

CONTAINMENT TECHNOLOGY



HOSOKAWA CONTAINMENT

Process Technologies For TomorrowSM

SINGLE SOURCE SUPPLY FOR CONTAINMENT TECHNOLOGY

As demands for low occupational exposure levels (OEL's) and increased product integrity requirements have escalated, Hosokawa Micron Ltd. are leading the way in developing new technologies to meet the changing needs of industry.

Powder and particle handling expertise along with process system integration experience is drawn together at Hosokawa Micron Ltd., with specialist equipment and technological design capabilities from Hosokawa's Containment Division.

Containment technology already firmly established in the pharmaceutical industry is also utilised increasingly in the chemical and food industries. As Health and Safety and product isolation requirements increase across a range of processing applications, the use of process containment technology for the protection of both personnel and product will intensify.

Working in close partnership with customers, Hosokawa Micron Ltd. are able to offer a single source supply of containment equipment and bespoke containment options for complete powder processes utilising uniquely designed integrated systems to meet the most exacting containment challenges. From design through to the installation of equipment Hosokawa are able to offer a full turnkey service combining Hosokawa Micron's world renowned powder



Process integration incorporating Alpine milling equipment into Stott Isolator. ▲

processing capabilities with the respected hygienic filling and weighing capabilities of Stott and the clean air environment technology of Vitalair to ensure the most appropriate containment solution to meet individual needs.

Testing

Hosokawa Micron offer the resources of the latest R & D and test facilities supported by a range of on site testing services utilising trial equipment to ensure the most appropriate specification of equipment and systems, ensuring all performance criteria can be agreed and that performance in certain specific process scenarios can be tested.

Full ergonomic and performance testing of all equipment and containment systems takes place prior to delivery to the customer, where appropriate, with full validation documentation.



A regular programme for inspection and maintenance is available

◀ *Stott filling and weighing system with high fill accuracy*

Service

A comprehensive after sales and maintenance service is available. Hosokawa Micron's highly experienced and qualified service engineers are able to provide not only a regular and programmed schedule of service but also a responsive problem solving back up for customer's own service team. Able to fully support with advice on all aspects of spares, maintenance and process optimisation the Hosokawa Micron service engineers provide a complete back up to ensure smooth operation of your equipment or system and reduced system downtime.



CONTAINMENT TECHNOLOGY

With varying requirements for product isolation and operator protection Hosokawa Micron have developed a range of equipment and integrated system options to meet the varied containment criteria demanded by different applications and industries.

Filling and Weighing Systems

Containment Level 1

500 - 1000 $\mu\text{g}/\text{m}^3$

Accurate weight controlled filling systems designed and manufactured to maintain the highest standards of hygiene, dust control and product integrity.



Laminar Flow Booths

Containment Level 2

100 - 500 $\mu\text{g}/\text{m}^3$

A controlled, once through, non turbulent air flow ensures good operator protection from dust and fumes. Individually designed to meet a wide diversity of applications.



Downflow Booths

Containment Level 3

25 - 100 $\mu\text{g}/\text{m}^3$

Hosokawa's extensive experience of clean air environments means we are able to work closely with our customers from initial front end specification to installation and commissioning.

Achieving a minimum 99.99% filtration performance, Hosokawa downflow recirculation booths are used particularly where hazardous, toxic or sensitizing powders are handled.

Gloveboxes

Containment Level 4

<25 $\mu\text{g}/\text{m}^3$

Isolator Systems

Containment Level 5

<1 $\mu\text{g}/\text{m}^3$

Hosokawa Micron have developed a range of individual containment equipment which may be utilised alone or can be combined with other containment technology to give additional or enhanced protection.

Designed and manufactured by Hosokawa to meet varying levels of containment this equipment may be integrated with other processing equipment to provide complete contained process systems.



HYGIENIC FILLING AND WEIGHING SYSTEMS

Hosokawa have over 20 years experience in the design and manufacture of hygienic filling and weighing systems for the pharmaceutical, food and chemical processing industries. A range of equipment is available, designed for the processing and packaging of expensive noxious or toxic products to solve powder and granular handling problems.

Stott Sealing Head Systems

Suitable for dust free packing into drums, bags, boxes and bulk containers a range of robust sealing heads form an integral part of dust free packing systems.

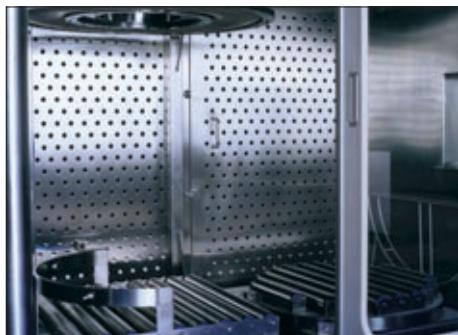


▲ Inward Inflatable Sealing Head with continuous liner



▲ Outward Inflatable Sealing Head for big bag filling incorporating sampling system

A Sealing Head for Every Need							Bags	Sacks	Liners	Drums	Kegs	IBC's	FIBC
	PH Outward Inflatable Sealing Head	✓	✓	✓									✓
	DS Downward Inflatable Sealing Head				✓	✓	✓						
	DSS Downward Solid Sealing Head				✓	✓	✓						
	VP Vacuum Assisted Sealing Head			✓									
	IS Inward Inflatable Sealing Head		✓										



◀ Downward Inflatable Sealing Head in Laminar Flow Booth with sliding door and roller track



Stott Filling & Weighing Systems

Hygienic filling and weighing systems from Hosokawa maintain the highest standards of dust control and product integrity. Stable and repeatable weight readings are given to meet the exact container weight specifications even in arduous conditions.

Dust emissions are automatically taken away from the operator whilst the totally enclosed filling system reduces potential outside contamination of the product.

When combined with an automatic container indexer, conveyor and label printer a complete automatic, bulk packaging system can be developed.

Vacuum Assisted Sealing Head incorporated into Stott Isolator and Vitalair Downflow Booth ▶

HORIZONTAL LAMINAR FLOW BOOTHS

The Horizontal Laminar Flow Booth's controlled, once through, non turbulent air flow ensures extra environmental safety and good operator protection from dust and fumes. Available in standard sizes up to 4m wide the ergonomic design of the Hosokawa Laminar flow Booths allows a wide range of containers to be handled either manually or automatically.

Individually designed to meet specific requirements the flow booths are supplied with integral fan/ motor systems with equipment zoned according to area classifications.

With optional inbuilt exhaust filtration or connection to local dust collection systems the laminar flow booths offer a safe, clean air facility for applications such as product charging and discharging, filling and weighing, inspection and dispensing, CIP work and also the pumping or dispensing of liquids or solvents.

Air is extracted at the back of the booth through a full rear plenum designed to give a laminar pull of air to 0.5 m/sec across the open front face access and thus



Laminar Flow Booth incorporating Keg Filling and Transfer Station ▲

creating a non-turbulent air flow pulling away any product emissions from the work area and operator.

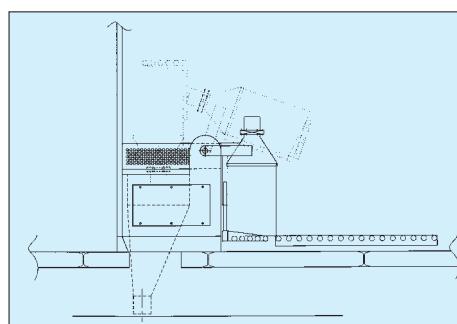
Laminar Flow Booth used for safe transfer of liquids. Transfer pipes can be incorporated in the ceiling. Booth

manufactured from epoxy coated mild steel or alternatively stainless steel.

Booth side faces can include pneumatic or manual doors for drum entry and removal, and to correspond with others external roller conveyor.

DRUM AND KEG HANDLING

Automatic and manual drum or keg tipping equipment available from Hosokawa offers safe product transfer. Product tipping units can be integrated into Laminar Flow Booths, Down Flow Booths or Glove Box facilities and are suitable for handling fibreboard kegs, plastic or steel drums up to 200ltr and 250kg.



▲ Automated drum/keg tip station integrated into Containment Booth package



▲ Manual keg-tipping unit in a Laminar Flow Booth

Dedicated localised exhaust to maximise containment



▲ Drum lift/tilt and discharge equipment inside Downflow Booth

DOWNFLOW BOOTH TECHNOLOGY

Vitalair Downflow Recirculation Booths

Achieving a minimum 99.99% filtration performance, Hosokawa Downflow Recirculation Booths are used particularly where hazardous, toxic or sensitizing powders are handled.

The air recirculation system ensures complete safety for personnel as a conditioned downflow of air passes vertically from the booth's ceiling inlet plenum pushing any dust or vapours downwards and away from the operator's breathing zone.

The air is extracted from the booth via low level grills mounted in the rear wall. The exhaust air is taken through a series of filters prior to recirculation into the booth

Non-standard size systems have been supplied between 1.5m and 12.00m wide and from 2.0m and 9.0m high internally.



▲ A large Dispensary Suite integrated into a pharmaceutical facility

Twin stainless steel product weigh-out Booths, with integral computer equipment consoles ▼



Vitalair Stand Alone Downflow Booth

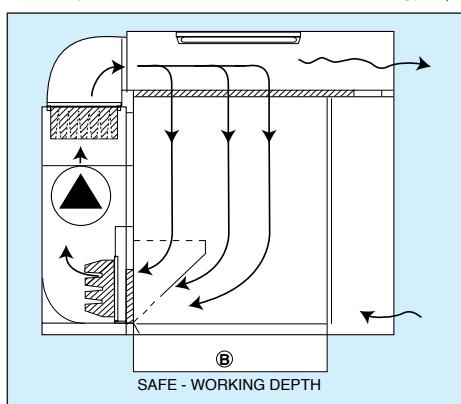
Designed for flexible use for all types of powder handling applications the stand alone downflow booths operate from a single plug-in connection and can be installed without the need to alter existing fixtures.

Constructed to meet individual requirements the booths can incorporate 'grey' outer areas for goods and personnel access. This means the Vitalair stand alone booths can be placed in designated 'black' areas without risk to personnel or product integrity.

Stand alone Downflow Booth with outer product/personnel entry ►



Downflow recirculation booth technology ▼



Oyster filter inside Downflow Tray Drying Booth ►



Vitalair Downflow Single Pass Booths

Ideal for use when fume or solvent laden substances are being handled or when high potency products demand a once through philosophy. The single pass booth operates a vertical airflow pushing dust or vapours downwards to ensure clean air in the operator's breathing zone with air discharged 100% to atmosphere. utilising a dedicated air supply and exhaust fan sets, both of which are normally fitted with HEPA standard (99.99%) filtration systems.



▲ Stott Keg Filling Isolator integrated with Vitalair Downflow Booth

GLOVE BOXES AND ISOLATOR SYSTEMS

In today's industrial climate the demands for strict regulation and compliance to reduce operator exposure levels cannot be over emphasised.

Hosokawa's expertise in this area is renowned, being the preferred supplier to many major pharmaceutical and chemical companies worldwide.

High Containment Isolators

Where ultra high containment levels are required for the handling of highly active or toxic chemicals the Hosokawa range of isolators offers complete operator safety and product integrity.

Designed to meet individual requirements isolators enable both manual and automatic handling procedures to be carried out with minimal operator exposure.



▲ Integration of Alpine 315 UPZ Mill into Stott Isolator.

Isolator Systems

Incorporating barrier containment technology in critical process areas such as milling, drying and product pack off, Hosokawa are able to offer containment levels of below $1\mu\text{g}/\text{m}^3$. Utilising individually designed processing equipment integrated within the sealed environment of an isolator offers a true shirt 'sleeve environment'.

Hosokawa work in close co-operation with customers to ensure that all production and containment levels and user requirements are fully met. Individual designs are translated to CAD and virtual presentation prior to mock up stage before production.



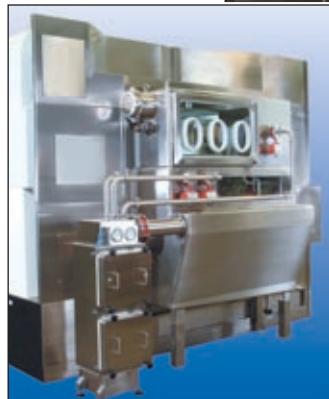
▲ Quad cell, solids discharge Drum Tipping Booth.

Integrated CIP

Integrated CIP is now a major design factor in containment technology. It eliminates the need for additional cleaning bays with the associated potential for cross contamination and minimises downtime whilst at the same time ensuring the total protection of personnel. Hosokawa have developed a range of isolators which offer a variety of CIP options.



▲ Safe removal of liners



◀ Integrated Vitalair Downflow Booth and Stott Isolator ▲

Glove Boxes

The glove boxes are ergonomically designed for ease of use, allowing products to be handled without risk of exposure. Over pressure and under pressure environments can be maintained and humidity controlled to ensure product integrity and stability.



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HOSOKAWA CONTAINMENT

The Hosokawa Micron Group will always be the leading global company covering the mountain range of Powder Technologies. The Group will achieve peaks of excellence in the development and commercialisation of advanced materials, process equipment and systems engineering.