



# COCOA

*Competence in cocoa and chocolate processing*



**HOSOKAWA  
MICRON GROUP**





» Niche Cocoa Industry Limited,  
Ghana

*The Hosokawa Micron Group offers you innovative technology from one single source for customised solutions. We can deliver the highest quality machines for your plant and product safety. Our established base of technical experts represents the conviction and trust in our know-how all over the world.*

» **INNOVATIVE TECHNOLOGY FROM ONE SINGLE SOURCE**

» **CUSTOMISED SOLUTIONS FOR OPTIMUM RESULTS**

» **HIGHEST QUALITY FOR YOUR MACHINE AND PRODUCT SAFETY**

» **MORE THAN 120 YEARS OF EXPERIENCE IN YOUR PROCESS**

» **POSSIBILITY OF TRIALS IN OUR TEST CENTRES FOR THE BEST TECHNICAL SOLUTION**



# THREE TIMES COMPETENCE

*We create synergies*

The Hosokawa Micron Group, headquartered in Japan, has various locations around the world. Our European competence centres have combined their know-how to offer you customised process technologies for optimum solutions. With many years of experience in the processing of cocoa and chocolate business, we are the market leader in the development, design and manufacture of powder and particle processing machines and systems for size reduction, drying, grinding and blending.

With its wide range of particle processing technologies, the Hosokawa Micron Group has been setting and still sets trends and standards in particle processing.

**HOSOKAWA MICRON LTD.**  
Size Reduction | Containment

**HOSOKAWA MICRON B.V.**  
Mixing | Drying | Agglomeration

**HOSOKAWA ALPINE AG**  
Milling | Classifying | Compaction

# POWDER, MIXTURES AND GRANULES

The production of cocoa and related products is a high-tech process comprising different steps for which high-performance machines and systems are needed. The feed material is derived from the cocoa plant and varies from source to source.







## HOMOGENISING / MIXING

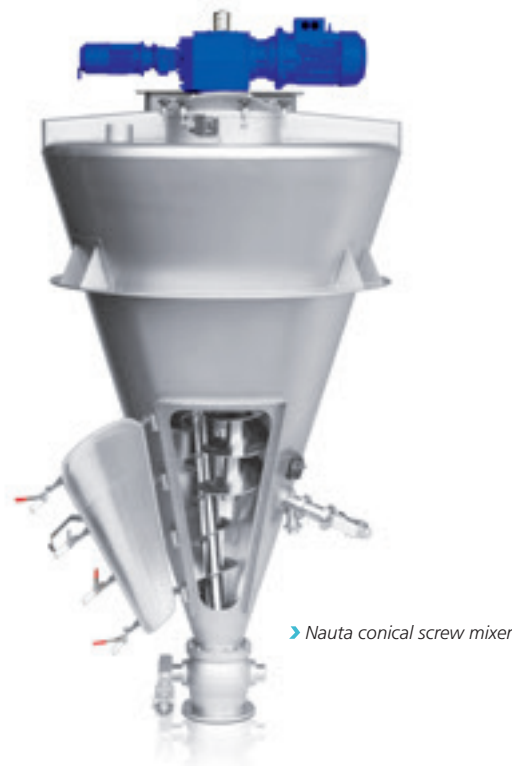
*OF NIBS, KIBBLED NIBS OR POWDERS*

The Nauta conical screw mixer is well-known in the world of cocoa processing. It offers a robust and versatile mixing solution for low-intensity mixing. It is very well suited for homogenising cocoa nibs or cocoa powders with a variety of product characteristics.

The Nauta mixer is a highly efficient, convective mixer. Its mixing screw is suspended from an orbital arm, which rotates along the inner vessel wall. It guarantees the highest level of mixing accuracy and process flexibility without product distortion.

### **FEATURES NAUTA CONICAL SCREW MIXER**

- Batch volumes from 2.5 up to 80,000 litres
- Gentle mixing with minimum energy input and product distortion
- Process flexibility in working volume and operation conditons
- Robust and simple design with cantilevered mixing screw
- For batch and continuous operation
- Addition of liquids / fats



➤ Nauta conical screw mixer



## ALKALISATION / STERILISATION

*OF COCOA NIBS AND POWDERS*

The CPD alkalyzer is very suitable for adjusting colour and flavour of cocoa to specific requirements. Multiple processes such as alkalisation, sterilisation and drying can be performed in one single operation, under pressurised, atmospheric or vacuum conditions.

The CPD offers accurate and gentle mixing, even under the harsh conditions of an alkalisation process. The vertical mixing rotor with paddles guarantees a continuous movement of the cocoa. The combination with a constant and even exposure of product with alkali agents results in an optimal and homogeneous product quality.

### **FEATURES CPD ALKALIZER**

- Batch volumes from 5 up to 15,000 litres
- Capable of handling nibs and powders
- For pressurised, atmospheric and vacuum operations
- Process flexibility in working volume and operation conditons
- Optimal control over colour and flavour development
- Bacteria counts below 500 cfu per gram



➤ CPD alkalyzer





# MILLING

## OF COCOA PRESS CAKE & COCOA SHELLS

As cocoa press cake is the main ingredient in chocolate applications, manufacturers are interested in ultra-fine cocoa powder for different recipes. The Alpine Classifier Mill ACM reaches the requirements thanks to the proven combination of grinding and air classification. The product enters the milling chamber and is crushed by the fast-rotating beaters until it is fine enough to pass the classifier wheel. To process high fat cocoa up to 26 % fat content smoothly, the mill is designed with a straight outlet and a coaxial bearing to avoid clogging and an unhindered product flow.

### YOUR PROCESS – OUR SOLUTION

- › Fineness values according to industry standards of 99.7% < 75µm or finer
- › Influence on product characteristics by means of adjustable temperatures
- › Defined particle size distribution
- › Ultrafine grinding (highly alkalinized) of cocoa press cakes up to a fat content of 26 %
- › Special cocoa design with wear protection
- › Explosion-protected machines and systems



› Alpine Classifier Mill ACM

## TECHNICAL SPECIFICATIONS

ACM	MILL MAIN DRIVE (KW)	CAPACITY KG/H
ACM 40	30	> 800
ACM 60	45	> 1,200
ACM 75	55	> 1,500
ACM 100	75	> 2,000
ACM 120	90	> 2,500
ACM 150	110	> 3,500
ACM 200	160	> 5,500

*Exemplary selection of machine sizes based on cocoa press cake with fat content < 12 %, low alkalization, 99.7 % < 75 µm product measured on air jet sieve*

» Depending on final application a wide range of other milling equipment is available.

## TECHNICAL HIGHLIGHTS

Cocoa press cake has an abrasive effect on mills and systems, due to residual traces of shells and husks. For long operation times and low spare part costs, the Alpine Classifier Mill ACM is equipped with wear protected elements. With worldwide installations since the 70's with capacities from 6 to 6,000 kg/h (see table above) confirm the long lifetime of the mill.

For long operation times and a profitable investment, the classifier mill includes various wear protected components (e. g. product inlet, grinding disc with full block hammers, wear protected cover insert, besides others). Those installations are characteristic for their extended lifetime and lower spare part costs.

The machine design itself offers easy access for cleaning and maintenance.



## PRODUCT SPECIFICATION

Fat content	10 – 12 %	10 – 12 %	up to 26 %
Alkalisatation	None	high	none
Throughput ACM 75*	1,500 kg/h	500 – 750 kg/h	750 kg/h

*\* Capacities will vary for cocoa shell or different alkalisatation levels.  
End fineness 99.7 % < 75 µm measured on air jet sieve*

» The ACM can also be used to pulverize your cocoa shells!





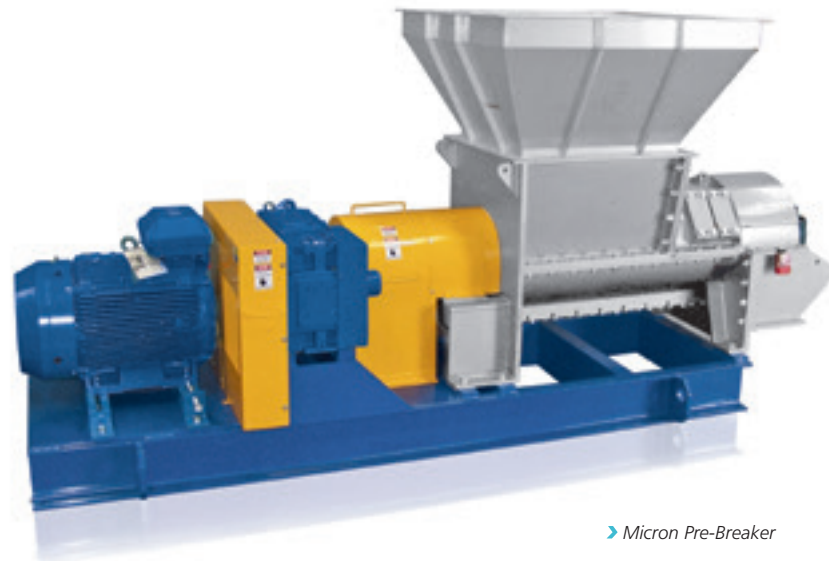
## PRE-BREAKING

### FOR COCOA PRESS CAKE

The requirements for robust, reliable and low-maintenance machinery for the coarse reduction and breaking of cocoa press cake prior to fine size reduction and subsequent processes within the cocoa industry are high. The Micron Pre-Breaker fulfills these demands and offers users the highest machine availability, minimum downtime and lowest maintenance returning higher process yields.

#### FEATURES AND BENEFITS

- Robust construction, low maintenance, long service life
- Withstands shock loads
- Optimised performance before fine size reduction step
- Stainless steel or carbon steel construction
- Capacity in lower case
- Cool running, negligible product degradation



➤ Micron Pre-Breaker



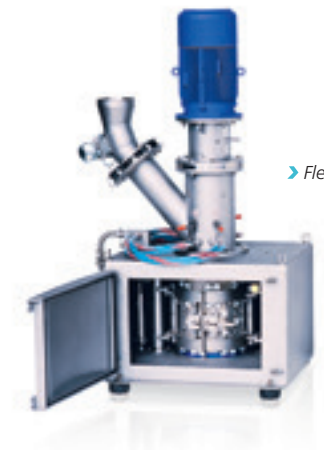
## LECITHINISING

### OF COCOA POWDER

To improve the wettability and solubility of cocoa powder into liquids, lecithin is often added. The Flexomix high-impact mixer is the perfect solution for this process, coating the cocoa powder with lecithin in a continuous operation.

#### CONTINUOUS LECITHINISING

- Capacities from 50 kg/h up to 40,000 kg/h
- Can handle a variety of lecithin qualities and quantities
- Short residence time / instantaneous mixing (< 1 second)
- Self cleaning mixing chamber



➤ Flexomix high-impact mixer

Another option for lecithinising cocoa powder is in a batch operation using the Vitomix ribbon screw mixer. The design of the two conical mixing screws creates a fluidized bed in the upper part of the mixer cone that is perfect for adding liquids.

#### BATCH LECITHINISING

- Batch volumes from 500 up to 5,000 litres
- Can handle a variety of lecithin qualities and quantities
- Maximum process flexibility regarding capacities and liquid addition
- Compact design



➤ Vitomix ribbon screw mixer





# MILLING

## OF CHOCOLATE CRUMB

Chocolate crumb is a mixture of ingredients like cocoa, sugar and milk powders used in application like fillings. The main challenges in the production processes are to guarantee a uniform application and good solubility of the homogeneous fine powder.

The Alpine Classifier Mill ACM is a proven technology for this application, not only because it is available in an explosion protected design, conforming to ATEX-regulations, guaranteeing the safety of staff, system and product.

### YOUR PROCESS – OUR SOLUTION

- High fineness values for optimum solubility
- Sharp and easily adjustable precision of cut
- Closed loop operation for low humidity in the process
- Simple to clean and maintain
- Explosion-protected machines and systems



➤ Alpine Classifier Mill ACM



# MILLING

## OF COCOA-BASED MIXTURES

The pin mill Sugarplex SX convinces not only with high throughputs but also reaches the necessary fineness for soluble powders applied in instant beverages. Because the processing of sugar poses a high risk for a dust explosion, the Sugarplex SX distinguishes itself by a low-dust production and a pressure shock resistant design up to 11 bar, conforming to ATEX regulations.

### SOLUTIONS FOR SUGAR AND COCOA BASED MIXTURES

- Space saving design with a system height < 2500 mm possible
- Low energy consumption
- No air conditioning/cooling, filter or blower necessary



➤ Sugarplex SX



# MIXING & PREPARATION

## OF CHOCOLATE PASTE

Requirements can exist within the confectionary industries for the continuous mixing, conditioning and preparation of chocolate pastes as a base mixture for subsequent processes. The Micron Extrudomix fulfills these needs efficiently and effectively, having the ability to mix and condition cocoa powders, liquid chocolate and rework materials thus minimising wastes and maximising productivity and process yields.

### FEATURES AND BENEFITS

- Ability to handle powders through to viscous pastes, diverse application handling
- Simplicity of operation, highly effective processing
- Ability to perform material agglomeration / pellet generation (subject to application)
- Sanitary design machines available, ability for in-situ CIP / WIP cleaning



➤ Micron Extrudomix





# AGGLOMERATION

## OF COCOA-BASED MIXTURES

Instant cocoa-based powder mixtures consist of cocoa, sugar, dairy and cereal powders. To achieve a stable mixture consistency and good solubility, the Flexomix agglomeration system is the perfect process solution.

In the Flexomix, the powders are fed continuously into the flexible mixing chamber where the agglomerates are formed in less than a second. The process requires a minimal amount of liquid addition. Process parameters are adaptable to meet specific requirements regarding colour, particle size and bulk density.

### FEATURES FLEXOMIX AGGLOMERATION SYSTEM

- Continuous process
- Capacities from 50 kg/h up to 10,000 kg/h
- Possible to add multiple liquids simultaneously during operation
- Separate operating units for agglomeration and drying / cooling for optimal process control
- Self-cleaning (flexible) mixing chamber
- Integrated system approach



➤ Flexomix mixer / agglomerator



### INNOVATIVE TEST CENTRES

Our research and testing facilities can provide you with a wealth of machines and complete systems for the most varied plant configurations, all available on a global level. Precision, quality and innovative technologies: Do your testing with us.



### YEARS OF EXPERIENCE

Profit from our many years of experience in the provision of solutions and our mastery of sophisticated processes. Well-known customers all over the world place their trust in the technology and know-how of the Hosokawa Micron Group.



### GLOBAL SERVICE

Our service teams take care of repairs and maintenance, both on site and in our modern workshops equipped with the latest technology – smoothly, speedily and all around the world! The Hosokawa Micron Group – a partner you can rely on. Find out for yourself, you are sure to be impressed.



### CONTRACT MANUFACTURING

The Hosokawa Micron Group is also your professional and reliable partner for toll processing. We are allowing you to concentrate fully on your core business and to offset capacity bottlenecks without investment risks or long-term personnel commitment. Whether for a one-time project or a recurring job – our crew as well as our equipment are very flexible in adapting to your specifications!



### RENTAL AND USED MACHINES

With the sale and rental of used machines, Hosokawa Alpine enters a new customer segment. We can offer shorter delivery times with attractive conditions and the usual Alpine quality.





# **HOSOKAWA MICRON GROUP**



## **HOSOKAWA ALPINE**

Milling | Classifying | Compaction

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Size Reduction | Containment

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***Any questions? Just call – we are happy to help.***

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