

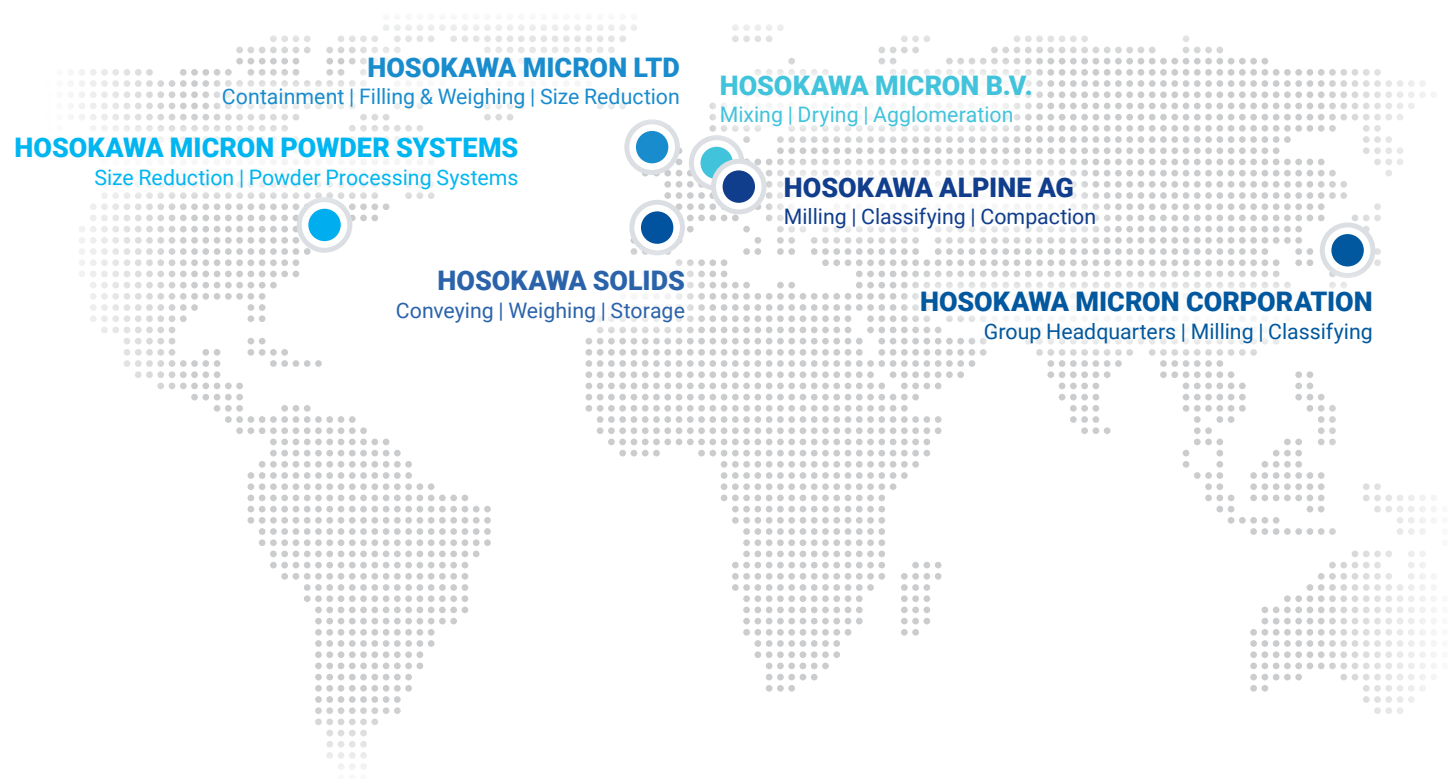


CONTAINMENT TECHNOLOGY & INTEGRATED SOLUTIONS

*Gloveboxes & Isolators • Flexible Compact Isolators • Downflow Booths
Horizontal Laminar Flow Booths • Filling and Weighing*



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.



**HOSOKAWA
MICRON GROUP**

YOUR TRUSTED PARTNER

for your specific industry



» PHARMACEUTICALS



» CHEMICALS



» NUCLEAR



» BATTERY MATERIALS



» COSMETICS



» FOOD & BEVERAGES

WHY CHOOSE HOSOKAWA MICRON LTD?

From our UK base in Runcorn, Cheshire we provide a comprehensive testing, design, manufacturing, installation, commissioning and aftersales service to a wide range of industries in the UK, Eire and overseas.

Hosokawa Micron Ltd is the worldwide manufacturer and supplier of Hosokawa Micron Milling and Hosokawa Micron Containment equipment and process systems.

Our engineering skills and integration of the latest production technologies ensure that our high-performance equipment, extensive processing know-how and partnership approach to the development of new technologies and processing solutions are in global demand by large and small blue-chip companies, alike.

We are proud to offer our customers a single source supply for integrated processing systems and component machinery to meet individual requirements and seek to set new standards in powder processing technologies that exceed expectations and deliver significant competitor advantages.

Hosokawa Micron Ltd's philosophy is to not only offer a standard piece of equipment or process system, but to work alongside our customers and their engineering teams to provide value-added solutions to very specific processing problems.



HOSOKAWA MICRON LTD.



WHY YOUR POWDER PROCESSING BUSINESS NEEDS A CONTAINMENT SOLUTION

In the world of powder processing, precision and safety are of paramount importance. Here are five reasons why a cutting-edge containment solution is essential for your business:

»» Safety First

Exposure to airborne powders, particles, liquids and vapours can be hazardous to your employees' health. Proper containment ensures their well-being and reduces workplace hazards.

»» Product integrity

Containment solutions prevent contamination, ensuring the purity and quality of your product. A single speck of foreign matter can compromise an entire batch, leading to costly recalls.

»» Regulatory Compliance

Many industries have stringent regulations regarding dust emissions and product purity. A containment solution helps you effortlessly meet these standards, avoiding legal issues and potential fines.

»» Efficient Workflow

State-of-the-art containment systems streamline operations, reduce waste and ensure a consistent processing environment.

»» Cost Effective

While an initial equipment investment is required, the long-term savings from **minimised health risks**, **reduced product loss** and **increased processing efficiency** are significant.

Elevate your powder processing business today with a dedicated, tailor-made containment solution from Hosokawa Micron Ltd



SAFETY UP TO THE HIGHEST LEVEL

- » We offer uncompromised protection and process efficiency with our industry-leading containment systems
- » Innovative containment solutions from the experts in powder and particle processing
- » Delivering Operator Exposure Levels down to 10ng/m³ and Operator Exposure Band 6
- » A single-source supplier of powder processing equipment and containment solutions
- » Delivering integrated and bespoke solutions which exceed expectations
- » Collaborating in close partnership with our customers worldwide
- » Customised solutions to meet your specific contained processing requirements – no matter how simple or complex

Occupational Exposure Band and Levels (OEB / OEL)

OEB 6
< 500 ng

OEB 5
< 1 µg/m³

OEB 4
1 – 10 µg/m³

OEB 3
10 – 100 µg/m³

OEB 2
100 – 1,000 µg/m³

OEB 1
1,000 – 5,000 µg/m³

Hazardousness



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GLOVEBOXES & ISOLATORS

In response to the development of increasingly potent and potentially toxic pharmaceutical products and chemicals, Hosokawa Micron has a proven range of standard and bespoke barrier containment solutions, offering protection for operators, the environment and the material being processed.

Engineered for manual and automated handling and processing, our Gloveboxes and Isolators are available in single and multi-cell variants for processes including milling, micronising, dispensing, sampling and product pack-off.

TECHNICAL HIGHLIGHTS

- Equipment OELs down to 10ng/m³ (8-hour TWA)
- cGMP, GAMP and FDA-compliant Isolators and Sterile Isolators for aseptic product handling
- Designed to accommodate Hosokawa Micron's range of size reduction equipment



KEY FEATURES

- Handles and processes hazardous, toxic and potent materials
- Available in a range of sizes and configurations
- ISO Class I nuclear Gloveboxes with leak tightness to less than 0.05% volume per hour
- Safe change HEPA filtration systems
- Uni-directional airflow systems
- Tailor-made equipment and integrated process systems

OPTIONAL FEATURES

- Integrated CIP/WIP system
- ATEX-compliant integrated nitrogen purge system
- Uni-directional flow filtration (Sterile Isolator)
- Viable and non-viable particle monitoring (Sterile Isolator)
- Integrated VHP sterilisation (Sterile Isolator)
- Negative or positive internal pressure control options

Bespoke Manual and Automatic Drum and Bulk Container Equipment

From drum tipping for precise powder handling, to versatile IBC/ drum filling for powders and liquids, efficient IBC/FIBC discharging for powders and advanced drum emptying with vacuum discharge, suitable for powder and liquid materials, Hosokawa Micron offers a range of tailor-made solutions to complement our containment equipment.



Drum and Bulk Container Equipment



Glovebox/Isolator

- » OPERATOR PROTECTION
- » PRODUCT PROTECTION
- » ENVIRONMENT PROTECTION
- » EXPLOSIVE MATERIAL HANDLING
- » INTEGRATED ENGINEERING



FLEXIBLE COMPACT ISOLATORS

A cost-effective 'plug-and-play' barrier containment solution that can easily be transported to where it is needed. Providing a single, contained workstation – or linked with other units – the Flexible Compact Isolator can create a complex, multi-cell solution with individual activities contained within each unit.

Ideal for use in scientific research, biotechnology, pharmaceutical applications for laboratory analysis, micronising, drying, product transfer and sampling of highly potent compounds.

TECHNICAL HIGHLIGHTS

- 3D modelling and full-size ergonomic mock-ups
- Manufactured to meet cGMP, FDA and EMA guidelines
- Designed to accommodate Hosokawa Micron-brand or third-party equipment

cGMP
FDA, EMA
COMPLIANT
DESIGN

KEY FEATURES

- Plug-and-play functionality
- Lower cost/shorter lead time alternative to all stainless-steel, static Isolators
- Containment level $<1\mu\text{g}/\text{m}^3$
- Freestanding or benchtop designs

OPTIONAL FEATURES

- Rigid or flexible canopies available
- Nitrogen inertion
- WIP/CIP system
- ATEX-standard designs



➤ Rigid Compact Isolator



➤ Flexible Compact Isolator in shut and open positions



» COMPACT, USER-FRIENDLY DESIGN

» COST-EFFECTIVE OPTION

» EASY TO OPERATE

» SIMPLY 'PLUG-AND-PLAY'

» MOBILE OPTION AVAILABLE

ATEX
COMPLIANT
DESIGN
AVAILABLE

DOWNFLOW BOOTHS

RECIRCULATION AND SINGLE PASS

Downflow Booths offer a safe working zone for the protection of operators from the potent, toxic and sensitizing particulates, liquids and solvents generated during manual handling activities such as sampling, dispensing, sub-division, charging and the offloading of powders or solvents.

Hosokawa Micron can offer an extensive range of standard design and bespoke Downflow Booth solutions, featuring the latest energy-efficient, clean air technology and supplied with or without integrated equipment.

TECHNICAL HIGHLIGHTS

- Bespoke or standard-design booths available
- Ergonomic, open-fronted designs
- Available in a wide range of sizes



KEY FEATURES

- Guaranteed operator exposure levels of <100µg/m³ (task duration) can be improved with the use of flexible or rigid high containment screens to 10µg/m³ (task duration)
- Flexible, modular build concept
- Almost limitless widths, heights and safe working depths available
- Standard designs at an affordable cost
- Recirculation or single pass and hybrid solutions
- Additional Local Exhaust Ventilation (LEV) when required

OPTIONAL FEATURES

- ATEX-standard designs
- Stainless-steel, powder coated mild steel or composite cleanroom construction panels
- Controlled entry and exit airlocks
- Temperature cooling/heating packages
- Multi-stage filtration with safe change capability
- High containment screen
- FAT/SAT testing, IQ/OQ



➤ Downflow Booth

DOWNFLOW BOOTHS



➤ Downflow Booth



- QUIET OPERATION
- 3D AND AIRFLOW MODELLING
- LOW ENERGY CONSUMPTION



Booth Width	2 Metres	2.5 Metres	3 Metres	4 Metres	5 Metres	6 Metres
Internal Width (mm)	2,000	2,500	3,000	4,000	5,000	6,000
External Width (mm)	2,100	2,600	3,100	4,100	5,100	6,100
Safe Working Depth (mm)	1,800	1,800	1,800	1,800	1,800	1,800
Front Buffer Depth (mm)	750	750	750	750	750	750
Rear Stack Depth (mm)	1,050	1,050	1,050	1,050	1,050	1,050
Overall Depth (mm)	3,600	3,600	3,600	3,600	3,600	3,600
Internal Height (mm)	2,300	2,300	2,300	2,300	2,300	2,300
Ceiling Height (mm)	550	550	550	550	550	550
Overall Height (mm)	2,850	2,850	2,850	2,850	2,850	2,850

HORIZONTAL LAMINAR FLOW BOOTHS

The Horizontal Laminar Flow Booth's controlled, non-turbulent, filtered airflow means only clean air is in the operator's breathing zone. Harmful airborne fumes and particles that are generated during processing activities are continually extracted from the breathing zone.

Available either custom-built or in standard sizes, the ergonomic design of Hosokawa Micron's Horizontal Laminar Flow Booths allow a wide range of containers to be handled manually or automatically and are designed for fixed or portable operation or as a standalone workstation.

TECHNICAL HIGHLIGHTS

- Complete with integral fan/motor systems, internal lighting, integrated hand tools, filling and weighing, processing or manufacturing equipment zoned according to ATEX area classifications
- For wide-ranging applications including charging/discharging, filling/weighing, dispensing, vacuum transfer and solvent containment during pumping and dispensing

KEY FEATURES

- Bespoke or standard designs and sizes
- High-quality stainless-steel or coated mild steel construction
- Easy to clean and maintain
- Manufactured to meet cGMP guidelines
- OELs down to <10µg/m³
- Guaranteed product integrity
- Fixed, portable or standalone workstations

OPTIONAL FEATURES

- Integrated CIP system
- Manually or pneumatically operated doors for the infeed/outfeed of containers
- Integrated operator controls
- Hazardous area controls
- Container location and pneumatic eject systems



Horizontal Laminar Flow Booth

- » QUIET OPERATION
- » 3D AND AIRFLOW MODELLING
- » ENERGY-EFFICIENT
- » EXPLOSIVE MATERIAL HANDLING
- » ATEX DESIGNS AVAILABLE



FILLING & WEIGHING

Accurate weight-controlled filling systems from Hosokawa Micron maintain the highest standards of hygiene, dust control and product integrity. Each system delivers accurate, stable and repeatable weight readings.

Available in standard or bespoke designs, our Filling and Weighing systems can be designed for use in hazardous areas. The systems incorporate interchangeable, Hosokawa Micron-designed, inflatable packing heads and integrated weigh platforms to provide automatic control of bulk and dribble filling modes.

TECHNICAL HIGHLIGHTS

- › Expertly engineered for dust-free transfer
- › Accurate weighing of powders, granules and liquids
- › Internal filter and purge features are a standard feature

KEY FEATURES

- › Designed for flexible filling of a range of container sizes including charge bottles and drums with or without liners
- › Internal filter and purge facilities as standard – reducing product loss and protecting HEPA filters, FIBCs and IBCs
- › Manufactured to be FDA, cGMP and EMA compliant
- › A single, easy-to-read, flush-mounted control panel display, including weight and other process parameters. The system can be connected to the customer's distributed control system (DCS)

OPTIONAL FEATURES

- › Gravity or motorised roller track section to assist entry and exit of filled containers
- › Integrated electrical and pneumatic controls for standalone systems
- › Manual or pneumatic platform height adjustment
- › WIP/CIP system
- › Drum base vibration system
- › In-line product sampler
- › FDA-compliant seal materials
- › Available in a choice of materials, including stainless steel, Hastelloy and coated mild steel
- › Additional Local Exhaust Ventilation (LEV) when required

FILLING & WEIGHING



Packing Heads with LEV



Hosokawa Micron offers a wide range of packing head solutions to complement our Filling and Weighing systems, including interchangeable sealing heads that can be changed in less than a minute, compact inward seals that do not come into contact with the product and outward or downward inflating seals made to a cGMP design.



› Filling & Weighing System



› Packing Head with LEV

» PRECISION WEIGHING

» USER-FRIENDLY INTERFACE

» SEAMLESS INTEGRATION

» HIGHLY CUSTOMISABLE DESIGN



HOSOKAWA MICRON

your system solution provider

Hosokawa Micron's extensive experience within a diverse range of processing industries includes turnkey containment and processing systems for Hosokawa Micron-brand drying, mixing, air classification, size reduction, agglomeration and compaction equipment, as well as creating containment systems to house third-party equipment.

Hosokawa powder processing equipment, as well as third-party auxiliaries, can be re-designed for installation inside Gloveboxes/Isolators for a more bespoke processing response and to deliver an improved ergonomic solution.



BESPOKE SOLUTIONS

Hosokawa Micron Group is a global provider of equipment, systems, processes and services. We guarantee process solutions for almost all industries and business areas with this suite of services.



MORE THAN 100 YEARS OF EXPERIENCE

Hosokawa Micron has been developing innovative processing equipment and systems for a wide variety of products and markets for more than a century. As a result, we can draw upon an unparalleled amount of know-how when designing new process systems for our customers.



INNOVATIVE TEST CENTRE

Our research and testing facilities contain a wide choice of equipment for the most varied plant configurations. Our skilled and knowledgeable experts are available to determine the best possible powder processing solution for your process, ensuring that all your requirements are met.

Integrated Powder Processing Solutions

FEEDING

Hosokawa Solids provides its own developed process solutions and systems in the core competences of storage, conveying, dosing and weighing technology. The components from Hosokawa Solids are manufactured by a highly qualified and experienced team. In addition, Hosokawa Solids offers adapted processes and homologations for your specific industry and design line.



DRYING

Hosokawa Micron offers a wide range of innovative drying technologies for batch and continuous processing, including vacuum drying, freeze drying and flash drying of materials such as powders, pastes, slurries and liquids.



MIXING

We supply skids for heating or cooling our drying equipment and for cooling ancillaries. A process air heater can be selected, depending on utilities such as steam, electricity or gas.

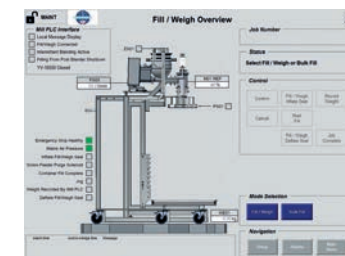


MILLING

Hosokawa Micron designs and manufactures Isolators where different Hosokawa-brand milling solutions can be integrated. An Isolator system with several integrated grinding systems offers the user a high degree of flexibility for R&D applications right through to the production of large batches.

COMPACTION

Hosokawa Micron offers a wide range of compacting and agglomeration equipment for various industries. The Pharmapaktor®, for example, is ideal for processing potent pharmaceutical ingredients and is available as a standalone piece of equipment, but we strongly advise pairing it with a Hosokawa Micron Isolator, tailor-made to meet ATEX, FDA, GAMP 5 and OEB 5 standards.



CONTROLS AND PROCESS AUTOMATION

Hosokawa Micron process systems include the latest hardware and software controls, optimally integrated to ensure a consistently high product quality under variable conditions and circumstances. We supply ergonomic and visual HMI-PLC panels, including for lot traceability, operator identification, remote servicing, alerts and customised data reporting to give you full insight into your production processes.



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.

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.

QUALIFICATION & VALIDATION SERVICE

To ensure your containment equipment operates correctly and meets critical standards, our trained engineers carry out a full range of testing and validation procedures in accordance with the latest ISO standards, including:

- HEPA filter integrity testing
- OEL testing
- Leak testing
- Classification of air cleanliness by particle concentration
- IQ/OQ/PQ Qualification on site

CONTAINMENT TESTING

Carried out on-site by Hosokawa Micron, in accordance with ISPE Guidelines, leak testing and Operator Exposure Level (OEL) testing enable you to benefit from our specialist containment expertise and an in-depth understanding of your containment requirements at all stages of construction.

QUALITY-ASSURED 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 for you
- We provide a full range of genuine, reliable spare parts for all of our Hosokawa-branded equipment
- Each part undergoes a Quality Assurance Inspection

OPTIMISATION & UPGRADES

Hosokawa Micron can provide expert assistance by upgrading your equipment in order to lower plant running costs, improve performance and ensure machinery is as eco-friendly as possible.

OUR UPGRADING PRODUCTS AND SERVICES INCLUDE:

- 5D flexible or rigid containment screens
- Energy/noise-reducing extractor fans
- Energy-efficient LED lighting
- Temperature Control packages
- PIR sensors (standby mode)
- Glove integrity test kits





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*Hosokawa Micron Group has established offices and agencies across various regions worldwide.
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Containment Technology & Integrated Solutions (CTISHML BRV1)