

NETZSCH

Proven Excellence.



Process Technology for Food Applications

Solutions for Dry- and Wet Processing in Production and Laboratory Areas

NETZSCH

Your Partner for Food Applications

In the food and luxury food sectors micronization is one of the most important process steps. During the industrial manufacture of various products, for example soya flour, wheat flour (protein shifting), milk powder, gelling agents, cocoa powder, starches and sugar, grinding and classifying are both important parts of the process.

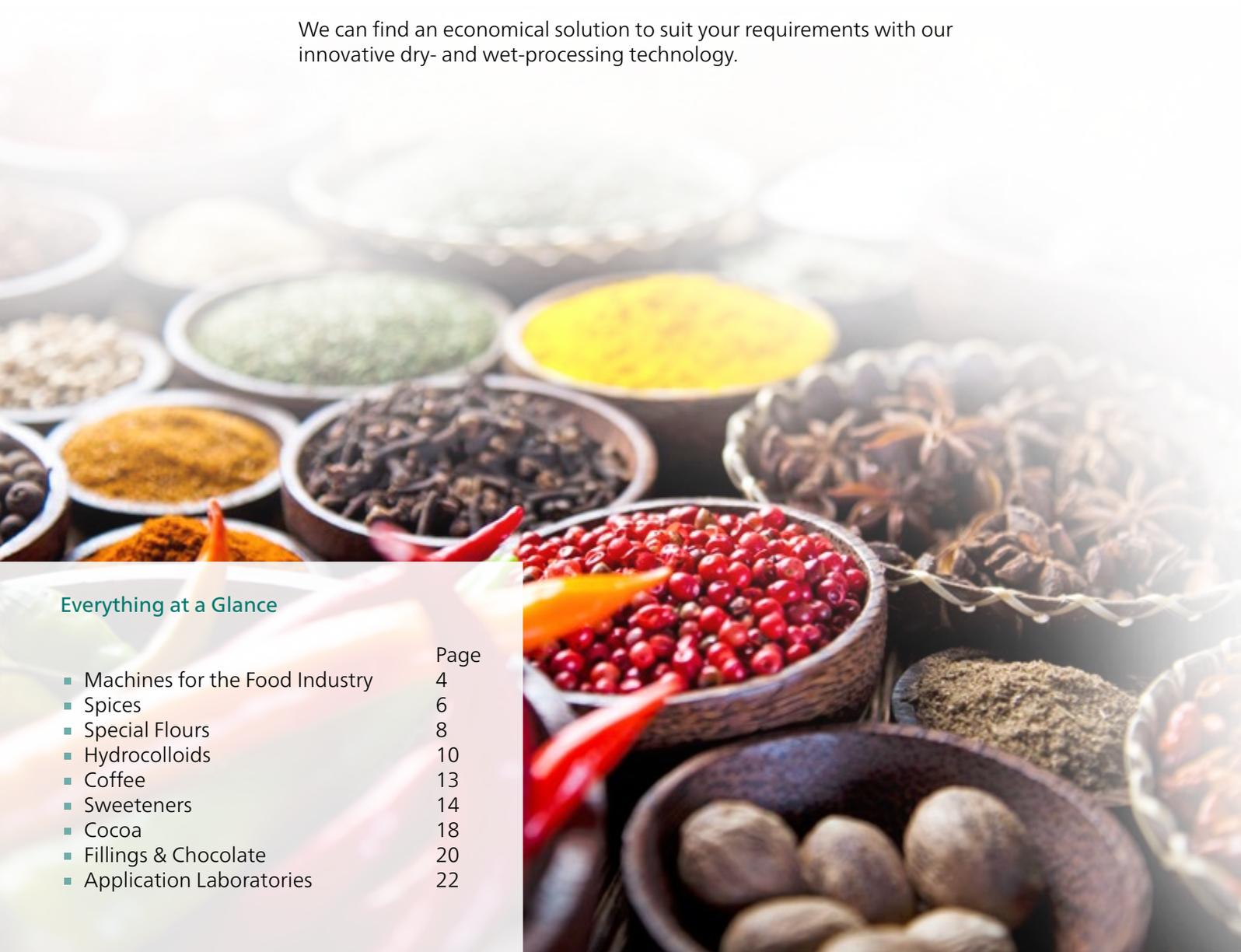
With our comprehensive experience and equally wide range of machines which includes fine impact mills, classifier- and jet mills as well as fine-cutting mills and high-efficiency fine classifiers, NETZSCH is your proven and dependable partner for the manufacture of food by dry-grinding.

In addition to this, you can also depend on NETZSCH 's experience and expertise as a worldwide leading company in the area of wet-grinding and dispersing.

We can find an economical solution to suit your requirements with our innovative dry- and wet-processing technology.

Everything at a Glance

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Examples of Applications	CHM	CONDUX®	CSM	CGS	CONJET®	SECO MY® SECO MY® S	CFS HD-S IN LINE STAR	MASTER NIBS	ALPHA® MASTER REFINER	MAMBO®	SALSA®	RUMBA®
	Hammer Mill	Fine-Impact Mill	Classifier Mill	Fluidized Bed Jet Mill	High-Density Bed Jet Mill	Fine Cutting Mills	Classifier	Beater Blade Mill	Agitator Bead Mills	Confectionery System	Confectionery System	Confectionery System
Flavors				■	■							
Baking additives			■	■	■							
Confectionery (cocoa press cakes, cocoa, ...)		■	■	■	■			■	■			
Enzymes									■			
Colorings		■	■	■	■				■			
Fruit preparations, -powders		■	■	■	■							
Fillings / Compounds									■	■	■	
Spices	■	■	■			■						
Hydrocolloids (algae, pectin, gelatine, cellulose)		■	■	■		■	■					
Coffee		■		■	■							
Milk- & Dairy Products		■	■	■	■							
Chocolate									■			■
Special Flours (protein shifting, soya flour, ...)		■	■		■		■					
Sweeteners (sugar, artificial sweeteners, sugar substitutes)		■	■		■							
Vitamins		■	■	■	■							

A range of examples of application areas for the NETZSCH machine program is shown in the table. If your product is not mentioned, please describe your requirements to us. We are sure that we can find a suitable solution for your application!

Customized Solutions for Your Particular

The production and operation of machines and plants for the food industry are subject to EU-directives. Machines used for the production of food are seen as special machines which must meet high safety requirements as well as high requirements regarding cleanability, hygiene and disinfectability.

All machine and plants made by NETZSCH are constructed according to the current directives and are distinguished by their easy and effective cleanability.

For your production process NETZSCH can not only offer individual grinding machines, but also complete grinding- and classifying plants which are especially designed to suit your requirements. Therefore, explosion pressure shock resistant plants can also be delivered as well as gastight plants for inert-gas operation or plants with grinding gas cooling for the fine-grinding of temperature-sensitive materials.



Fine-Impact Mill CONDUX® 680

Requirements



NETZSCH Trockenmahltechnik GmbH
and NETZSCH-Feinmahltechnik GmbH
are company members of EHEDG

Hygiene Requirements

- Machine construction based on the guidelines of the European Hygienic Engineering & Design Group (EHEDG)
- The materials used are food grade and in compliance with FDA regulations and the usual standards (IFS, BRC, HACCP, IS 22000)
- Product-contacted parts made of stainless steel simplify cleaning and guarantee that your product stays free of contamination and foreign matter
- Machines and plants can be cleaned easily and effectively; Cross contamination is avoided
- Tools can be exchanged quickly and cleaning carried out easily

Your Benefits thanks to NETZSCH's Well-thought out and Perfected Design

- Easy and rapid cleaning
- Product can be changed rapidly
- Long maintenance intervals
- Grinding tools are adapted to suit the particular product for optimal use of energy
- Wide range of grinding finenesses can be selected
- Simple and durable construction
- Low number of easily exchangeable wear parts
- Best processing quality guaranteed by NETZSCH in-house production
- Excellent price-performance ratio



Fine-Impact Mill Condux® 220

SPICES

Gentle Grinding to Preserve the Characteristic

Spices are dried plant parts, for example seeds, fruits, roots, bark, berries, peel, stems or leaves. These are used in nutritionally insignificant amounts as food additives for flavor and color or as preservatives.

NETZSCH Flavor Protection Grinding

When processing herbs and spices the highest priority is to preserve their characteristic properties as flavor-, aroma- or color carriers. Some spices already have their characteristic properties when they are freshly-harvested. In this case the natural flavors are completely enclosed by cell walls and to a large extent protected. Other spices develop their characteristic properties after they have been dried and some are processed with the aim of enhancing their desired properties.

Essential oils and so-called hot and spicy substances are the main flavor enhancers in spices. They consist of a multitude of different flavors which are generally volatile. With the NETZSCH flavor-protection grinding process these flavors can be preserved to a large extent.

Examples of Applications	Fineness [%] < 500 µm	CONDUX® 300 [kg/h]	CONDUX® 1250 [kg/h]
Aniseed	87	295	3 245
Caraway seeds	72	81	891
Chilli	99	90	990
Chilli	95	150	1 650
Cinnamon	97	231	2 541
Cloves	96	143	1 573
Coriander	92	250	2 750
Ginger	96	370	4 070
Nutmeg	98	270	2 970
Paprika	98	625	6 875
Pepper	96	577	6 347



Properties



Chilli



Pepper

Focus on Your Advantages

- Low grinding temperatures reduce diffusion processes
- Adjustable grinding fineness avoids unnecessary breaking up of cell structures
- Short dwell times in the mill keep heat transfer into the grinding product to a minimum
- Crush-free grinding protects the cell structures within the particles
- The essential oils are preserved to a great extent as the final fineness is obtained in a single grinding step without product return and without intermediate screening
- Cryogenic grinding with liquid nitrogen
- Conditioned grinding air for products with high oil- and fat contents



Fine-Impact Mill CONDUX® 680

SPECIAL FLOURS

Grinding and Classifying with Higher Throughput

Special flours differ from normal flour, which consists solely of wheat, either due to their composition or their intended use. Powdery products with a special character are also included in the area of bakery products.

These can be either

- Micronized flours,
- Flours with particular finenesses with a steep particle size distribution,
- Specially dried flours and/or powders with a reduction of the residual moisture in the product to below 5 %,
- Flours or powders with an improved microbiological stability or
- Flours with modified protein structures.

Example of an Application: Protein Shifting in Wheat Flour

As well as dietary fiber, minerals and digestible carbohydrates, plant-based materials used for feeding humans or animals also contain proteins. The aim of the process of protein shifting is to gain a protein-rich fraction in which the amount of protein is considerably higher than in the original product by grinding and separating.

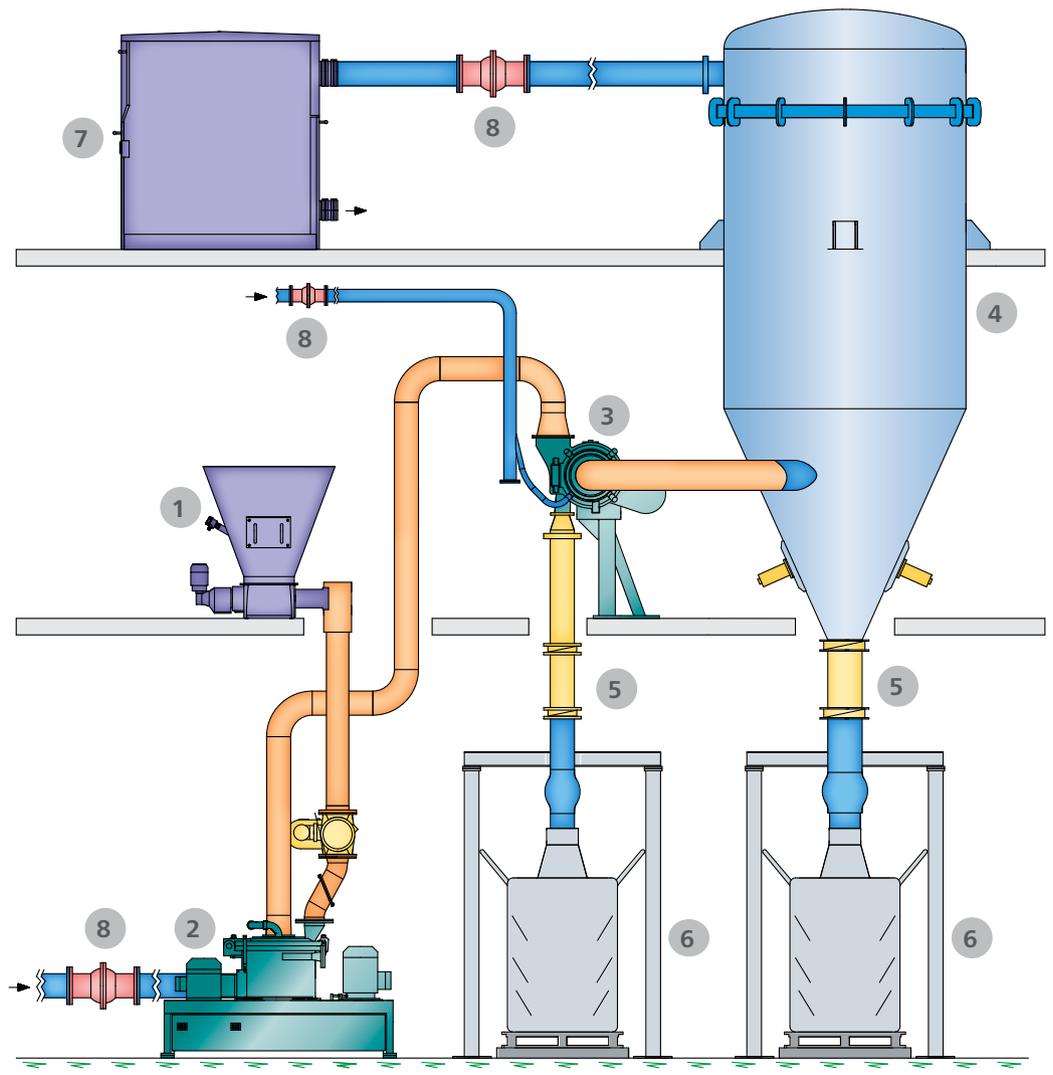
In this process the large difference between the size of the protein- and starch particles (starch: 30 μm to 40 μm , protein < 17 μm) is exploited, as well as the fact that starch can only be ground by means of dry impact grinding with a high energy input.

Using the NETZSCH classifier mill type CSM to fine-grind commercial wheat flour, protein- and starch particles in the flour are separated to a large degree. As the starch particles are difficult to grind due to their flexible structure, the protein particles are ground significantly more finely. By subsequent classifying with the NETZSCH Fine Classifier CFS or the NETZSCH High-Efficiency Fine Classifier CFS HD-S or the *INLINESTAR*, fractions with different protein- and starch contents can be obtained.

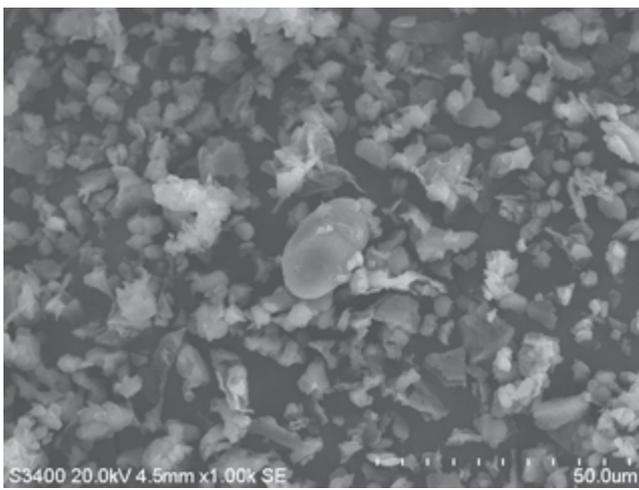
Focus on Your Advantages

- High throughput capacities
- Gentle grinding with low heating of the product
- Grinding with conditioned air possible
- Higher amount of protein-rich fraction

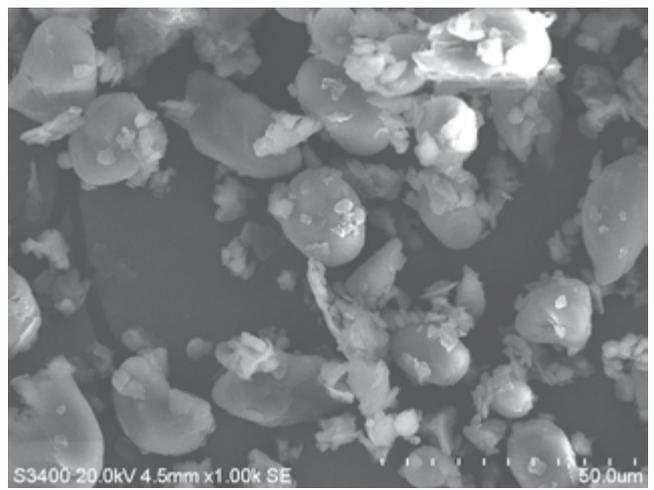
Capacity



- 1 Dosing unit
- 2 Classifier Mill CSM
- 3 High-Performance Fine Classifier *INLINESTAR*
- 4 Dust filter
- 5 Double flap valve
- 6 Big-Bag
- 7 Blower
- 8 Explosion protection valve



Fine fraction with high protein content



Coarse fraction with high amount of starch

HYDROCOLLOIDS

Food Additives and Food Supplements with

A large group of polysaccharides and proteins which have a high capacity for gelling are known as hydrocolloids. A large number of these originate from nature most of them from the plant world. However, hydrocolloids can also be obtained from algae, bacteria and animal sources. The extraction of hydrocolloids is carried out using several very different processes and often the products obtained are further modified in order to regulate certain properties.

Hydrocolloids are used in the food industry as gelling- and thickening agents, stabilizers, humectants etc. Furthermore, their properties give each particular food its appearance and the usual (texture) mouth feel.

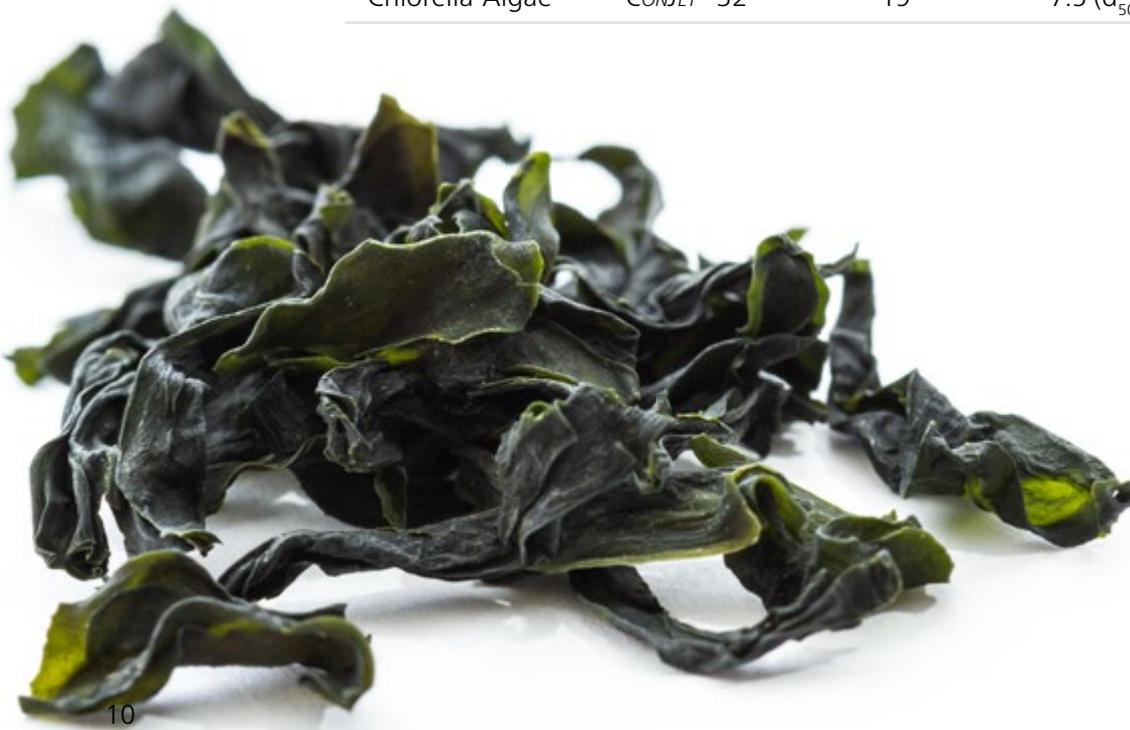
We can offer you the optimum solution for your requirements with NETZSCH 's proven technology including impact-, classifier-, jet- and fine-grinding mills.

Application Example Algae

Algae not only have a high content of minerals and trace elements, but are also rich in carbohydrates, unsaturated fatty acids and/or beta-carotenes. For this reason algae are interesting as a food – so far predominantly in South East Asia.

For special applications the individual ingredients are used or the degradability of algae is exploited and the products obtained through degradability used.

Product	Machine	Throughput [kg/h]	Final Fineness [μm]
Chlorella-Algae	CONJET® 32	19	7.5 (d ₅₀)



many different Properties

Application Example Gelatine

Gelatine is a natural foodstuff. It is transparent has neither odor nor taste and is used for many applications. Gelatine consists up to 80 - 90% of protein. The remaining components are water and mineral salts. Gelatine is produced from collagen in a multistage manufacturing process. In the final step the pulverization of extrudates is necessary. The throughputs obtained in this step depend greatly on the viscosity of the feed product.

Product	Machine	Throughput [kg/h]	Final Fineness [μm]
Gelatine	CSM 360	83	100 (d_{99})
Gelatine	CONDUX® 450	130	250 (d_{99})
Gelatine	CONDUX® 680	480	630 (d_{97})

Application Example Cellulose and Cellulose Derivatives

Before cellulose and cellulose derivatives can be used in pharmaceutical products, a multistage processing is necessary.

With their precise and high number of cuts and the use of a screen insert and/or with a rotating classifier wheel to determine the final size, the fine-grinding mills CS-Z, SECOMY® and SECOMY® S by NETZSCH are an ideal solution for the first processing step. The cellulose powder obtained with these machines can be added straight away to the product (food) as a filler or an additive.

The powder obtained in this way can also be modified and by introducing various functional groups can give a multitude of cellulose derivatives which are characterized by certain particular properties such as solubility, viscosity, gelling power and -temperature or surface activity. With the NETZSCH impact mill the cellulose derivative can be ground down to various finenesses to suit your requirements exactly.

Product	Machine	Throughput [kg/h]	Final Fineness [μm]
Wood cellulose	SECOMY® S 50	45	63 (d_{97})
CMC	CONDUX® 1250	1 800 - 2 100	250 (d_{99})
HPMC	CONDUX® 300	66	150 (d_{50})
HPC	CGS 50	100	53 (d_{50})
Microcrystalline cellulose	CGS 71	150	150 (d_{50})



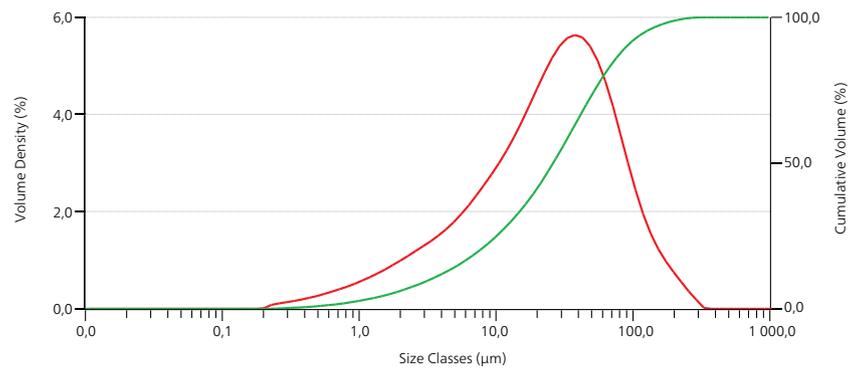


Pectin

Application Example Pectin

Pectins are plant-based polysaccharides which can be found in all hard plant parts, for example stems, flowers or leaves. Seen from a nutritional point of view pectins provide dietary fiber for humans, although they are used chiefly as gelling agents in the food industry.

Pectins are essential ingredients of many products in the food- and pharma industries or are used in the manufacture of cosmetics.



Machine	Throughput [kg/h]	Final Fineness [µm]
SECO ^{MY} ® S 50	11	90 (d ₉₀)
CSM 720	700 - 800	179 (d ₉₀)



High-Density Bed Jet Mill
CONJET® 71

Further Product Examples

Product	Machine	Throughput [kg/h]	Final Fineness [µm]
Milk calcium	CONJET® 50	200 - 250	10 (d ₉₉)
Tricalcium citrate	CONJET® 50	200	10 (d ₉₈)
Beta carotene	CONJET® 50	60	5 (d ₉₇)
Carob flour	SECO ^{MY} ® S 50	57	55 (d ₉₉)

COFFEE

Finest Grinding for Greater Enjoyment!

Coffee is one of the most important internationally traded products as well as one of the most frequently consumed drinks. Its name is derived from the Arabic word "Kahwe" or "Qahwa" which means vitality or strength. The stimulating effect of coffee has been well-known for a long time and thanks to constantly improving methods of analysis over 1000 different ingredients such as flavors, vitamins, minerals or antioxidants have been determined.

In order to release these ingredients and flavors, the coffee must be ground after roasting. The finer the coffee is ground the greater the amount of ingredients released, thus influencing the flavor positively. New products require very fine-grinding. The fluidized bed jet mill range by NETZSCH is predestined for this application.



Coffee

Example of Product

Fine-grinding of a coffee mixture consisting of 50% roasted coffee and 50% instant coffee.

Fluidized Bed Jet Mill	CGS 100
Feed size d_{97}	500 μm
Grinding air pressure	3 bar(g), cold gas 20 °C
Throughput capacity	240 kg/h
Fineness d_{90}	37.6 μm
Fineness d_{97}	47.3 μm
Fineness d_{99}	100 μm



Fluidized Bed Jet Mill CGS 50



SWEETENERS

Safe Operation and Effective Dry-Grinding

Sugar, Artificial Sweeteners and Sugar Substitutes

Although the word „sugar“ is commonly only used when referring to monosaccharides such as fructose and glucose, it actually encompasses disaccharides, such as sucrose, lactose and/or maltose. The most important disaccharide in economic terms is sucrose (crystal- or household sugar) which is obtained from sugar cane and sugar beet in an industrial process. Sugars are grouped under the term sweeteners together with natural and synthetic sugar substitutes.

Compared to sugar, artificial sweeteners either have no or a negligible amount of calories. They are manufactured synthetically or consist of natural compounds, which are considerably sweeter than sugar. As artificial sweeteners are considered to be food additives, they are subject to statutory authorization.

Sugar substitutes such as Sorbitol, Isomalt, Mannitol or Xylite are carbohydrates which taste like sugar but which have only around 40% - 70% of their sweetening power.

NETZSCH Technology – Custom-Designed and Efficient

For the dry-grinding of all these products first class equipment is just one part of a proven production process. NETZSCH also determines the optimum process parameters for each material. Fineness, temperature and throughput are perfectly coordinated to guarantee an economical process which gives a high-quality product.

Focus on Your Advantages

- Grinding after crystallization and drying as a downstream process step for adjustment of the particle size
- Cold grinding and classifying with proven NETZSCH Technology
- Target finenesses of between 10 µm and 150 µm can be set easily
- Hygienic design

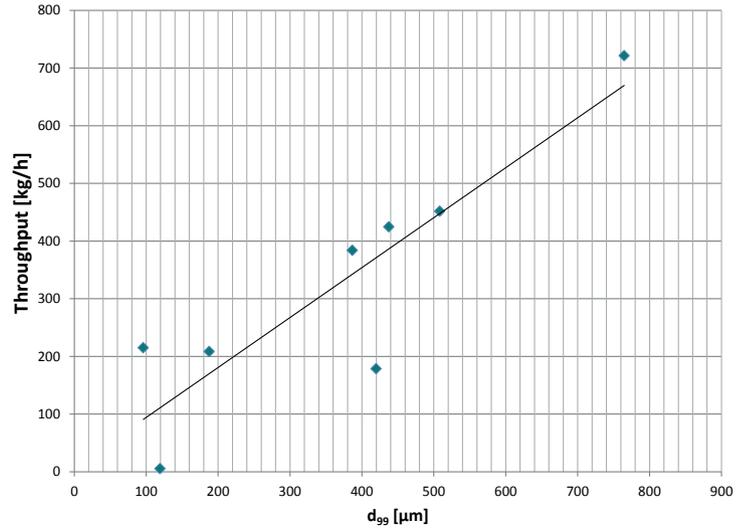
Application Example Lactose

Lactose is a crystalline, colorless substance with between 25% and 60% of the sweetening power of sucrose (household sugar), depending on its concentration. As it has favorable properties for the production process as a carrier substance or emulsifier, lactose is often used in medicinal drugs for example as a pharmaceutical excipient.

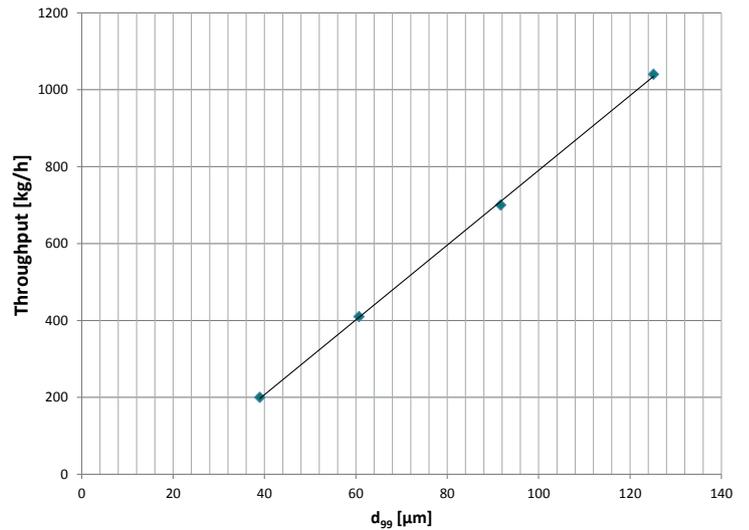
All market standard qualities can be manufactured with the Impact Mill *CONDUX*[®], the Classifier Mill CSM or the High Density Bed Jet Mill *CONJET*[®].



High Density Bed Jet Mill *CONJET*[®] 16



Lactose grinding with the Impact Mill *CONDUX*[®] 300



Lactose grinding with the Classifier Mill CSM 360

Machine	Throughput [kg/h]	Final Fineness [μm]
<i>CONJET</i> [®] 16	10	45 (d_{90})

SWEETENERS

Processing Technologies for Sugar

Sugar is a material with manifold uses such as in chocolates, jams, jellies, ice cream, drinks and baked goods such as cookies. Depending on the intended use various different particle sizes are required. Sugar is finely ground for numerous application uses as this guarantees the rapid solubility in the subsequent process or it is then used to decorate delicious desserts.

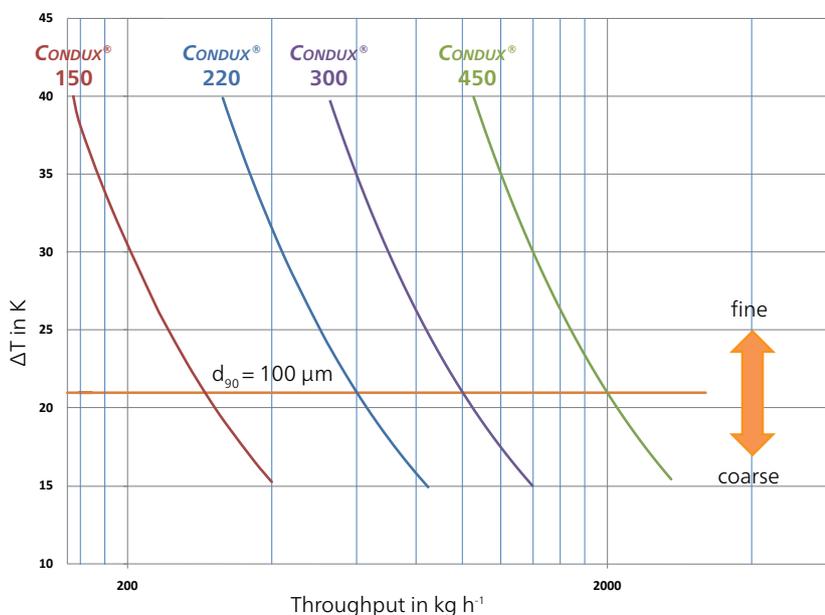
With the Impact Mill *CONDUX*[®] various grinding finenesses can be easily produced using the infinitely variable speed setting on the blower rotor as well as various screen inserts.

CONDUX[®] COMPACT plant

- Suitable for applications in which the confectioner's sugar undergoes further processing directly after grinding
- ATEX-compliant plant design: Complete grinding system designed for an explosion overpressure of up to 10 bar (g)
- A mini-aspiration filter prevents the unwanted escape of dust at the product feed inlet and discharge valve
- The thermal energy created during grinding is dissipated via the product being ground
- Low space requirement; compact construction
- Dust-free filling; easy and rapid cleaning as well as straightforward operation
- Low investment- and maintenance costs



Impact Mill *CONDUX*[®] 220 COMPACT

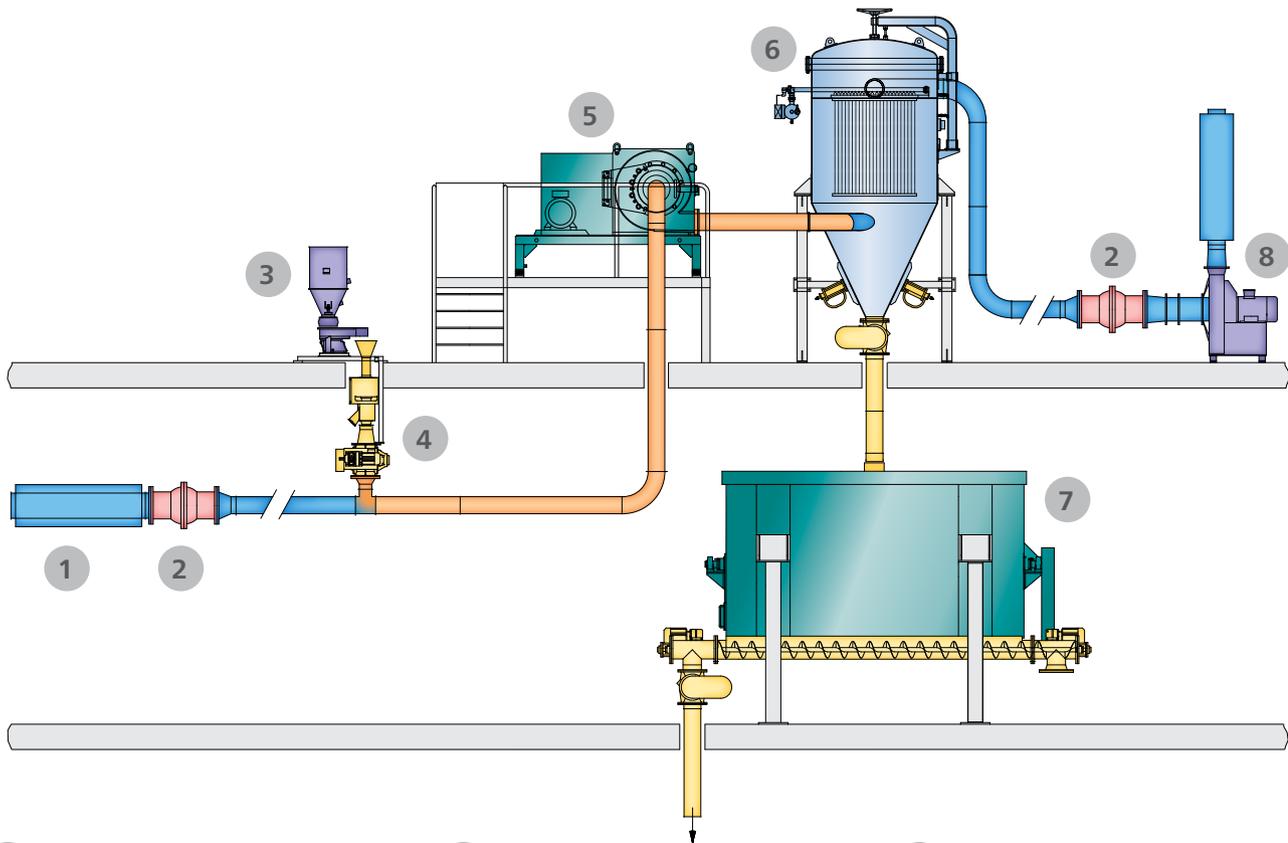


Sugar-grinding with impact mill *CONDUX*[®] COMPACT

Focus on Your Advantages

- Optimum adjusting of fineness, temperature and throughput
- Excellent product qualities produced in an economical process
- The design of the impact Mill *CONDUX*[®] with a blast rotor guarantees a low temperature level
- Dust explosion protected plants designed according to national directives in the country of the purchasing company are available

Standard Plant for the Fine-Grinding of Sugar with Pneumatic Conveying System and Explosion Protection.



- 1 Intake silencer
- 2 Explosion protection valve
- 3 Vibration feeder
- 4 Rotary airlock valve
- 5 Impact Mill *CONDUX*®
- 6 Dust filter
- 7 Intermediate tank
- 8 Radial ventilator

	<i>CONDUX</i> ®	150	220	300	450	680	900	1250
Power factor		0.3	0.6	1	2	4	6	11
Throughput approx.	[kg/h]*	300 - 530	480 - 840	800 - 1 400	1 600 - 2 800	3 200 - 5 600	5 200 - 9 100	9 800 - 15 400
Drive power (max.)	[kW]	4	11	18.5	37	75	132	250

* $d_{97} = 75 \mu\text{m} - 200 \mu\text{m}$



COCOA

Grinding & Pulverizing

Cleaning & Roasting

De-shelling

Grinding

Pressing

Pulverizing

Pre-Grinding of Cocoa Nibs

Beater Blade Mill *MASTERNIBS*

- The top-mounted drive allows better access to the tools and tank.
- The arrangement of the bearing facilitates better/more efficient cooling of the grinding chamber and lower process temperature.
- Quick exchange of beaters outside the grinding chamber
- Quick and easy cleaning of tank, grinding tools and screen.
- Easy removal of screen and exchange of grinding tools.



Beater Blade Mill *MASTERNIBS*

Fine-Grinding of Cocoa Liquor

Horizontal Agitator Bead Mill *MASTERREFINER*

- Efficient single pass operation
- High throughput
- Small footprint
- Low energy consumption
- Use of smaller grinding beads achieves a finer product



Horizontal Agitator Bead Mill *MASTERREFINER*

Plant	Consisting of	Throughput [kg/h]
<i>TANGO</i> ® 1000	<i>MASTERNIBS</i> 1000 + <i>MASTERREFINER</i> 200	750 - 1 000
<i>TANGO</i> ® 2000	<i>MASTERNIBS</i> 2000 + <i>MASTERREFINER</i> 500	1 500 - 2 000
<i>TANGO</i> ® 4000	<i>MASTERNIBS</i> 4000 + <i>MASTERREFINER</i> 1000	3 000 - 4 000

Throughput is influenced by the type of bean, shell content and desired fineness.



Pulverization of Cocoa Press Cake

The finely ground cocoa mass is separated into liquid cocoa butter and solid cocoa press cake in a chamber filter press. The cocoa butter is then filtered and either bottled in liquid form or poured into molds, while the compacted cocoa press cakes are broken up in roller crushers after which they are finely ground using dry-grinding to give cocoa powder. NETZSCH can offer various machine types for pulverizing the pre-crushed low fat or high fat cocoa press cakes depending on their fat content, feed temperature and desired final fineness.

Classifier Mill CSM

- High specific throughput capacities with low fat qualities (up to 12% fat content)
- Cooling of the intake air
- Final products with a defined upper particle size limit thanks to integrated air classifier.

Fluidized Bed Jet Mill CGS

- Reliable processing of high fat qualities (22% fat content) in low pressure operation
- Low wear
- Well-suited for products containing a large amount of cocoa shells

Impact Mill CONDUX®

- Equipped with two counter-rotating pin discs as grinding tools
- Relative peripheral speeds of up to 250 ms⁻¹

Deagglomeration of Cocoa Press Cakes

Machine	Final Fineness d_{99}	Throughput [kg/h]
CSM 360	< 75 μm	1 000
CSM 560	< 75 μm	2 500
CSM 720	< 75 μm	4 400



Classifier Mill CSM 360

COMPOUNDS & FILLINGS

Compact & High-Efficient Plants

Dip coatings, icings and fillings differ from chocolate in that they have a higher fat content. The vegetable fats used are the primary determinants of their characteristics. Depending on the temperature, they are essentially responsible for the taste and viscosity and affect the consistency, how it feels in the mouth, the aroma it gives off and the way it melts.

The overall higher fat content and the use of different vegetable fats change the consistency of the compound, making production and processing easier than for chocolate. On the one hand, the selective tempering is omitted and on the other hand, due to the lower viscosity, the time-consuming and costly dry and wet conching process can be eliminated.

NETZSCH Confectionery Systems

Thanks to the modular construction, our plants are designed according to your exact requirements. In addition to standard filling cream, spreads and compounds you can also process specialties such as diet masses or chocolate with different types of sugar and additives. You can produce all standard confectionery masses fully temperature controlled in a consistent, reproducible quality.

System *MAMBO*®

The integrated and fully automated *MAMBO*® cleaning system allows fast product changes without additional time or cleaning liquid. It consists of a storage tank for cleaning fat, cleaning heads, pigging system in pipeline, pumps and automatic sequence of raw material dosing at beginning, during and after the mixing and refining.

System *SALSA*®

Our line concept *SALSA*® includes the initial homogenization of the individual components in a mixing tank with a rapidly spinning dispersion tool for product circulation, transfer of the mass to the heatable process tank and the final fine grinding in the *MASTERREFINER* agitator bead mills.



CHOCOLATE

Unbounded Flexibility

The *RUMBA*® plant concept from NETZSCH-Feinmahltechnik GmbH is a complete process for the production of high-quality chocolate. From the basic ingredients cocoa mass, cocoa butter, sugar and perhaps milk powder, you can produce your own dark, milk or white chocolate. With very easy operation of the compact, closed *RUMBA*® plant and batch sizes from 150 kg to 6 000 kg per batch, you can develop recipes according to individual needs.

Compared to other systems for the production of chocolate- and confectionery masses, the system *RUMBA*® is characterized by reduced requirements for energy, cooling water and space as well as considerably shortened processing times (*CHOCO EASY*® process – dry conching within 3 - 4 hours), since the grinding and liquid-conching processes run simultaneously. The system *RUMBA*® also allows you to save on cocoa butter/fats and/or lecithin.



Product	Machine	Throughput [kg/h]	Final Fineness [µm]
Chocolate	<i>RUMBA</i> ®	125 - 2 000	18 - 35 (d ₉₀)
Nut paste	<i>MASTERCREAM</i> / <i>MASTERREFINER</i>	125 - 2 000	25 - 50 (d ₉₀)
Fillings / Compounds	<i>MAMBO</i> ® / <i>SALSA</i> ®	200 - 3 000	18 - 35 (d ₉₀)

WHITELAB and FOODLAB

NETZSCH-Application Laboratories

The NETZSCH application laboratories in Hanau and Selb equipped with the state-of-the-art technology form an integral part of our comprehensive service offer.

After clarification of technical details you can give free reign to your creativity regarding recipe. Our teams at both locations are fully committed to ensuring that the tests are carried out to give the expected results.

NETZSCH Service

- Product development
- Process support
- Scale-up to your production requirements
- Project planning and -management / commissioning / customer service / local service
- Training at NETZSCH and locally

WHITELAB for Testing Products from the Confectionery Branch

Our laboratory in Selb/Bavaria includes a separate area specifically set up and equipped for testing for the food industry. The results obtained in our labs form the basis for the design of plants for the production of confectionery masses and cocoa products which NETZSCH delivers to its customers all over the world.

Your requirements can be met with the following equipment:

- Compact plant *CHOCO EASY*® 50 for conching and grinding the chocolate mass
- The latest analysis technology for quality assurances
- Horizontal Disk Mill *MASTER REFINER* 6 for mixing and grinding of fillings, chocolate compounds or -spreads
- Additional equipment such as tempering unit and heating tank with agitator
- Special refrigerator unit without moisture and heating cupboards for melting the raw masses





NETZSCH Trockenmahltechnik GmbH
and NETZSCH-Feinmahltechnik GmbH
are company members of EHEDG

Dry-Processing in *FOODLAB*

Our *FOODLAB* at NETZSCH Trockenmahltechnik in Hanau is available to you for tests which conform to food grade standards. There are two new test rooms in the *FOODLAB*. Testing in each can be observed from the meeting room through a large glass panel and access to each test room from the meeting room for visitors and employees is only possible via a hygiene sluice.

In the larger test room a pilot plant for dry-grinding equipped with an Impact Mill of type *CONDUX*[®] (with interchangeable Classifier Mill CSM module) is installed. As well as the pilot plant, an Impact Mill of type *CONDUX*[®] for grinding sugar in a compact execution is also installed in this room.

In the smaller test room a laboratory plant with NETZSCH Fluidized Bed Jet Mill type CGS (with interchangeable High Density Bed Jet Mill *CONJET*[®] or standard classifier CFS modules) is installed for basic feasibility analyses for finest applications.



Pilot Plant in the *FOODLAB* in Hanau

Equipment

- ATEX compliant test machines with inner zone 20
- Area at product inlet and -discharge defined as Zone 21
- Product-contacted parts designed in material 1.4401 or of higher quality
- Product-contacted surfaces are polished to $Ra < 0.8 \mu m$
- Measuring equipment for determining the test results



The NETZSCH Group is an owner-managed, international technology company with headquarters in Germany. The Business Units Analyzing & Testing, Grinding & Dispersing and Pumps & Systems represent customized solutions at the highest level. More than 4,000 employees in 36 countries and a worldwide sales and service network ensure customer proximity and competent service.

Our performance standards are high. We promise our customers Proven Excellence – exceptional performance in everything we do, proven time and again since 1873.

Proven Excellence. ■

Business Unit Grinding & Dispersing – The World's Leading Grinding Technology

NETZSCH-Feinmahltechnik | Germany
NETZSCH Trockenmahltechnik | Germany
NETZSCH Vakumix | Germany
NETZSCH Lohnmahltechnik | Germany
NETZSCH Mastermix | Great Britain
NETZSCH FRÈRES | France
NETZSCH España | Spain
ECUTEK | Spain

NETZSCH Machinery and Instruments | China
NETZSCH India Grinding & Dispersing | India
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