

Complete Process Requirements Analysis of

Tomato Powder Spray Dryer

Processing fresh tomatoes into tomato powder can greatly increase its added value, meanwhile it is also a good way to solve the problems, such as low price and being easily rotting during busy season.

I. Raw material selection

Fresh, ripe, bright red, and pest-free tomatoes are used as raw materials.

II. Hot crushing

Hot crushing refers to a treatment method in which tomatoes are heated to 85° C immediately after they are crushed.

III. Beating

In order to remove the skin and seeds of the tomatoes, a beater is used to beat through 2 stages. The screen diameter of the first-stage beater is 0.8-1.0 cm, and that of the second-stage beater is generally 0.4-0.6 cm. The speed of the beater is generally 800-1200 rpm. The amount of skin slag obtained after beating should generally be controlled between 4% and 5%.

IV. Vacuum concentration

Concentration methods include vacuum concentration and atmospheric concentration. In atmospheric concentration, the color and flavor of the tomato pulp drop due to the high concentration temperature, and the product quality is poor. Therefore, vacuum concentration is generally used. The temperature used for vacuum concentration is only about 50° C and the vacuum degree is 670 mmHg or more.

V. Drying

Tomato concentrates are generally spray drying and foam drying.

1. Spray drying method.

The tomato concentrated slurry was homogenized prior to spray drying. The homogenizing pressure is 150-200 kg/cm². Centrifugal or two-fluid spray dryers with a cooling jacket on the tower wall are generally used for drying. If the heating medium is pre-dehumidified dry air, the inlet air temperature during drying is generally about 150-160° C, the outlet air temperature is 77-85° C, and the feed concentration is generally 20%-30%.

2. Foam drying.

The key to this drying method is mainly to form a stable foam in the tomato concentrate by adding foaming substances such as soy protein,

globulin, fatty acid ester, sugar ester and glycerin monostearate. The temperature of the gas passing through the dryer is approximately 93 ° C., and the speed is approximately 100-130 m/s, which is supplied in a counter-current manner. The drying time is determined by the characteristics of the product and the drying conditions used. Generally, the drying time can be 15-18 minutes.