

### J-20 J-25 J-30 Fluid Jet Micronizers

**Fluid jet micronizers designed for R&D**

The Fluid Jet family of micronizers (including the J-20 line) is based on TECNOLOGIA MECCANICA's jet milling technology. Our J-20 works at a constant temperature (endothermic) and independently with just a nitrogen bottle. The powder is fed at subsonic speeds (approximately 50 m/s) into the flat cylindrical milling chamber tangentially through a Venturi system using pressurized air or nitrogen. Once inside the milling chamber the particles are then accelerated by a series of jets around the perimeter to supersonic speeds (300 m/s), in a spiral movement. The micronizing effect occurs when the slower incoming particles and the faster particles in the spiral path collide. While centrifugal force retains the larger particles at the periphery of the milling chamber, the smaller particles exit with the exhaust gas from the centre of the chamber.

#### At a glance

- Modular unit for batches from 50 mg to 600.0 g
- Single collecting point with complete scalability of the process to bigger micronizers
- Metal contamination below 1 PPM (particles per million)
- Every equipment is manufactured in Aisi type 316L (EN 1.4404) stainless steel or in Hastelloy mirror polished to Ra 0.25 micron

#### Narrow particle size distribution

- ❖ Product: ZINC LACTATE
  - Quantity of product fed 50.0 g
  - Input particle size distribution D99<100 µm
  - Output particle size distribution D99<2.99 µm
- ❖ Product: BUDESONIDE
  - Quantity of product fed 10.0 g
  - Input particle size distribution D99<300 µm
  - Output particle size distribution D99<2.60 µm
- ❖ Product: SALBUTAMOL
  - Quantity of product fed 30.0 g
  - Input particle size distribution D99<120 µm
  - Output particle size distribution D99<2.45 µm



#### Discover your own tailored equipment

There are many possibilities and configurations available to tailor our micronizers to your application. We are able to test your custom version since our engineering team works with you in order to develop your personal system. Options already available:

- Single and double screw feeders
- Low Emission version with Hepa filter
- Automatic shaking system
- Balance line
- Cold / Cryogenic process gas version
- J-25 / J-30 milling chambers
- Explosion proof version
- Totally contained solution in glove box



## Technical Features

The J-20 series is able to micronize very small batches/samples from 0.2-0.3 grams (even 50 mg in milligram kit configuration) with low product loss to an extremely narrow particle size distribution of  $D_{99} < 3$  micrometer. This is the main advantage of the J-20 since the pharmaceutical laboratories all over the world are concentrating their research efforts on new molecules, and on newly developed and quite often expensive products of which only limited quantities might be available. This mill allows researchers to carry out many more trials with their limited or costly product(s) instead of just one or two trials, and with very low product loss. Until recently, researchers had to settle for R&D fluid energy jet mills able to micronize batches starting from 3 or 4 grams, but the laboratories don't always have 3 or 4 grams at their disposal just to make trials.

The Particle Size Distribution is controlled by adjusting two main parameters:

- **PRESSURE:** the energy used to micronize; increased pressure increases the micronization effect
- **FEED RATE:** the concentration of product fed into the milling chamber; the greater the feed rate, the less the micronization effect. This is due to the fact that particles must have space to achieve proper acceleration before collision occurs.



### Example of different micronized products

- ❖ Very small batches: LACTOSE
  - Quantity of product fed 0.3 g
  - Micronized product 0.22 g
  - Yield 73.3%
- ❖ Medium batches: PEPTIDE
  - Quantity of product fed 1.0 g
  - Micronized product 0.88 g
  - Yield 88%
- ❖ Bigger batches: POLIPEPTIDE
  - Quantity of product fed 50.0 g
  - Micronized product 49.3 g
  - Yield 98.6%

### with milligram kit for NCE (New Chemical Entity)

- ❖ Milligram batches: LACTOSE
  - Quantity of product fed 100 mg
  - Micronized product 90.3 mg
  - Yield 90.3%

By increasing the quantity the J-20 is able to guarantee higher yield performance (near 99.5%)

### Available Versions

- J-20 or J-25 or J-30 milling chamber
- J-20 with milligram kit
- J-20 with twin screw micro feeder
- J-20-LE (low emission version)
- J-20-CRYO (cryogenic version)



### Technical Data

- ❖ Milling Chamber: J-20
  - Process gas at 7 bar = 0.08 m<sup>3</sup>/min (2.82 CFM)
  - Process gas at 12 bar = 0.20 m<sup>3</sup>/min (7.06 CFM)
  - Estimated capacity = from 0.50 to 100.00 g/hour
- ❖ Milling Chamber: J-25
  - Process gas at 7 bar = 0.14 m<sup>3</sup>/min (4.94 CFM)
  - Process gas at 12 bar = 0.24 m<sup>3</sup>/min (8.47 CFM)
  - Estimated capacity = from 5.00 to 300.00 g/hour
- ❖ Milling Chamber: J-30
  - Process gas at 7 bar = 0.17 m<sup>3</sup>/min (6.00 CFM)
  - Process gas at 12 bar = 0.28 m<sup>3</sup>/min (9.89 CFM)
  - Estimated capacity = from 5.00 to 600.00 g/hour

### Our Workshop address:

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The manufacturer reserves the right to modify specifications without prior notice.