

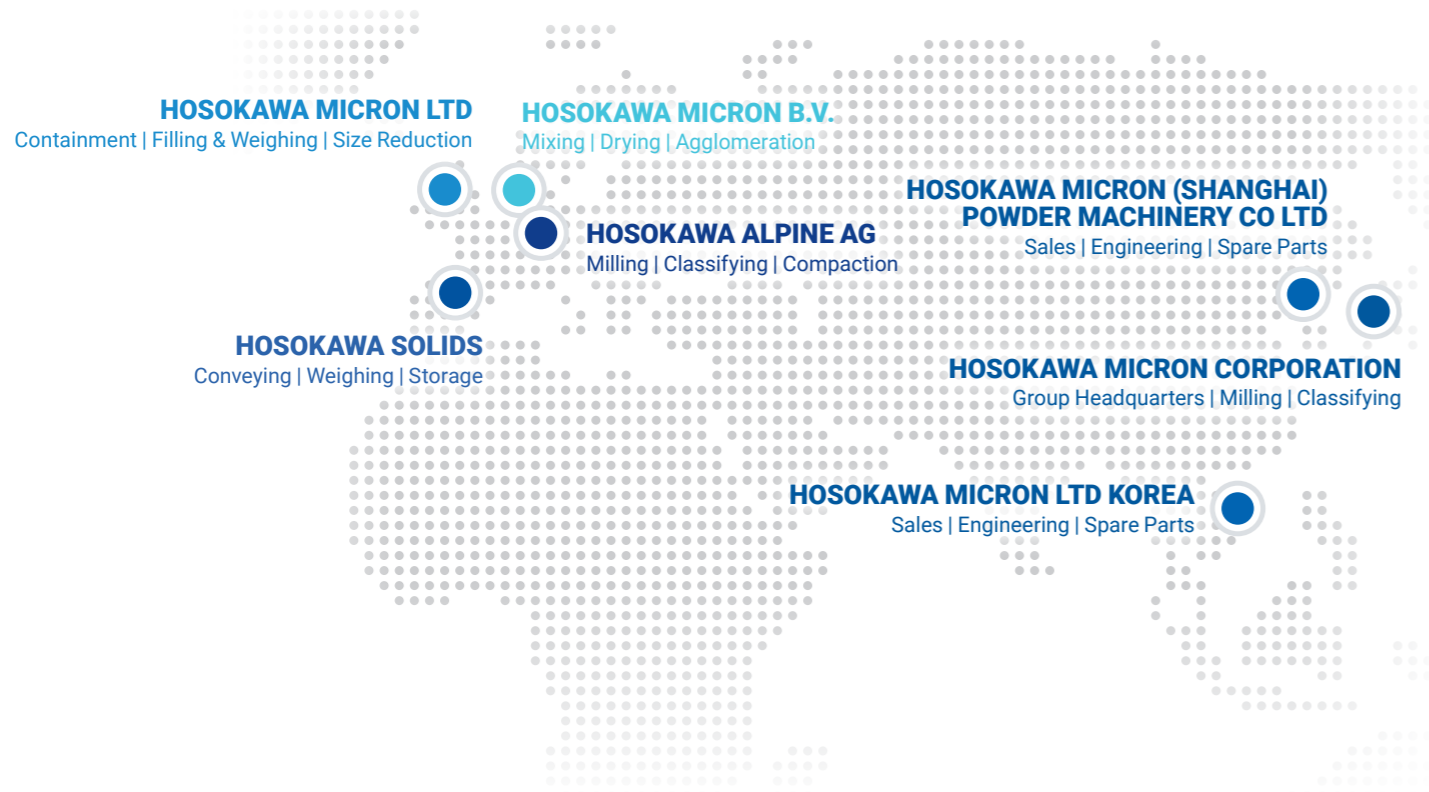


# SIZE REDUCTION AND MIXING

*Crushing • Disintegrating • Coarse Milling • Mixing and Blending • Extrusion*



**HOSOKAWA MICRON LTD.**



## PIONEERING POWDER PROCESSING FOR MORE THAN A CENTURY

### We create synergies

Hosokawa Micron Group – established and headquartered in Japan – has offices in various locations worldwide, including throughout Asia and in Europe, which has four competence centres.

Our pioneering European companies have accumulated more than a century of technical, scientific, engineering and manufacturing expertise to provide you with customised processing technologies that offer optimal solutions for your application.

We are a globally recognised market leader in the concept, design and manufacture of bespoke powder, particle, liquid and vapour processing equipment and systems for multiple purposes, such as size reduction, drying, grinding, mixing, blending, agglomeration and compaction. Our comprehensive portfolio also features standard and bespoke containment equipment, including gloveboxes/isolators, downflow booths, horizontal laminar flow booths and systems for filling and weighing, as well as drum and container bulk handling.

Our expertise is trusted by a diverse and ever-increasing number of industry sectors – from pharmaceuticals, chemicals, food and beverages, cosmetics and minerals, to renewable energy and nuclear.

With an expansive portfolio of high-performance equipment and a full range of complementary services and support – such as product trials, equipment and process system installations, maintenance, servicing, testing and upgrades, operator training, a choice of remote or in-person FATs, SATs and the supply of rental equipment – Hosokawa Micron Group consistently innovates, evolves and sets new standards and trends in processing technology.



## YOUR COMPETENT PARTNER

for your specific industry

FOOD & BEVERAGES

CHEMICALS

PLASTICS

PAPER & PULP

RECYCLING

RUBBER

## SIZE REDUCTION AND MIXING RANGE

Hosokawa Micron Ltd expertly designs, manufacturers and supplies an industry-leading portfolio of standard and bespoke high-performance size reduction and mixing equipment and process systems suitable for the light to heavy-duty processing of a huge variety of materials.

**CRUSHING & CUTTING**  
Pages 4 to 9

- Rubber Chopper
- Pre-Breaker
- Extractor

CHEMICALS  
FOOD & BEVERAGES  
RUBBER & PLASTICS  
PAPER & PULP  
PHARMACEUTICALS

**COARSE TO MEDIUM-FINE MILLING**  
Pages 10 to 15

- Angle Disintegrator
- Vertical Disintegrator
- In-Line Disintegrator

CHEMICALS  
FOOD & BEVERAGES

**MIXING, BLENDING & AGGLOMERATION**  
Pages 16 and 17

- Extrudomix

CHEMICALS

**HOSOKAWA MICRON LTD.**

- CHEMICALS
- FOOD & BEVERAGES
- RUBBER & PLASTICS
- PAPER & PULP
- PHARMACEUTICALS



## TECHNICAL SPECIFICATIONS

	PB15	PB15 (HD)
Rotor diameter (mm)	380	380
Feed opening (mm)	380 x 560	380 x 560
Body length (mm)	710	710
Drive (kW)	132 (max)	For high torque applications

### TYPICAL BALE SIZE HANDLED

Width (mm)	380
Length (mm)	700 – 750
Thickness (mm)	150 – 180
Weight	up to 35kg

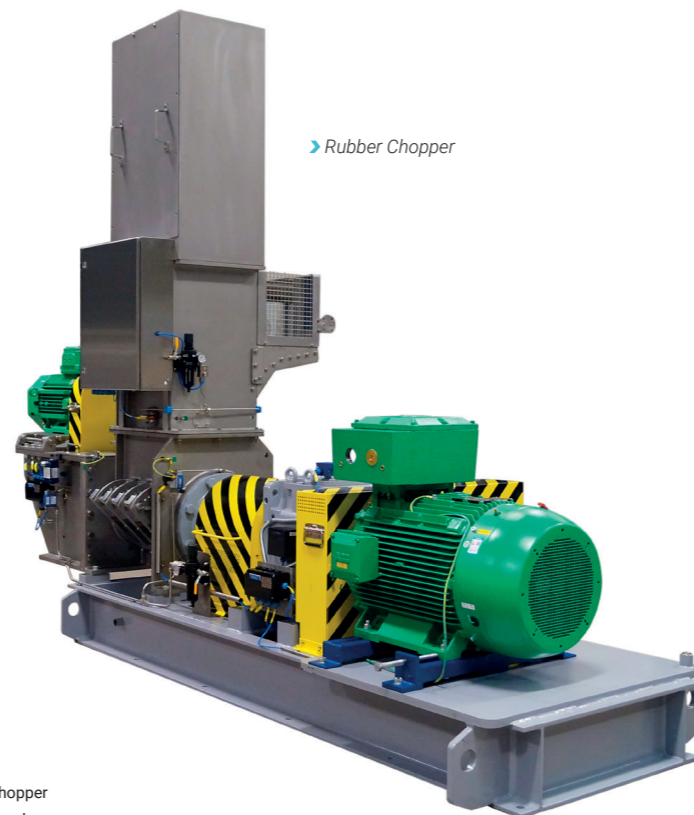


# RUBBER CHOPPER

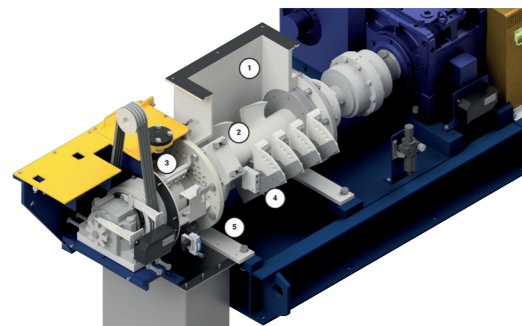
As a major player in the Rubber Chopper market, Hosokawa Micron has a broad client base worldwide. While our Rubber Chopper is sought after as a standalone piece of size reduction equipment, it is also frequently incorporated into custom process systems, particularly those involving turnkey projects.

Our expertise in Rubber Choppers extends to various process systems, such as the recirculation-type and also continuous in-line dispersion systems, utilised for the secondary processing of synthetic rubbers with solvents such as styrene.

Hosokawa Micron is delighted to work alongside third-party equipment suppliers and have a successful track record of collaborations with reputable technical partners all over the world. We strive to provide the most fitting solution to our direct clients and industry associates alike.



› Rubber Chopper



- 1 Inlet hopper
- 2 Primary hammers
- 3 Cutter knife
- 4 Adjustable anvils
- 5 Orifice plate

## TECHNICAL HIGHLIGHTS

- › Constructed from robust materials including stainless steel, normal steel and duplex alloy for ultimate corrosion resistance
- › Features a wear-protected discharge barrel
- › Processes from 1.2 to 6 tonnes of material per hour
- › Standard ATEX-certified versions are available for hazardous area applications
- › Automatic Pneumatic Bale Feeder option for trouble-free bale feeding
- › Pneumatic bale feeder prevents non-feeding/bridging over the rotor and allows for a safer and more efficient operation



## REFERENCE PRODUCTS

### Chemicals

Butadienes	Smoke Sheet
High Impact Polymers	Butyrates
Isoprenes	Natural Rubbers
Nitriles	Butyls
Styrene Butadiene	Reclaim

›› Shreds and grinds all types of rubber bale material for making a huge variety of products, including the latest-generation rubber compounds for the automotive industry



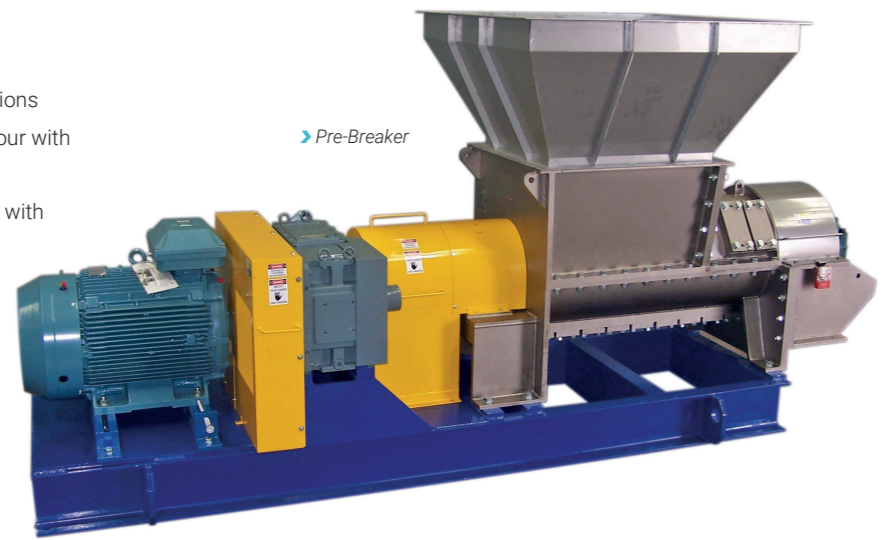
# PRE-BREAKER

The Hosokawa Micron Pre-Breaker is one of the products in our line-up of horizontal shaft crushers and is designed for coarse size reduction.

Our reliable Pre-Breaker performs a similar cutting and shearing operation to both the Hosokawa Micron Rubber Chopper and Hosokawa Micron Extractor, but what sets the Pre-Breaker apart is the broad range of light to heavy-duty materials the crusher can process – everything from fruits and vegetables, seaweed, bones and plastics, to wood, insulation boards and press cakes.

### ADVANTAGES OF THE PRE-BREAKER

- › Robust construction in stainless-steel or carbon steel
- › Available up to 150 kW for the most demanding applications
- › Typical wet processing capacities up to 20 tonnes per hour with drive power of 90-132 kW
- › Withstands the heavy loads and shock loads associated with processing bovine and porcine materials
- › Low maintenance
- › Energy-efficient and economical operation



› Pre-Breaker

## TECHNICAL SPECIFICATIONS

	PB10	PB12	PB15	PB18	PB24
Drive (kW)	7.5 – 15	15 – 30	45 – 55	55 – 90	75 – 150
Speed (rpm)	40 – 180	40 – 180	120 – 180	120 – 180	120 – 230
Weight (kg)	1,207	1,530	5,000	9,000	11,000

## TECHNICAL HIGHLIGHTS

- › Processes a wide range of materials from soft and friable to tough and resilient
- › Hooked, hard-faced hammers rotate between fixed, hard-faced anvils to cut and shear material
- › Cutting and shearing process conveys the product to the discharge
- › Degree of size reduction achieved depends on the physical properties and nature of the process feed material
- › Excellent for pre-processing material such as cocoa presscake prior to specialist fine milling into ultra-fine cocoa powder

›› *The versatile Pre-Breaker is available in tailor-made hygienic and chemical designs*

## REFERENCE PRODUCTS

Chemicals	Food & Beverages	Rubber & Plastics	Paper & Pulp
Magnesite	Cocoa Presscake	Synthetic Resins	Bull Screen Rejects
Sodium Nitrate	Frozen Egg	Plastics	Wood Pulp Sheets
Sodium Bisulphate	Seaweed	Polyurethane	Wallpaper
Salt Cake	Raw Meat	Rubber Crumb	Reprocessing



## TECHNICAL SPECIFICATIONS

	RE6	RE10	RE12	RE15	RE24
Drive (kW)	4	7.5	11	18.5	37
Speed (rpm)	20 – 140	20 – 140	20 – 28	25 – 30	25 – 30
Weight (kg)	500	1,000	2,033	3,050	5,000



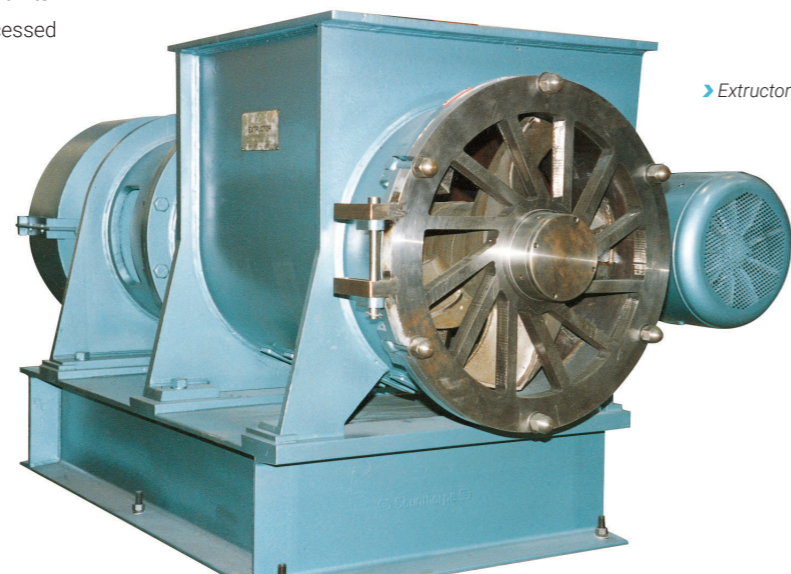
# EXTRACTOR

The Hosokawa Micron Extractor is an energy-efficient and robust piece of size reduction equipment that can effortlessly cut and shear coarse materials such as frozen blocks of food and blood plasma, as well as dairy products, soaps, and polymer gels.

The Extractor works similarly to a Hosokawa Micron Pre-Breaker, but has fewer internal tools and a shorter barrel, which helps to ensure that the materials being processed retain their integrity without degrading or bruising. Conveniently, the Extractor comes in five models, each with its own scale, speed, and amount/weight of material that can be processed per hour, and can be tailored to customer specifications.

### ADVANTAGES OF THE EXTRACTOR

- › Robust stainless-steel or carbon steel construction
- › Withstands shock loads
- › No product bruising or damage during processing
- › Minimal product temperature rise
- › No fluid loss from product during processing
- › Capable of handling large frozen blocks of material
- › Choice of orifice plates to control particle size
- › Low maintenance with no knives to sharpen



› Extractor

## TECHNICAL HIGHLIGHTS

- › Shorter barrel and fewer hammers and anvils, ensuring material integrity
- › Forward-progressing hammers and smaller anvils minimise bruising and degrading of processing materials
- › High throughput relative to power consumption



›› *Tailor-made to suit exact customer requirements*

## REFERENCE PRODUCTS

Food & Beverages	Pharmaceuticals	Rubber & Plastics
Frozen Fruit Blocks	Cocoa Blocks	Frozen Plasma Blocks
Frozen Fish Blocks	Potato Ricing	Pancreas Glands
Frozen Meat Blocks	Butter	Yeast Extract
Frozen Tomato Paste	Cheese	Lactose Blocks
		Polymer Gel
		Wet Extrusions
		PU Foam
		Hard Rubber Trims



## TECHNICAL SPECIFICATIONS

	RA8	RA12	RA18	RP8	RP12	RP18
Rotor Diameter (mm)	200	300	450	200	300	450
Screen Height (mm)	62 or 159	159 or 233	233	62 or 159	159 or 233	159 or 233
Drive (kW)	15	55	55 (75)	15	55	55 (75)
Drive Type	V-belt	V-belt	V-belt	Direct	Direct	Direct
Speed (rpm – normal/max)	3,000/7,500	3,000/5,200	3,000	3,000/7,000	3,000	3,000
Hammer Velocity (normal/max)	31/78	47/81	70	31/78	47	70
Scale (max height screen)	0.45	1	1.5	0.45	1	1.5

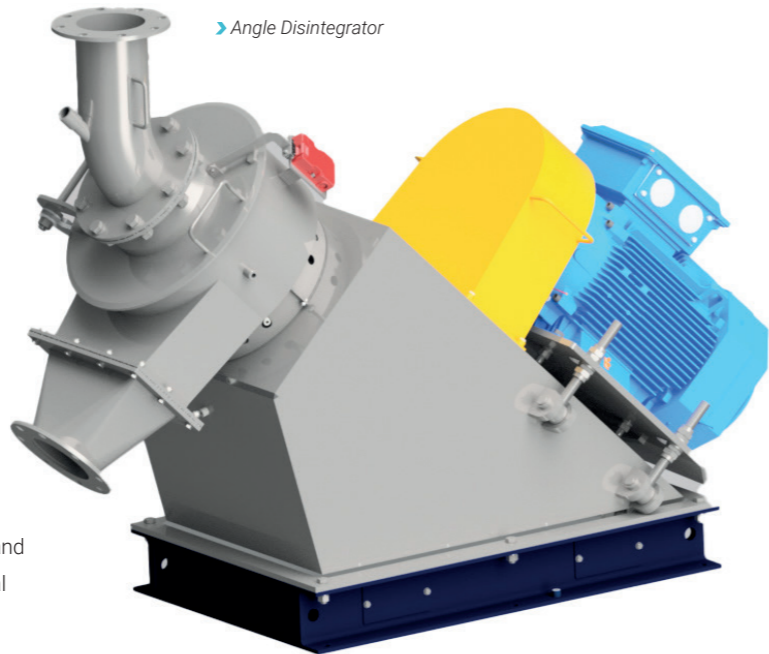


# ANGLE DISINTEGRATOR

Hosokawa Micron's high-performance Angle Disintegrator is a versatile and self-contained piece of equipment that is capable of handling multiple different processes. The milling equipment is ideal for the food industry because it can effortlessly perform tasks such as pulping, blending and fine or coarse puréeing of hot, cold, wet, soaked and dry ingredients, resulting in a very high-quality end product.

### ADVANTAGES OF THE ANGLE DISINTEGRATOR

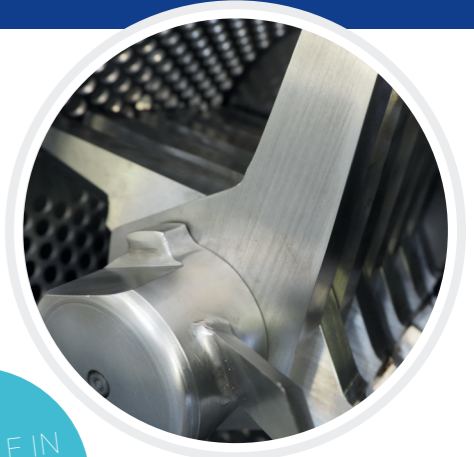
- › Multi-tasking – performs multiple different processes
- › Handles a wide variety of hot and cold materials and products
- › Processes up to 3,000 kgs of material per hour
- › Energy-efficient operation
- › Hygienic construction
- › Highly efficient reduction hammers
- › User-friendly and easy to clean
- › Quick product changeovers without cross-contamination
- › Wide range of sizes available
- › Chemical, sanitary and over-pressure options
- › RA models can be fitted with a secondary outlet for the separation and continuous ejection of non-friable or rejected/contaminated material



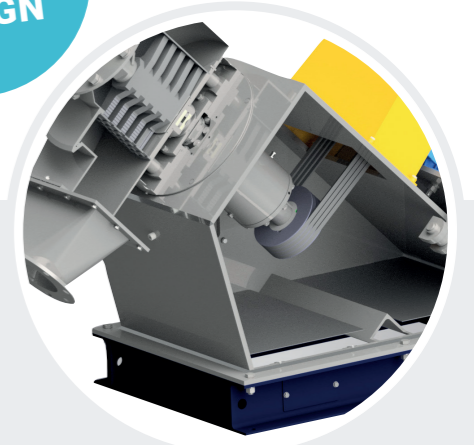
› Angle Disintegrator

## TECHNICAL HIGHLIGHTS

- › Offers intense grinding and processing of wet and dry products
- › Automatically separates and rejects non-friable material through the optional secondary discharge
- › Materials enter at the top of the rotor and are subjected to repeated impact and attritional forces from the high-speed rotating hammers
- › Centrifugal force carries the material through the 360° perforated screen for uniform reduction and continuous flow
- › Easily changed screens ensure low temperature rise and reduce vibration, resulting in a lower kW requirement



AVAILABLE IN CRYOGENIC DESIGN



## REFERENCE PRODUCTS

Chemicals		Food & Beverages	
Aramid Fibre	Fungicides	Garlic	Tomatoes
PTFE	Pigments	Chilli	Onions
Resins	Dyestuff	Pepper	Vanilla Pods



COARSE TO MEDIUM-FINE MILLING



## TECHNICAL SPECIFICATIONS

	RD12	RD18	RD24
Rotor Diameter (mm)	305	458	600
Base Dimensions (mm)	810 x 810	1,016 x 1,016	1,422 x 1,422
Overall Height	1,778	2,286	3,048
Drive (kW)	7.5 – 30	22 – 75	75 – 150
Weight (kg)	839	1,586	3,629



# VERTICAL DISINTEGRATOR

The Vertical Disintegrator by Hosokawa Micron is a versatile piece of milling equipment offering an excellent solution for the efficient size reduction of many raw materials. Suitable for meeting the processing requirements of diverse industry sectors – from food and beverage to seaweed and chemicals – the reliable equipment is used by global industry-leading manufacturers.

### ADVANTAGES OF THE VERTICAL DISINTEGRATOR

- › Robust, hardwearing construction
- › Available in carbon, stainless-steel, Hastelloy® and nickel-coated
- › Grinding and continuous classification of hard-to-process materials
- › Handles fine, medium-course, wet, dry and moist material
- › Achieves uniform particle size distribution
- › Simultaneously mills solids and incorporates liquid additives
- › 360° perforated vertical screen for processing materials with high fat or moisture levels
- › Continuous gravimetric discharge of rejected material
- › Easy to clean and maintain
- › Quiet and energy-efficient operation



› Vertical Disintegrator

## TECHNICAL HIGHLIGHTS

- › Raw material is introduced at a controlled flow and is reduced through impact milling principles inside the equipment's chamber by way of rotating hammers and a 360° sizing screen basket
- › The hammers are configured to optimise size reduction and are configured to provide maximum retention time within the reduction zone
- › Processed material exits by gravity at the base section the equipment, having passed through the reduction screen
- › The Vertical Disintegrator can be configured with a secondary outlet for the continuous discharge of reject or contamination materials



**IN-SITU  
CLEANING  
SYSTEM  
AVAILABLE**

## REFERENCE PRODUCTS

Chemicals		Food & Beverages	
Aramid Fibre	PTFE	Alginates	Fish Meal and Press Cake
Resins	Mica Flake	Citrus Peel	Fruit and Vegetables
Dyestuff	Petrochemical Sludge Waste	Chocolate Crumb	Malted Barley



# IN-LINE DISINTEGRATOR

The Hosokawa Micron In-line Disintegrator (RI) is used by the specialist chemical industry for processing sticky materials and offers size reduction, dispersion, de-lumping, grinding and mixing capabilities. An easy to access chamber, as well as easy removal of the perforated reduction screen and hammers, make this a very user-friendly and popular piece of coarse milling equipment.

## ADVANTAGES OF THE IN-LINE DISINTEGRATOR

- › Compact and robust construction
- › Belt drive for flexibility and speed adjustments (direct drive option)
- › Easy access chamber for quick cleaning and maintenance
- › Simple removal of reduction screen and hammers
- › 360° screen ensures a uniform product size and helps to reduce temperature rise
- › High volumetric capacity
- › 10 barg pressure design
- › Mechanical seal or packed gland options
- › ATEX designs are available
- › Horizontal and vertical shaft options



› In-line Disintegrator

COARSE TO MEDIUM-FINE MILLING



## TECHNICAL SPECIFICATIONS

	R16	R18	R112
Capacity (m <sup>3</sup> per hour)	20 – 25	50 – 60	100 – 120
Drive (kW)	11	37	55

## TECHNICAL HIGHLIGHTS

- › In-line Disintegrators have a rotor with hard-faced, rigid hammers
- › Hammer tips run at close clearance to a stainless-steel 360° perforated screen
- › Materials enter the central part of the basket and are subjected to repeated impact and attritional forces from high-speed rotating hammers
- › Centrifugal force carries the mixture through the perforated screens
- › Intensive mechanical energy is applied to processing materials as they rapidly pass through the mill
- › The basic mixing action is achieved by intense turbulence and high shear rate created by the In-line Disintegrator



## REFERENCE PRODUCTS

### Chemicals

Laundry and dishwasher detergent delumping upstream of spray dryers	Polycarbonate Slurry
Dispersing of Colour Pigments	PVC Slurry
Intense mixing and delumping of materials	Sulphur Slurry





## TECHNICAL SPECIFICATIONS

	EM6	EM10	EM12	EM15	EM24
Capacity (kg per hour)	340	680	1,140	1,820	4,550
Drive (kW)	7.5	15	55	75	150

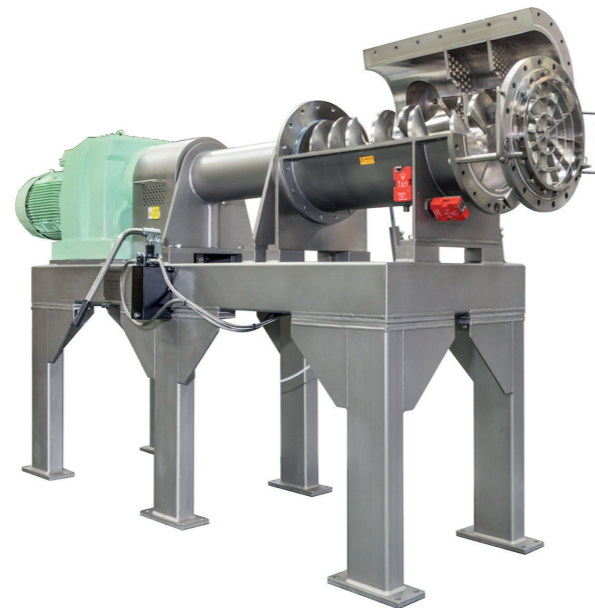


# EXTRUDOMIX

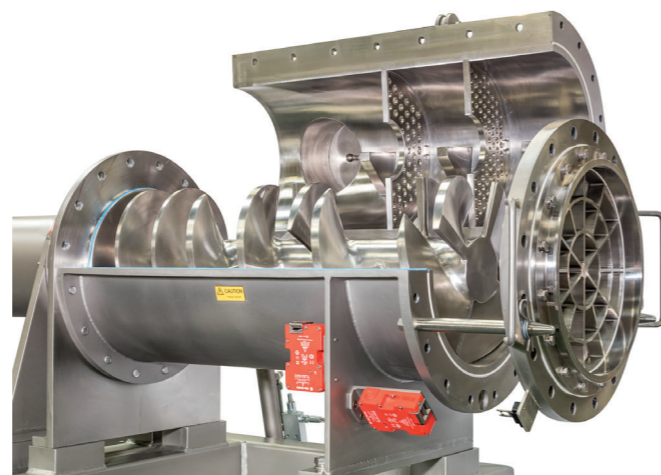
The Hosokawa Micron Extrudomix offers light to heavy-duty processing solutions and can process materials ranging from free-flowing powders to viscous pastes and plastics. Available in five sizes, this versatile mixer/agglomerator can blend solids together or with liquids without pre-mixing and has a specially designed chamber that allows for easy cleaning and hygienic processing, making it ideal for pharmaceutical manufacturers. It also has adjustable shear input, heat transfer and back mixing features, making it useful for wet cake formulation preparation and drying in the food, beverage, soap and detergent industries.

### ADVANTAGES OF THE EXTRUDOMIX

- › High-performance carbon steel or stainless-steel construction
- › Wide range of sizes, powers and throughputs available
- › Continuous and batch mixing of wide-ranging material, from ultra-fine powders and liquids to heavy pastes and plastics
- › Versatile applications and capable of processing multiple solid materials and liquids at once
- › Improves powder handling
- › High kneading capabilities
- › Can perform as a product conditioner prior to spheronization and drying
- › No pre-mixing of process material is required
- › Top-bottom open casing, with hinge assembly on the larger models, allows for easy disassembly, cleaning or inspection



› Extrudomix



## TECHNICAL HIGHLIGHTS

- › Discreet zones incorporate inlets for the introduction of the liquids and solids, with areas containing anvil blocks, rotating paddles and orifice plates throughout
- › Single horizontal processing shaft contains radial mixing flights in a spiral configuration
- › Perforated orifice plate retains material at discharge, regulates the mixing action and, depending on the application, can produce pellets, agglomerates or granules
- › Optional jacketed housings or hollow shafts enable material to be heated or cooled
- › A simple, but highly effective, sweep blade can also be fitted to process the pellets and granules to a specific length, if required
- › Cantilevered design shaft ensures there is no contamination risk to the discharge point



**GMP**  
STANDARD  
AVAILABLE



## REFERENCE PRODUCTS

### Chemicals

Pesticides	Super Absorbent Polymers
Herbicides	Tobacco Powder
Pigment Powders	Powder Blends

›› A multi-functional, high-performance solution for continuous or batch mixing and agglomeration, the unique Extrudomix is ideal for the chemical, pharmaceutical, food and detergent industries



### ADVANTAGEOUS SYNERGIES

The know-how and experience of numerous specialists are combined in the Hosokawa Micron Group to produce perfect solutions. Experience derived from a variety of industry sectors in mechanical process engineering ensures that you, as the customer, enjoy optimum solutions for practically every product – from an individual component to an entire plant.



### INNOVATIVE TEST CENTRES

Our research and testing facilities can provide you with a wealth of equipment and complete process systems for the most varied plant configurations, all available on a global level. Precision, quality and innovative technologies – test your products 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 knowledge accumulated by Hosokawa Micron Group.



### GLOBAL SERVICE

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



### CONTRACT MANUFACTURING

The Hosokawa Micron Group is your professional and reliable partner for contract manufacturing/toll processing. Our service allows you to concentrate fully on your core business and offset capacity bottlenecks without investment risks or long-term personnel commitments. Whether for a one-time project or recurring contract, our team, facilities and equipment are very flexible and can adapt to your exacting specifications.



## MAINTENANCE PACKAGES

Hosokawa Micron's Planned Maintenance packages ensure your equipment performs optimally, thus preventing costly or unnecessary production downtime.

Plant shutdowns are ideal times for customers to maintain their equipment. Our dedicated team of highly experienced engineers will happily accommodate your company's production schedules, for the ultimate in convenience.

While at your facility, Hosokawa Micron engineers will ensure your plant and operators are protected in accordance with the latest industry standards. Afterwards, a comprehensive report will be issued, which will also contain information about technology updates that will enhance the performance of the equipment, thereby optimising production processes to reduce energy bills, improve yield, ensure consistency and drive business growth to increase profitability.

#### FEATURES AND BENEFITS INCLUDE:

- › Dedicated technical support
- › Fast on-site response times
- › Discounts on our genuine spare parts
- › Extended Warranties available for equipment

Preventative and Predictive Maintenance ensures you are in control, but in the unlikely event you may need us for the Corrective Maintenance of your equipment, we will be there to provide accurate fault-finding and fixing for a rapid return to maximum performance.

## SPARE PARTS

Our Lifecycle Team will support you by fulfilling all of your spare parts requirements.

#### ADVANTAGES INCLUDE:

- › We carry stock of consumable spare parts used in our equipment to help minimise downtime
- › Our Spare Parts packages are carefully tailor-made to best suit your needs
- › For longevity and your peace of mind, we provide a full range of genuine, reliable spare parts for all of our Hosokawa-branded equipment
- › Each part undergoes a Quality Assurance Inspection

## LIFECYCLE SERVICES





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*Hosokawa Micron Group has established offices and agencies across various regions worldwide.  
For further information, please contact Hosokawa Micron Ltd in the United Kingdom.*

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Size Reduction and Mixing (SRMHML BRV2)