

# Air-Pallet<sup>®</sup>

System



Semi-Bulk Systems, inc.

We'll make a believer out of you



# Benefits of the

# Air-Pallet® System

**When it comes to storing and transporting powders, you face a number of difficult challenges. Storage, transport, and processing powders pose tremendous obstacles: dust-filled air; back injuries from lifting and dumping heavy bags; waste disposal hassles and expense with empty packaging; floor space constraints with typical reusable containers; and ceiling height constraints hampering use of standard F.I.B.C.s. Just to name a few.**

**A**T SEMI-BULK SYSTEMS, WE HAVE BEEN developing effective solutions to the challenges of handling and mixing powders and liquids for more than 25 years. The result is a patented, state-of-the-art technology that is faster, cleaner, easier, and more economical than any other in the industry. Whether you are looking for individual components or a totally integrated system, we offer custom-designed solutions to meet your specific manufacturing needs.

The unique design of the Air-Pallet® System makes it possible to load, transport, store, and unload dry ingredients under completely closed conditions, totally eliminating dust or contamination. It allows total automation with PLC and loss-in-weight controls to deliver powder to processes including gravity, vacuum pneumatic conveyors, and the VACUCAM® process.



## High Quality

- **Reliable flowability** – The porous “fluidizing” membrane floor permits powders to flow smoothly and at a uniform rate with proper fluidization.

## Low Cost

- **Waste reduction** – The Air-Pallet® Containers are completely reusable and returnable.
- **Reduced labor and product loss** – Air-Pallet Containers replace a large number of bags or drums and connect to automated unload options.

## Flexibility & Convenience

- **Reduced space requirements** – A range of Air-Pallet Container models and sizes are designed to accommodate very low to very high bulk densities, reducing storage space requirements and optimizing shipping capacities.
- **Reduced storage needs** – Our containers are completely collapsible, so they can be stacked when empty waiting to be returned.
- **Easy integration** – All of our systems permit integration with your existing processes, allowing you to add as much or as little of our technology as you want.

## Health & Safety

- **Complete dust-control** – The sidewall of the Air-Pallet® Container has welded seams. All connections form air-tight seals, and fill and unload components are totally enclosed.
- **Fewer injuries and reduced health care costs** – The system requires no heavy bag lifting and dumping. Operator contact with hazardous or explosive powders is eliminated. Work areas stay cleaner, reducing slips and other housekeeping hazards.



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# The Only **Totally** **Integrated System** for **Dry Ingredient** **Handling**



## **DUST-FREE FILLING EQUIPMENT**

- Semi-Bulk Systems offers filling systems for Air-Pallet® Containers, as well as bulk bags with adaptors for drums and pallet box filling. Available options include: scale base with automated fill weight control; compaction tables and thumper tables for product densification and stability; adjustable mast for accommodation of varying container heights; automated divert valve control for vent and dust control to dust collector; manual and power roller conveyors to load empty containers and remove full containers; inflation blowers for bulk bag liners and vacuum blowers for product densification where applicable.
- Filling systems for bulk bags and bins designed for hygienic filling of food ingredients. They also incorporate options listed above.

We offer complete design engineering, including initial ingredient evaluation and characterization. All fabrication and assembly are done in our manufacturing facility, and systems are tested in our production-scale pilot plant before they are placed into your operations. Then we supervise your installation and start-up and provide ongoing training and service.

## **Typical Applications**

Semi-Bulk Systems custom designs each system to fit our customer's specific product and processing requirements, physical plant accommodations and other variables. We can design an entire system or the necessary components to integrate the Air-Pallet® System within your existing process.

Custom-designed applications are being developed on a regular basis as we work to meet each client's distinctive, individual needs. The following applications are examples of how our Air-Pallet® Container is currently being used in both **Industrial** and **Sanitary** processes.

- **INDUSTRIAL APPLICATIONS** – Examples of products being shipped and handled in Air-Pallet® Containers include pigments, clays, starches, PVC resins, precious and heavy metal catalysts, dispersants, powdered thickening agents, specialty and intermediate chemicals and heavy metals.

- **SANITARY APPLICATIONS** – Examples of products currently being shipped or handled in Air-Pallet® Containers include specialty chemicals, brewing filtration materials, pet food ingredients and health care compounds.



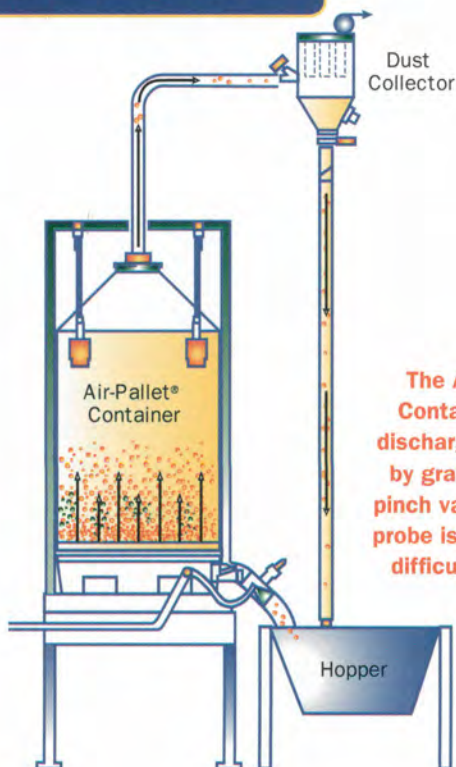
**After containers are emptied, they are collapsed and easily stacked for return and reuse.**



# Closed-System Unloading Options

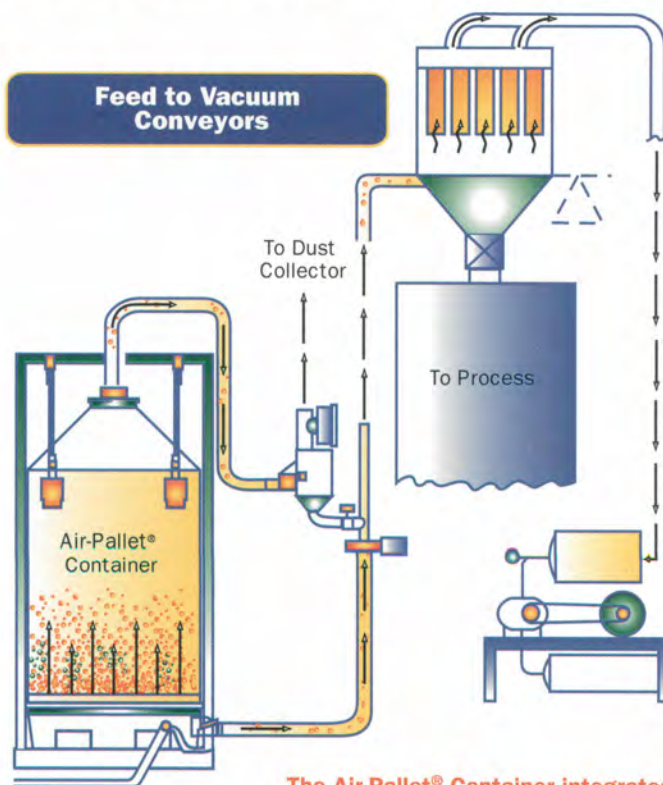
When the Air-Pallet® Container reaches its destination, the contents can be conditioned to flow into almost any unloading or conveying process. A unique feature of this system is its capability to discharge controlled increments, measured by container weight loss or by receiver weight gain.

## Gravity Discharge



The Air-Pallet® Container batch discharges powders by gravity using a pinch valve. A screw probe is available for difficult powders.

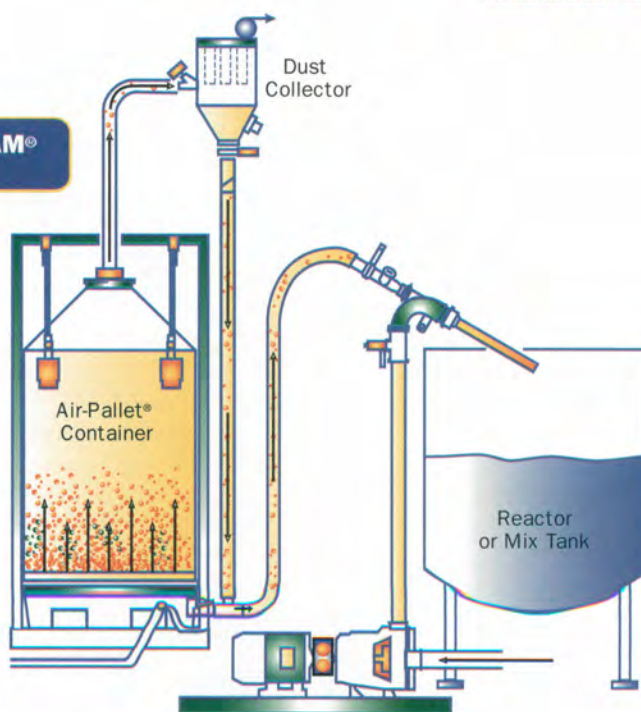
## Feed to Vacuum Conveyors



The Air-Pallet® Container integrates directly with vacuum conveyors to deliver powder to process or to intermediate storage.

## Direct Feed to VACUCAM® Slurry Process

The Air-Pallet® Container conditions powders for direct coupling to the VACUCAM® Ejector Mixer slurry system. This device conveys and wets powders, using pumped fluids. Aerated powders are introduced into the center of a high-velocity, hollow, liquid stream where rapid dispersion, wetting and dissolution are achieved.



# Air-Pallet® Container Specifications

## Round

<b>Size</b>	42" (106.7cm) diameter
<b>Volume Capacity</b>	
<b>Filled Height</b>	35 cu. ft. (1 cu. meter)/ 56" (1422mm) 50 cu. ft. (1.4 cu. meter)/ 72" (1829mm)
<b>Empty Height</b>	Approximately 11" (279mm)
<b>Max Weight Capacity</b>	4100 lbs. (1863 kg)
<b>Empty Weight</b>	85 lbs. (38.6 kg)
<b>Trailer Capacity</b>	
<b>40 ft. trailer</b>	22 units
<b>45 ft. trailer</b>	24 units
<b>48 ft. trailer</b>	26 units
<b>53 ft. trailer</b>	30 units

## Rectangular

<b>Size</b>	48" (122 cm) wide x 51" (129.5 cm) depth
<b>Volume Capacity</b>	
<b>Filled Height</b>	85 cu. ft. (2.4 cu. meter)/ 81" (2057mm) 100 cu. ft. (2.8 cu. meter)/ 92" (3622mm)
<b>Empty Height</b>	Approximately 16" (406mm)
<b>Max Weight Capacity</b>	4100 lbs. (1863 kg)
<b>Empty Weight</b>	195 lbs. (88.6 kg)
<b>Trailer Capacity</b>	
<b>40 ft. trailer</b>	18 units
<b>45 ft. trailer</b>	20 units
<b>48 ft. trailer</b>	22 units
<b>53 ft. trailer</b>	24 units

### Base Option

Air-Pallet Containers are available with optional stainless steel isolation valves molded into base.

### Side Wall Material Standard

Woven polyester base fabric with anti-static PVC coating on both sides with a polyurethane topcoat on both sides.

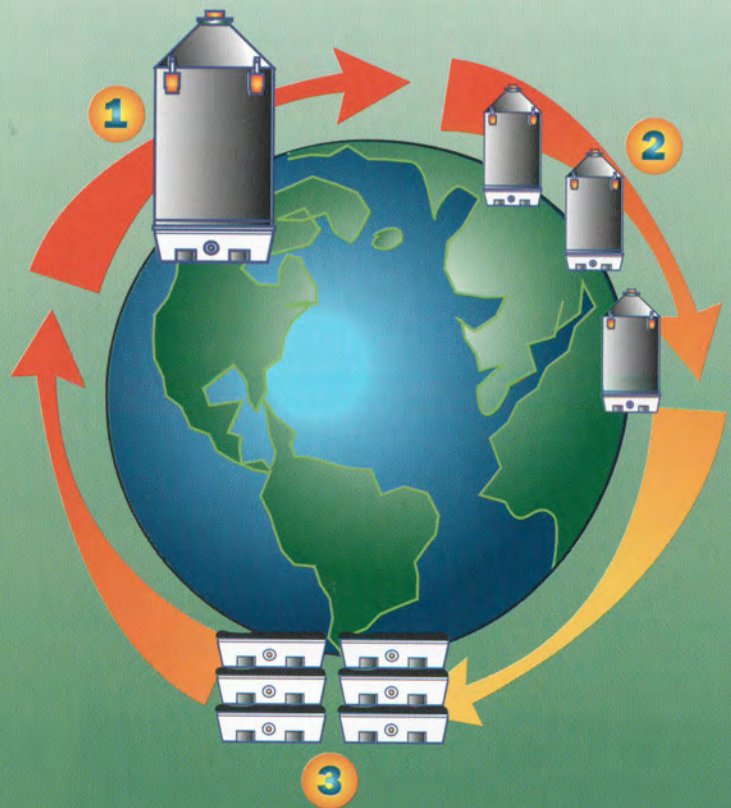
### Options

- Woven polyester base fabric with anti-static polyurethane coating on both sides.
- Special moisture vapor barrier coated fabric.
- Stenciling, numbering, material data pouches, logo decals and powder coated metal parts are also available as options.



# Our Air-Pallet® System is Environmentally Sound

The Air-Pallet Container helps to eliminate land-fill waste because it is a reusable package designed for hundreds of uses and years of service.



**1** Supplier Fills

**2** Customer Unloads

**3** Return for Reuse

return  
recycle  
reuse  
reduce waste



# Advanced Technology for Handling Dry Ingredients

**Our Air-Pallet® System is the only totally integrated system for dry ingredient handling on the market. It provides an incomparably safe, clean, and economical method for handling pigments, resins, clay, starches, flour and other fine powders. Here's how it works.**

**T**HE AIR-PALLET® CONTAINER IS THE HEART OF THE SYSTEM. THE SIDEWALL IS CONSTRUCTED of heavy duty PVC, polyurethane or other coated fabric attached to a light-weight HDPE base. The base contains a unique built-in fluidizing membrane floor, air probe entry port, product discharge port and four-way access entry for fork lifts and hand trucks.

Using a dust-free automated filling station supplied by Semi-Bulk Systems, your supplier fills the Air-Pallet® Containers with your raw materials and ships them to your plant. These containers eliminate the need for bag breaking and drum dumping. While they are designed to hold up to 4100-pounds, they require much less storage space because they are collapsible. Since the containers are also reusable, there is no package waste handling and disposal.

The Air-Pallet® Container can be emptied in its entirety or in controlled increments. The porous fluidizing membrane floor in the base permits low pressure "conditioned" gas to permeate the entire contents uniformly at a controlled rate. When the dry ingredients are conditioned, they assume the properties of a liquid and can then be transferred either directly into your manufacturing process or to interim storage.

The screw top lid is removed and the fill spout is connected to an inflatable seal fill head for dust free filling. For unloading the smaller screw cap is removed and a probe is connected for dust free venting.



Conditioning gas is supplied by a positive displacement blower, and powder assumes the properties of a liquid.



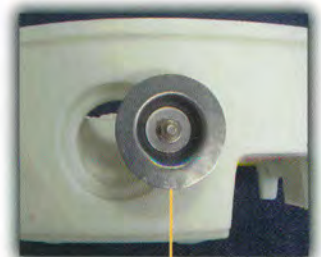
Cutaway view of the Air Membrane



Slide Discharge Port Option



After expansion plug removal, an inflatable seal probe is connected to the discharge port for dust free discharge.







**We'll make a believer out of you**

**Manufacturing custom-designed  
systems for dry and liquid mixing  
processes and dry ingredient handling**

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25 Years  
**Semi-Bulk Systems**  
incorporated