

## SPRAY DRYERS

### Spray drying

Spray drying is a method of producing a dry powder from a liquid or slurry by rapidly drying with a hot gas. This is the preferred method of drying of many thermally-sensitive materials such as foods and pharmaceuticals. A consistent particle size distribution is a reason for spray drying some industrial products such as catalysts.

### Applications

Spray drying can be used in a wide range of applications where the production of a free-flowing powder is required. This method of dehydration has become the most successful one in the following areas:

- Pharmaceuticals
- Bone and tooth amalgams
- Beverages
- Flavours, colorings and plant extracts
- Milk and egg products
- Plastics, polymers and resins
- Soaps and detergents
- Textiles and many more



### The spray drying process

Spray drying is the most widely used industrial process for particle formation and drying. It is well suited for a continuous production of dry solids in powder or agglomerated particles form from a liquid feedstock. The feedstock can include solutions, emulsions, and pumpable suspensions. The technology is ideal when the end-product must comply with precise quality standards such as particle size distribution, residual moisture content, bulk density and particle morphology. During spray drying, an enormous heat and mass transfer takes place within a fraction of time. It starts with the atomization of a liquid feedstock into a spray of droplets. The small droplets are created by an atomizer - either a rotary



wheel or a high pressure nozzle. The droplets are introduced in to a hot airstream, which is cooled down due to the evaporation of the water or a chemical solvent from the concentrate. This now colder and humid air is discharged from the dryer through a cyclone, bag filter or a combination of the two. After separation of the now dry particles, the air is discharged into the atmosphere. The dry particles can be cooled and bagged off after separation from the process air. The spray drying process entirely depends on the composition of the product. Some products are very easy and others very difficult to dry. In this context it should be stated that a dryer is designed and the process parameters selected to ensure:

- Best product quality
- Low energy consumption
- Protection of the environment
- Long operation time between cleaning



Spray Nozzle

### The Essential components are:

- Pump
- Burner
- Air Heater
- Air Fan
- Spray Dryer
- Bag Filter
- Cyclone



Spray Dryer

