

# Spray Dry Products on Pilot Scale

## SD310 Spray Dryer

Traceability, complete control & predicted humidity %

OMVE's SD310 Spray Dryer provides a high quality of spray dried products by controlling and monitoring the temperature and moisture content. This minimizes product loss and makes product development easier and faster. This ergonomically designed system is meticulously crafted to provide you with the best configuration, safety during operation, process control, ease of cleaning, sanitary design, and scalability.

Operators can rely on the high level of automation to reduce the development time of food applications. The SD310 comes standard with several control points and monitors, as well as 15 process parameters. The spray is adjustable, easy to inspect and clean, and can be customized for various spraying profiles.

The SD310 Spray Drying pilot plant is the next level for drying products in small scale production plants, R&D labs and universities worldwide.

## Features & Benefits

- Two-fluid nozzle is adjustable and has a replaceable insert for a high range in viscosities
- Effective control of the air and humidity to gain the desired powder consistency
- Prediction of the residual moisture level for increased yield
- Up to 15 process parameters are monitored and logged for traceability
- Meets ATEX, secure operation for personnel & facilities

## Applications

- Milk powders
- Medical foods
- Sports/ fruit nutrition powders
- Protein powders
- Infant foods
- Functional ingredients
- Plant-based protein powders
- Supplementary foods

## Working Principle

The liquid feed is injected into the drying chamber through a two-fluid nozzle. The two-fluid nozzle atomizes the fluid into small homogeneous droplets. Hot air is simultaneously injected into the drying chamber. The standard drying configuration is co-current downflow. This configuration ensures that the temperature of the powder is kept below the desired setpoint. As the droplets fall through the chamber, the water adhered to the solids evaporates, resulting in a powder. The powder is transported out of the drying chamber by the outgoing hot air and is separated by a cyclone downstream. Powder is collected from the cannister at the bottom of the cyclone during operation.



## Optional Accessories

- Product Pump Skid with 10L feed hopper & flow meter
- Direct feed from UHT system for temperature control of the feed (20-90°C)
- Pneumatic hammering for improved powder yield



Spray Dryer



Pump Skid (Product Inlet)



Control unit blower & HMI control

## Specifications

| Product Code                    | SD310 Spray Dryer              | Details                                             |
|---------------------------------|--------------------------------|-----------------------------------------------------|
| <b>Process parameters</b>       |                                |                                                     |
| Two-fluid spraying nozzle       | Interchangeable and adjustable | 10-50% dry matter content                           |
| Water evaporation capacity      | 10kg/hr                        |                                                     |
| Drying air                      | 50-200m³/hr                    |                                                     |
| Hot air temperature             | Max. 230°C                     |                                                     |
| Air temperature outlet          | 50-90°C                        | PID control                                         |
| Humidity control outlet         | 5-60%                          | PID control                                         |
| Wet bulb temperature            | Powder temperature sensor      | For Aw estimation                                   |
| <b>Weights &amp; Dimensions</b> |                                |                                                     |
| Gross weight                    | 350kg                          |                                                     |
| Dimensions (L x W x H)          | 1350 x 1150 x 2800mm           | Control Unit: 690 x 910 x 1250mm                    |
| <b>Required utilities</b>       |                                |                                                     |
| Water                           | 2-3bar(g) [29-43,5psi]         | Required at product inlet for start-up and cleaning |
| Air                             | 6-7bar(g) [87-101psi]          |                                                     |
| Drains                          | Ø 40mm diameter                | Required with CIP option                            |

| Product Code                    | Pump Skid (Product Inlet) | Details                     |
|---------------------------------|---------------------------|-----------------------------|
| <b>Process parameters</b>       |                           |                             |
| Max. operational pressure       | Up to 12bar(g)            | N/A                         |
| Product feed                    | 5-20kg/hr                 | Viscosity up to 15,000 mPas |
| <b>Weights &amp; dimensions</b> |                           |                             |
| Gross weight                    | 50kg (Air Inlet 125kg)    |                             |
| Dimensions (L x W x H)          | 1300 x 880 x 1250mm       |                             |