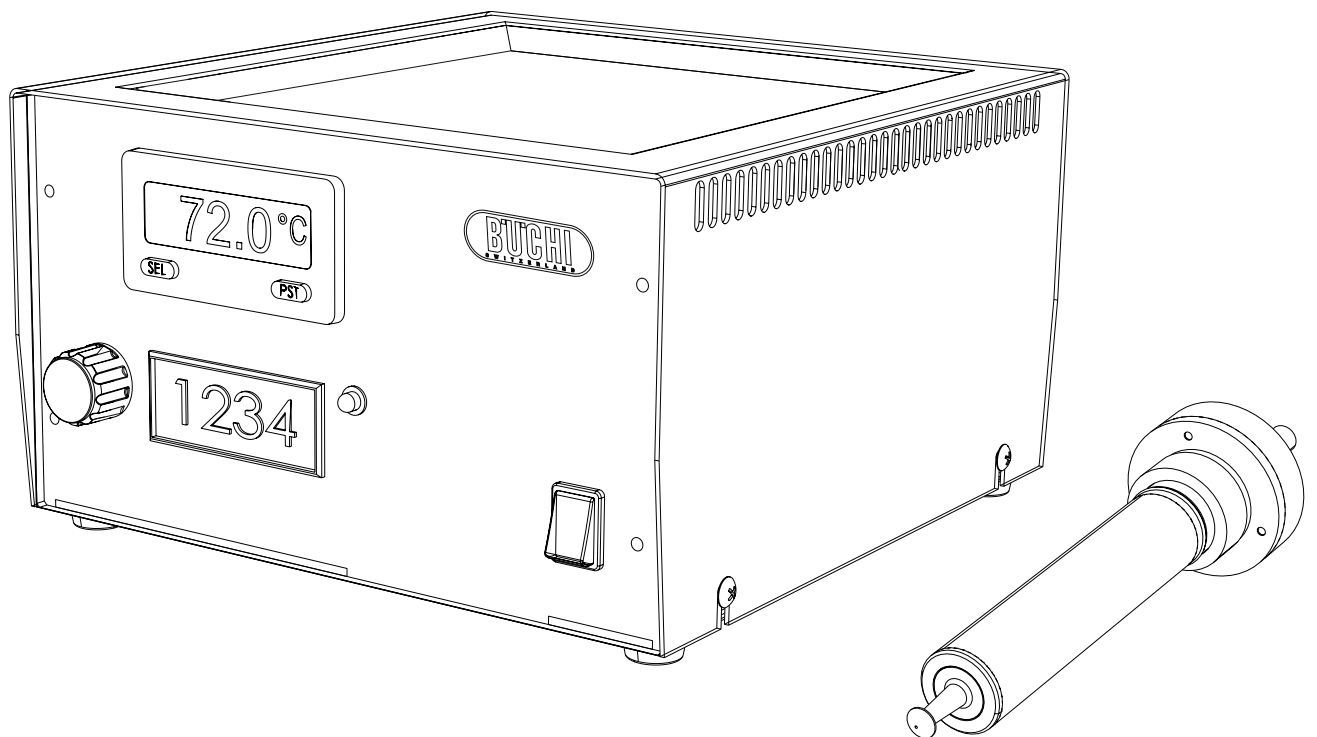




Ultrasonic Package

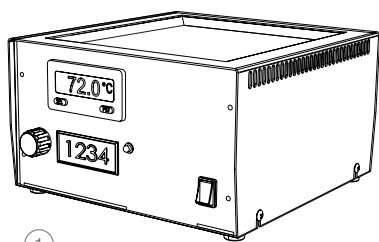
Technical data sheet

The new Ultrasonic Package allows users to maximize the particle size in cooperation with the world leading laboratory scale Mini Spray Dryer B-290. The Ultrasonic Package produces particles (10 – 60 μm) with a small standard size distribution and similar shape. Larger particles result in a better flowability of the produced powder, as well as better dosing and handling of the product.

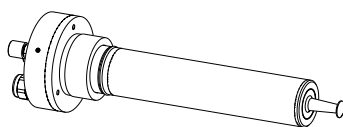


Scope of delivery

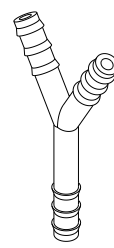
Components	Qty	Order Code	Picture
Ultrasonic Controller	1	110 600 52	①
Ultrasonic Nozzle	1	110 600 53	②
Ultrasonic Cable	1	110 600 54	
Y-piece	3	110 605 27	③
Pulsation damper	3	110 605 28	④
Power supply	1	0 400 90	



①



②



③



④

Order code

1 1 0 5 9 9 8 0

Ultrasonic Package

Technical data

Dimensions (WxHxD)	245 x 132 x 225
Weight (net)	2.4 kg
Operating voltage	90 – 260 VAC
Frequency	50 / 60 Hz
Power consumption	Max. 75 W
Power output at nozzle	1-15 W
Temperature range	0 – 40 °C
Maximal Viscosity	70 cps
Feed flow rate (min.)	1 ml/min
Feed flow rate (max.)	9 ml/min
Maximum operation temperature of the Nozzle	120 °C
An alarm will be triggered as soon as the temperature reaches 100 °C	
Mean particle diameter	80% (20 – 60 µm)
Maximum flow rate for cooling gas	200 – 800 l/h (at 5-8 bar)
Yield	Up to 85% / standard 40-70%

Accessoires

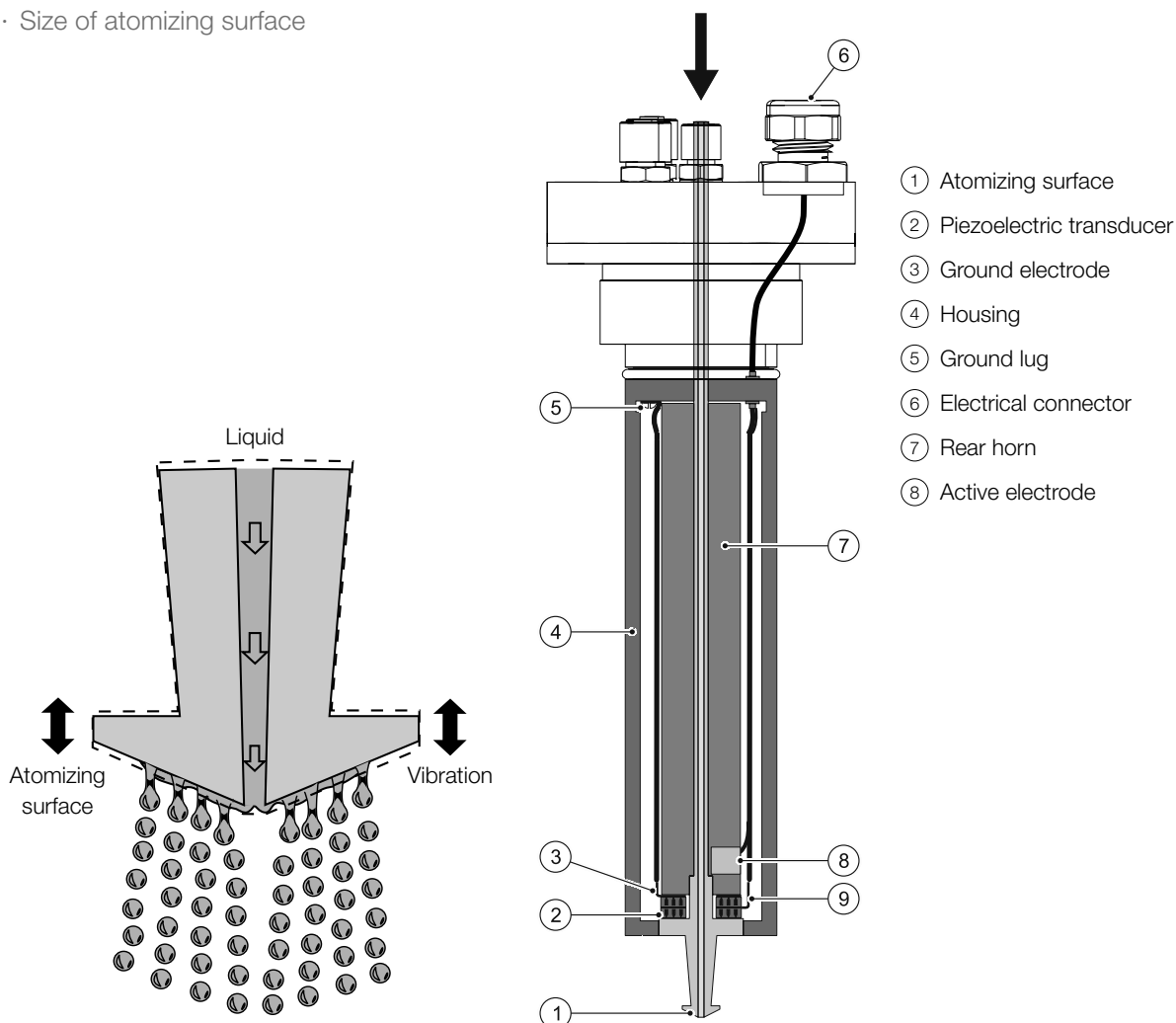
Components	Qty	Order Code
Inert Gas Adapter	1	110 604 92
Adapter for safe spray drying of organic solvents with the Ultrasonic Package in combination the Inert Loop on the Mini Spray Dryer B-290		

Functional principle

The ultrasonic atomization process is highly dependent on the power delivered to the nozzle. Ceramic piezoelectric transducers convert high frequency electrical energy from a power generator into vibratory mechanical energy (of the same frequency), at the atomizing surface. The liquid is delivered to the atomizing surface through a large diameter feed tube and breaks up into droplets due to the vibrational frequency at the atomizing surface.

The droplet size depends on:

- Nozzle type (mechanical and electrical characteristics, size)
- Power on the atomizing surface
- Liquid characteristics (e.g. viscosity, solid content etc.)
- Flow rate of the feed
- Size of atomizing surface



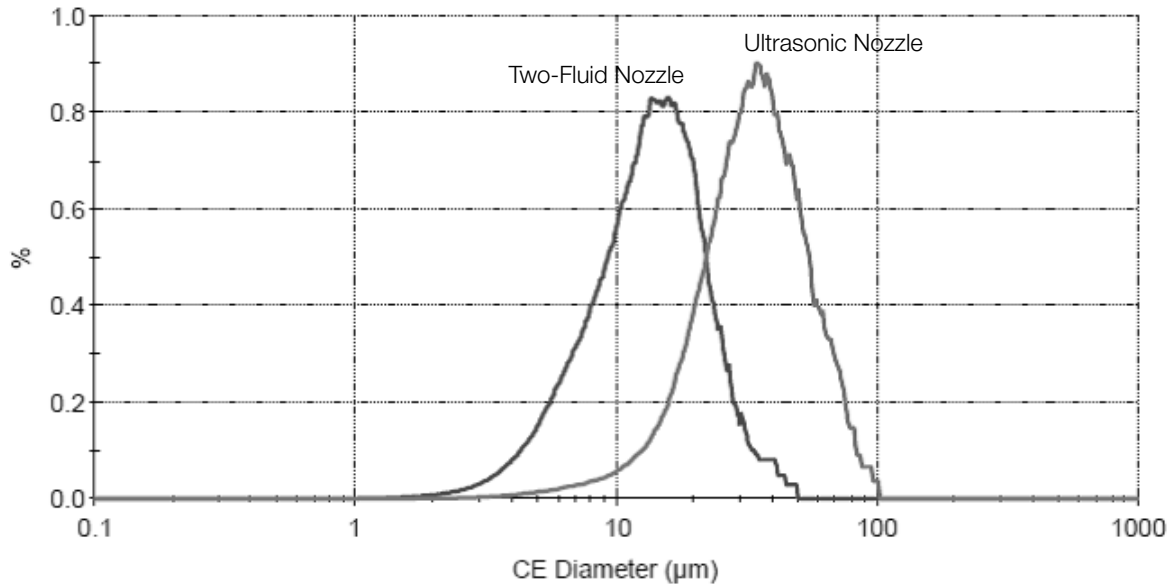
Ultrasonic Nozzle vs. Two-Fluid Nozzle

Settings on the Mini Spray Dryer B-290 with NaSO₃ solution:

Nozzle type	T _{in}	T _{out}	Aspiration
Two-Fluid Nozzle	145	94	100 %
Ultrasonic Nozzle 60 kHz	124	75	50 %

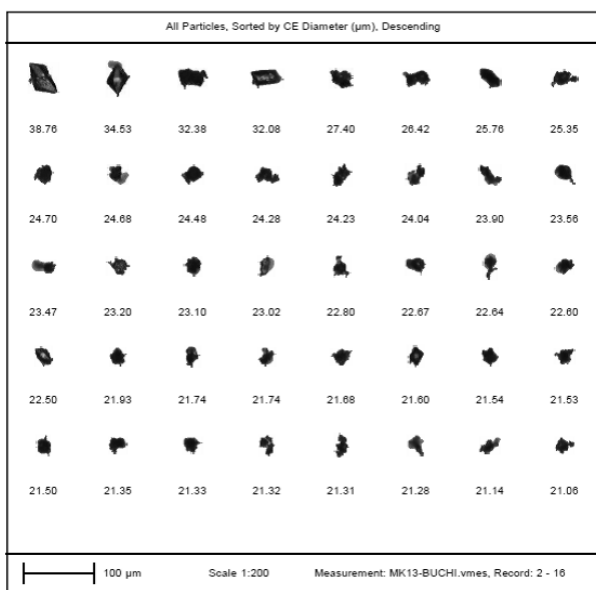
Volumetric particle distribution:

CE diameter (μm) smoothed over 51 points

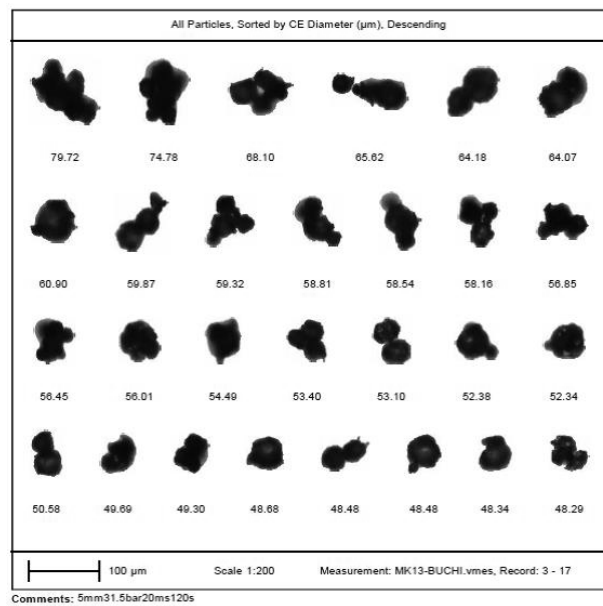


Particle diagram:

Two-Fluid Nozzle



Ultrasonic Nozzle



Rheology measurement (flowability):

