

ALPINE SPIRAL JET MILL 50 AS FOR ULTRAFINE PRODUCTS



HOSOKAWA ALPINE

PROCESS TECHNOLOGIES FOR TOMORROWSM



The many years of close cooperation between the development departments of our customers and our own engineers have turned us into leading global specialists for comminution technology.

ALPINE IS A LEADING GLOBAL PLAYER

Alpine stand for competence in all areas of size reduction technology. Our experience and technological developments have been turned to success by the chemicals, cosmetics and foodstuffs industries over the last 100 years.

AMOUNTS < 3 g MICRONISING WITHOUT PRODUCT LOSS

The requirement of micronising even small amounts without product loss led to development of the Alpine spiral jet mill 50 AS. This extremely compact and light-weight unit was tailored especially to the demands of laboratory applications and is also ideal for installation in a laboratory fume hood.

PARTICLE SIZES FROM 5 µm

The 50 AS is ideal for the ultrafine comminution of dry substances with a crystalline structure to a Mohs' hardness

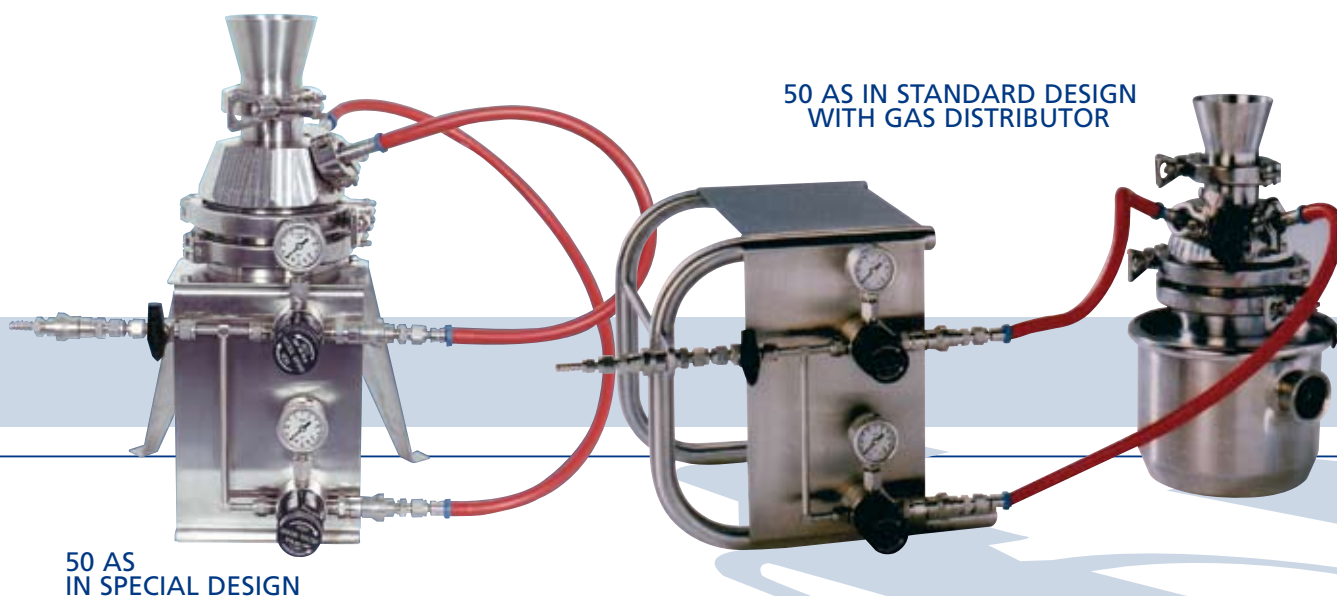
of 3, whereby particle sizes in the range between 5 µm and 30 µm are achieved. The 50 AS is universal in use and is eminently suitable for the processing of numerous pharmaceutical substances including parenterals, DPI (dry powder inhalants) and other active substances. Even extremely small amounts can be processed easily and with maximum yield. The 50 AS is – as are all other Alpine units in pharmaceutical design – cGMP qualified and FDA approved.

LOW AIR AND PRESSURE REQUIREMENT

In contrast to the laboratory jet mills of other manufacturers, the Alpine 50 AS achieves particles with a fineness value of $d_{97} < 5 \mu\text{m}$ at pressures as low as 4 - 5 bar. This makes it the ideal jet mill for every laboratory with standard equipment. If required, the mill can be upgraded at any time for operation at higher pressures.

DESIGN FEATURES

- Stainless steel version, stainless steel 316L, monobloc design, without welding seams
- **Disposable polymer version in PVDF available**
- Processing of micro amounts (< 3 g)
- Minimal product loss, i.e. optimum yields
- Surface finish $R_a < 0.8 \mu\text{m}$ or better
- Small and compact - ideal for installation in a laboratory fume hood
- Completely pre-installed gas distributor with separate calibrated pressure regulators
- The laboratory unit can be dismantled and cleaned quickly and easily without tools
- The individual components can be sterilised in an autoclave



50 AS
IN SPECIAL DESIGN

50 AS IN STANDARD DESIGN
WITH GAS DISTRIBUTOR



ONLY A FEW COMPONENT PARTS

Here too, the 50 AS stands out positively against other makes, because during development, a conscious effort was made to keep the number of component parts as low as possible. With only 3 clamp connections, the Alpine jet mill cannot be beaten when it comes to ease and speed of dismantling, cleaning and reassembly. The simple design of the 50 AS prevents assembly faults and saves the user time.

EXTENSIVE ACCESSORIES

The daily practical operation, both in our application testing centre in Augsburg as well as numerous customer laboratories, gave rise to demands for customised metering systems and isolator

solutions. With the micro metering screws and the flexible isolator, Alpine offers the best possible solution for standard and special applications. A number of different qualities are available to meet customer requirements, e.g. filters made of polyamide-membrane-coated stainless steel or of stainless steel fibrous web elements.



EASY
TO CLEAN

ISOLATOR (OEL <math>< 1 \mu\text{g}/\text{m}^3</math>)
WITH 50 AS AND PHARMA MICRO METERING
SCREW PMD





PROCESSING HIGHLY ACTIVE SUBSTANCES

We offer containment solutions that conform with the prevailing pharma standards for the processing of highly active substances. The example shows an isolator with integrated 50 AS spiral jet mill in PVDF and pharma-design metering screw. Because we are able to draw on a vast fund of experience within the Hosokawa Group, offering tailor-made solutions, we join forces with our sister companies to develop processing systems which optimally meet your problem specifications in terms of economy, technology and ergonomics.

FLEXIBLE AND COMPACT ISOLATOR

To meet the increasing demands for inexpensive containment solutions, Hosokawa developed a series of compact isolators.

The modular design affords a high degree of flexibility with respect to the materials of constructions as well as the interior fittings. The bottom section of the isolator comprises a stainless steel work tank which can either be set up on a laboratory table or equipped with its own holder.



FLEXIBLE ISOLATOR (OEL < 10 µg/m³)
WITH DISPONABLE MODEL OF 50 AS IN PVDF

Product	Feed size	Fineness
Calcium phosphate	99% < 32 µm	99.6% < 5 µm
Cefixime	99.9% < 435 µm	97% < 20 µm
Ceftiofur	99% < 50 µm	99% < 20 µm
Chloramphenicol	99.9% < 90 µm	99.9% < 9 µm
Dextromethorphan	99% < 123 µm	97% < 5 µm
Fenpiverin bromide	99.9% < 150 µm	99.9% < 7,5 µm
Mica	98% < 51 µm	99.9% < 25 µm
Lactose	90% < 75 µm	90% < 3 µm
Lactose	90% < 75 µm	99% < 9,6 µm
Nitroscanat	99.9% < 150 µm	99% < 5 µm

DESIGN FEATURES

- Stainless steel work tank
- Filter and transfer system integrated into the back panel
- Simple design

HOUSINGS

- Transparent FDA-approved Polymerfilm
- Transparent FDA-approved PC
- Stainless steel with glass panels

GLOVE SYSTEMS

- Stott glove ports in safe-change version.
- Gloves welded direct in the PE front panel
- Gloves in all commercial qualities

TRANSFER SYSTEMS

- Continuous tube
- α / β-port system



PHARMA MICRO METERING SCREW PMD

This micro metering screw was developed especially to conform with cGMP for applications in the pharmaceutical industry. The metering screw is in volumetric design and was developed for the continuous and precise metering of dry substances.

FEATURES

- cGMP-qualified design
- Modular design
- Clear division between the product-contact zone and the drive
- Quick and easy to dismantle
- Quick and easy to clean
- Suitable for batch sizes between 5 and approx. 150 g
- Weight approx. 12 kg



MICRO METERING SCREW PMD

FEED RATE

The feed range depends on the screw design and speed and ranges between 1 g/min to 170 g/min. For example at a screw speed of 15 rpm: approx. 4 g/min. This value refers to lactose < 100 µm, density 0.6 kg/l.

The complete screw comprises the following two modules:

Module 1: drive unit

Brushless DC motor with integrated controller including speed recording.

Motor and gearbox:

Rated power: 20 W
Supply voltage: 24 V DC

Module 2: product bin

Product bin: 265 ml
Inlet funnel: Ø 70 mm

Other variants are available to suit different requirements.

The modules are connected to each other by means of a central locking mechanism. A lever catch is used to release and secure the connection.

CONSTRUCTION MATERIALS AND SURFACE FINISH

Product-contact components made of stainless steel AISI 316L, ground to Ra < 0.8 µm and electropolished. Product bin made of borosilicate glass.

SEALS

Seals made of

- PTFE, 21 CFR 177.1550
- EPDM, 21 CFR 177.2600
- Silicone, 21 CFR 177.2600

OPTIONS

- Gravimetric metering system
- Different screw profile geometries (full profile, spiral profile, concave profile)
- Isolator version

PHARMA VIBRATION METERING CHANNEL PDR

Over and above this, we offer a micro metering channel for small throughputs, with feed rate between approx 0.15 l/h and 2.8 l/h. The pharma-qualified design with no dead spaces or crevices means that product residues are kept to a minimum. Product-contact components made of stainless steel AISI 316L, ground to Ra < 0.8 µm and electropolished. Drive and control unit IP 65.



PHARMA VIBRATION METERING CHANNEL PDR

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HOSOKAWA ALPINE Aktiengesellschaft

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