

USA LAB MINI SPRAY DRYER

PNEUMATIC ATOMIZATION

The USA Lab Mini Spray Dryer is a compact, benchtop instrument that converts aqueous solutions, emulsions, and suspensions directly into uniform micro-powders — eliminating separate filtering, concentrating, or crushing steps. A pneumatic atomization nozzle produces fine droplets that are rapidly dried in a heated air stream, then captured by an integrated cyclone separator. Engineered for R&D and small-scale production in pharmaceuticals, food & beverage, dairy, dyes, pigments, and academic research, with 316L stainless steel, 3.3 borosilicate glass, and PTFE seals for broad chemical compatibility.

KEY BENEFITS:

- **Fast Drying** – Average drying time of just 1.0–1.5 seconds converts liquid samples to uniform powders almost instantly.
- **Pneumatic Atomization** – Fine, consistent droplet formation for repeatable particle size and yield across runs.
- **Precision Temperature Control** – PT-100 sensor and PID loop hold inlet (30–250°C) and outlet (30–120°C) to ±1°C.
- **Siemens PLC & Auto Nozzle Clearing** – 7" touchscreen control with adjustable-frequency nozzle clearing for extended runs.



Evaporation Capacity
2,000 mL/h @ 70% yield



Inlet Air Temperature
30 to 250°C ±1°C



Average Drying Time
1.0 to 1.5 sec

BUILD A COMPLETE PROCESSING WORKFLOW

Pair the Mini Spray Dryer with USA Lab rotary evaporators, vacuum ovens, and freeze dryers for an end-to-end concentration, drying, and powder-collection lineup — aqueous solutions only.



SPECIFICATION

Model	USA-SD-MINI
Power Consumption	3.6 kW 16.4 A NEMA 6-20 plug
Voltage	220V / 60 Hz
Evaporation Capacity	2,000 mL/h @ 70% yield maximum
Dry Air Flow	1.5" × 1.5" × 3"
Fan Power	220V @ 400 W Variable Flow
Inlet Air Temperature	30–250°C ±1°C
Outlet Temperature	30–120°C ±1°C
Heating Capacity	3.0 kW
Heating Control	PT-100 Sensor PID ±1°C
Onboard Air Compressor	250 W MAX 4.2 m³/h 29–116 psi
Spray System	Pneumatic Atomization
Average Drying Time	1.0–1.5 s
Automatic Unblocking Function	Automatic nozzle clearing with adjustable frequency
Control System	Siemens S7-200 SMART PLC w/ 7" touchscreen
Glass Components	3.3 Borosilicate glass
Nozzle / Heater / Cyclone Separator	316L stainless steel
Seals	PTFE
Product Feed Pipe	Silicone Rubber
Exhaust Pipe	Polyurethane
Dimensions	650 × 570 × 900 mm 25.6" × 22.5" × 35.43"
Weight	60 kg / 132 lb
Manual	Download PDF
External Air Compressor Required	Not included — 5.88 CFM (166.5 L/min) required