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# FLUIDIZED BED AEROSOL GENERATOR MODEL 3400A

EFFECTIVELY DEAGGLOMERATE  
POWDERS FOR DISPERSION OVER  
A WIDE RANGE OF CONCENTRATIONS

TSI's Fluidized Bed Aerosol Generator Model 3400A\* contains a fluidized bed chamber and a powder reservoir. The fluidized bed consists of 100- $\mu\text{m}$  bronze beads supported by a porous screen that allows clean, dry air to pass through, yet prevents the passage of any powder.

\*Developed in cooperation with the University of Minnesota Particle Technology Laboratory.  
†Respirable dust is defined by the American Conference of Governmental Industrial Hygienists.  
The flow rate through the 0.5-inch HASL cyclone is that which is recommended by the American Industrial Hygiene Association Aerosol Technology Committee.



During operation, a bead chain meters powder into the fluidized bed. As air forces its way up through the screen and into the bed, it creates a boiling action, which deagglomerates the powder and causes it to be carried upward by the airflow through a vertical elutriator.

A cyclone at the top of the vertical elutriator prevents any particles that are not fully deagglomerated from being dispersed. With a flow rate of 9 liters/min, the cyclone allows only respirable dust† to be generated. Separate flowmeters measure the bed flow rate and the bead purge flow rate.

The powder reservoir is equipped with a gear-driven rake that rocks back and forth, preventing the formation of a channel in the powder due to the movement of the bead chain through the powder reservoir. This assures a constant, even feed rate into the fluidized bed chamber. The airflow pattern through the porous screen further stabilizes the concentration of the output aerosol.

## Features

- + Particle size range from 0.5 to 40  $\mu\text{m}$
- + Bed of bronze beads breaks up powder agglomerates
- + Stable output and concentration

## Applications

- + Generating dust for inhalation and toxicology studies
- + Evaluating performance and calibrating dust samplers and monitors
- + Dust erosion in high-speed gas flows
- + Generating particles for laser velocimeter applications

# SPECIFICATIONS

## Fluidized Bed Aerosol Generator Model 3400A

### Output Concentration Range

10 to 100 mg/m<sup>3</sup>

### Powder Feed Rate Range

3 to 30 mm<sup>3</sup>/min, adjustable (equates to a feed rate of 180 to 1800 mg/hour, assuming unit density)

### Carrier Gas Flow Rate Range

5 to 15 liters/min at 345 KPa (50 psi)

### Particle Size Range

Related to size of powder to be dispersed. Maximum size is approximately 40- $\mu$ m aerodynamic diameter; particles smaller than 0.5  $\mu$ m do not deagglomerate efficiently.

### Cyclone

Stainless steel, 0.5-in. diameter, classifies respirable dust at 9 liters/min

### Power Requirements

115, 230 VAC; 50 to 60 Hz; 45 W

### Dimensions (LWH)

264 × 368 × 150 mm (10.4 × 14.5 × 5.9 in.);  
with elutriator, H = 483 mm (19 in.)

### Weight

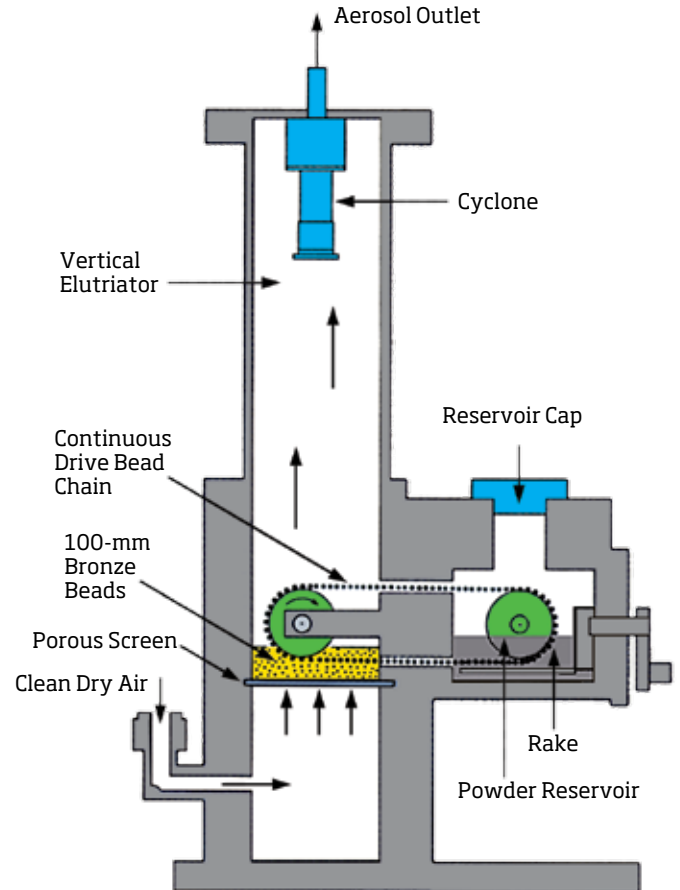
11 kg (24 lbs)

Specifications are subject to change without notice.  
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It is recommended that the powder dispersers described in this brochure be used with the TSI Model 3074B Air Supply System.

**Warning:** Dispersed dusts may be toxic and hazardous.

TSI assumes no responsibility for personal injury or property damage due to inappropriate use of these instruments.



### To Order

Fluidized Bed Aerosol Generator

Specify	Description
3400A	Fluidized Bed Aerosol Generator

### Optional Accessories

3012/3012A	Aerosol Neutralizer
1502574	Bronze Beads

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