

DRYING EQUIPMENT

FOR PLANT PROTEINS



Drying

- **Drying equipment** for plant proteins is a type of machinery used in the production of plant-based protein powders. Plant protein powders are created by extracting protein from various plant sources, such as soy, pea, rice, and hemp, and then drying the extracted protein into a powder form.
- There are several types of drying equipment commonly used in the production of plant protein powders, including **spray dryers, fluidized bed dryers, and freeze dryers**. Spray dryers are the most used type of drying equipment for plant protein powders.
- The extracted protein is first mixed with water to create a slurry, which is then sprayed into a heated chamber. As the slurry is sprayed, the water evaporates, leaving behind a fine powder.
- Drying equipment for plant proteins is essential in creating high-quality plant protein powders that are shelf-stable and easy to use in various food and beverage applications. These powders are used in a variety of products, including protein bars, shakes, and supplements, and are becoming increasingly popular as demand for plant-based protein sources continues to grow.

Examples of food products that are processed using drying equipment for plant proteins

1. Protein powders
2. Meat alternatives
3. Nutritional bars
4. Bakery products



Working Principle

- The working principle of drying equipment for plant proteins is based on the process of removing moisture from the protein material using various methods such as heat, pressure, and air circulation. The aim is to reduce the moisture content of the protein material to a level that is suitable for storage and further processing.

Each type of equipment operates on a slightly different principle, but the basic process involves the following steps:

1. Pre-treatment: The plant protein material is first prepared by grinding, homogenization, and mixing to form a uniform slurry or paste.

2. Drying: The protein slurry or paste is then fed into the drying equipment, which applies heat or pressure to remove the moisture. In spray drying, the slurry is atomized into small droplets and sprayed into a hot chamber, where the moisture evaporates quickly.

3. Collection: The dried protein material is then collected and packaged for storage or further processing.

- **Fluidized bed dryers:** instead of spraying the slurry into a heated chamber, the slurry is placed into a bed of hot air. The hot air circulates around the slurry, evaporating the water and leaving behind powder.
- **Freeze dryers,** also known as lyophilizers: the extracted protein is first frozen, then placed into a vacuum chamber. The chamber is heated, causing the frozen water in the protein to sublime directly from a solid to a gas, leaving behind a dry powder.



Market Scope



- The market for drying equipment for plant proteins is expected to grow significantly in the coming years.
- This growth is driven by the increasing demand for plant-based protein products, which are viewed as a healthier and more sustainable alternative to animal-based protein.
- The Asia-Pacific region is expected to be the largest market for drying equipment for plant proteins, driven by the growing demand for plant-based protein products in countries like China and India.
- North America and Europe are also expected to see significant growth, as consumers in these regions increasingly seek out plant-based protein products.
- Spray dryers are currently the most used type of drying equipment for plant proteins, due to their high efficiency and ability to produce a fine powder with good solubility.
- However, there is growing interest in other types of equipment, such as fluidized bed dryers and freeze dryers, which offer advantages in terms of product quality and energy efficiency.
- The market is also seeing a trend towards equipment that can handle a wider range of plant protein materials, including those with higher fat or fiber content.
- Additionally, there is growing interest in equipment that can be used for organic and non-GMO plant protein materials, to meet the increasing demand for these products.