savings and pay for itself in just a short time.

Parts are prevented from sticking together by keeping them moving in a rotating rack in the oven.

Carbon Composite Materials

These days, carbon composite materials are used in many industries such as automotive, aerospace, wind power, agriculture, etc. Different materials and manufacturing processes require different heat-treatment processes for curing composite materials.

Some of the processes are done in autoclaves. Other materials are heat-treated in chamber dryers or furnaces with air circulation. In this case, the composite materials are frequently evacuated in vacuum bags. For this purpose, the furnace is equipped with suitable connections for the evacuation of the air bags.

Pages 6/7 contain a description of which Nabertherm furnace ranges are suitable for tempering and curing of plastics.



Silicone tempering furnace with tightly welded inner box and rotating rack for the charge.



Continuous furnace D 1500/3000/300/14 with mesh belt transport system and subsequent cooling station