

TECHNICAL NOTE

J.T.Baker® DispenseRight™ Powder Delivery System

An advanced powder delivery system combining proprietary dual-layer packaging with a seamless connection to ensure efficient closure integrity for contamination control when dispensing dry chemical powders into a mixing vessel.

FEATURES

- Up to 120 kg in a single package
- Inner LDPE liner and outer Polypropylene (PP) woven layer
- Desiccant in breathable Tyvek® inner pouch (non-desiccant available)¹
- Non-migrating and permanent anti-static film
- Bag ports available in 4", 6" and 8" for broad bioprocessing compatibility

BENEFITS

- Scalable dispense fit for large-scale production
- Enhanced packaging strength and integrity for high weight
- Minimize the amount of moisture build-up and clumping for hygroscopic salts
- Efficiently empty materials without the optional rinse
- Seamless connection to mixing vessel for consistent process performance



DispenseRight™ Single-Use bag

ADDITIONAL FEATURES AND SPECIFICATIONS

- Salts, buffers, or supplements are pre-weighed to your specifications with a trusted-weight tolerance of $\pm 1.0\%$
- Compatible with Raman identification, enabling streamlined material identification testing
- User-friendly TC-clamp connection, allowing quick installation and removal
- Tamper-evident clip that remains in place until dispensing, reducing the risk of handling errors
- Compatible with common hoist system to effectively dispense heavy loads, lowering labor requirements and EH&S risks



OPTIMAL BAG DESIGN FOR STRENGTH AND MATERIAL FLOWABILITY

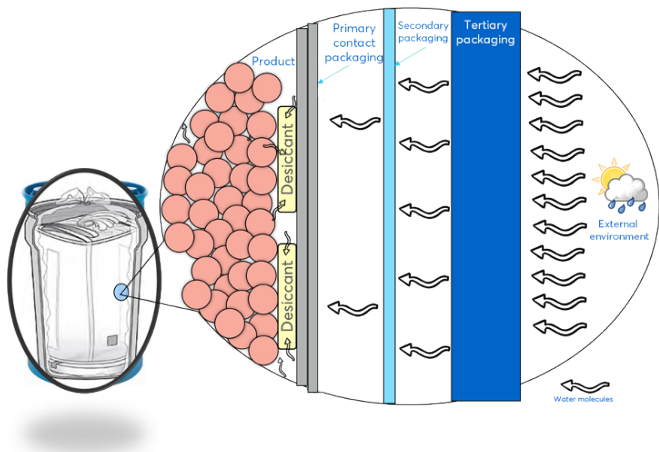
DispenseRight™ bags are designed for large-scale production environments. The dual-layer construction provides maximum strength for chemicals up to 120 kg. An integrated layered structure with a desiccant-holding pouch helps minimize moisture accumulation, maintaining material integrity and supporting free-flowing performance.

Clumping in traditional packaging



VS

DispenseRight™ dual-layer bag with unique desiccant-pouch design



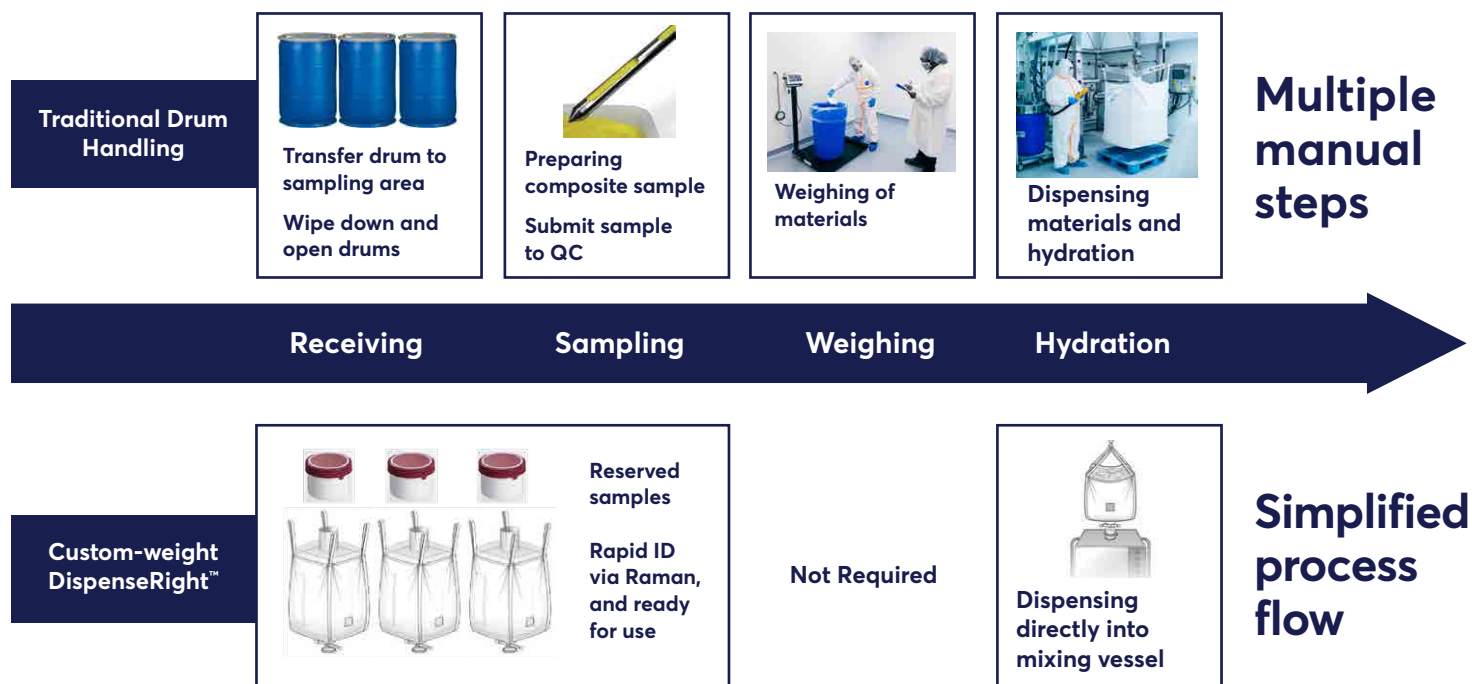
Note: Image is illustration only. Additional information on desiccant and other materials available upon request.

REGULATORY COMPLIANCE

Low-Density Polyethylene (LDPE) inner film	• 21CFR 177.1520(a)3(i);177.1520(b); 77.1520(a)(2)(b) & (c) 2.1 Olefin Polymers • <USP87>, <USP661>
Animal Derived Material	• Does not contain materials posing a risk of transmitting Bovine Spongiform Encephalopathy (BSE) or Transmissible Spongiform Encephalopathies (TSE)
Quality Assurance System	• ISO9001: 2015 U919122Q31903R3M

COMPARISON TO TRADITIONAL HANDLING

Compared to traditional chemical drum handling, DispenseRight™ streamlines buffer preparation by eliminating manual powder weighing, enabling rapid material identification through Raman ID, and replacing the need for composite sampling with side samples.



EASILY SCALE UP BUFFER PREPARATION WITH DISPENSERIGHT™

Custom weight specifications for buffer recipes (e.g., a 5 M sodium chloride stock solution) enable easy scale-up or scale-down of buffer preparation volumes.



DISPENSERIGHT™ WORKFLOW



HYGROSCOPIC CHEMICALS: COMPARISON STUDY

Hygroscopic chemicals are substances that readily absorb moisture from the surrounding air, which can cause them to become damp, clump, or solidify during storage or handling. Examples of chemical hygroscopic behaviors are included in Table 1. Our studies have shown DispenseRight™ desiccant design can minimize humidity build-up and improve chemical's free-flowing characteristic and clumping risk.

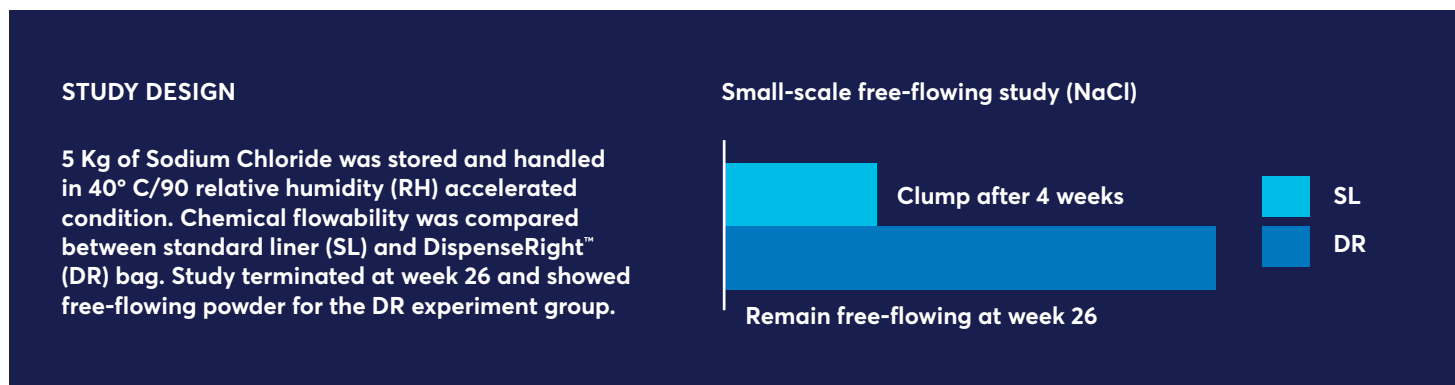


TABLE 1. RELEVANT COMMON CHEMICALS IN BIOPROCESSING APPLICATIONS

Chemical	Hygroscopic Behavior	Typical Handling Issues
Sodium Chloride	Low to Moderate, RH dependent caking risk	Material can cake at high RH, leading to moisture uptake
Potassium Phosphate Dibasic	Highly hygroscopic	Moisture uptake may cause clumping, causing weighing drift. Keep tightly closed and dry.
Potassium Phosphate Monobasic	Moderate to high	Moisture uptake can cause clumping, leading to weighing variability. Dry storage and prompt resealing are recommended.
Sodium Acetate Anhydrous	Highly hygroscopic	Rapid moisture absorption, liquefaction
Sodium Bicarbonate	Moderate: RH and temperature sensitive	Material can absorb moisture and cake at elevated RH, stability decreases under higher humidity/temperature
Sodium Carbonate	High	Hydrate formation, weighing instability
Dextrose	Moderate to high	Moisture uptake can increase caking, impair flow, and affect dispensing consistency
Sodium Hydroxide (pellet)	Highly hygroscopic	Rapid moisture uptake can cause caking of pellets.
Citric Acid Monohydrate	Moderate; RH-dependent	Material may cake in warm or humid conditions and may show hydrate/dehydrate behavior depending on RH and temperature.
Tris-Base	Moderate	Moisture uptake can increase caking. Keep container tightly closed in dry environment.
Sodium Acetate Trihydrate	Low hygroscopicity	Main issue with water loss, hydrate/phase behavior.

Note: Hygroscopicity ratings are qualitative handling-risk indicators based on literature-reported moisture behavior. Actual risk depends on material manufacturability, packaging, open-container exposure time, ambient RH/temperature, and local dispensing practices. Final claims should be verified against product specifications, SDS, CoA, and, where available, dynamic vapor sorption or water-content data.

ACCURATE DISPENSING WITH ANTI-STATIC LINER

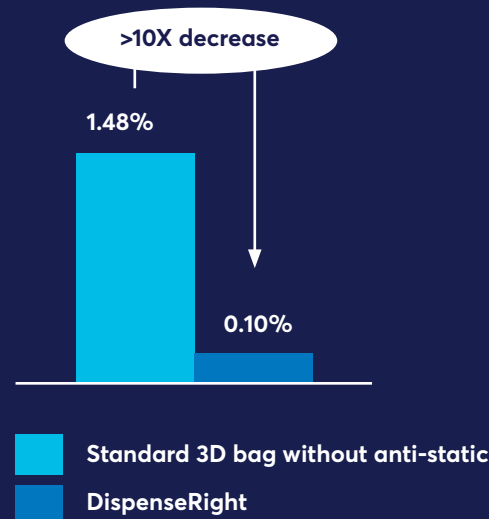
In addition to the trusted-weight tolerance of $\pm 1.0\%$, DispenseRight™ mitigates variabilities caused by chemical dispensing discrepancies, demonstrated by a study measuring powder retention where DispenseRight™ inner LDPE liners reduced powder retention by more than 10-fold than standard 3D bags.

STUDY DESIGN

A study is performed between standard 3D bag without anti-static property and DispenseRight™ bag with anti-static feature. Six (6) experiment groups with combination of chemicals, weights, and bag sizes were used, showed as following:

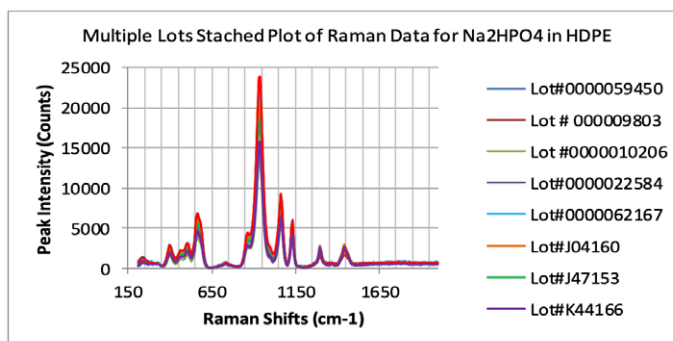
Group	Chemical	Weight	Bag Size
1	Potassium phosphate monobasic	24 kg	50 L
2	Glycine	50 kg	80 L
3	Glycine	10 kg	30 L
4	Dextrose	10 kg	30 L
5	Dextrose	24 kg	80 L
6	Dextrose	50 kg	121 L

Average powder retention (% of the packaged weight after dispensing)



COMPATIBILITY WITH RAMAN IDENTIFICATION

DispenseRight™ bags are fully compatible with Raman identification technology. High quality and clarity film material delivers reliable, consistent Raman profile across lots. Reference traces available for easy validation and adoption.



Consistent Raman profile between 10 lots of Sodium Phosphate

APPLICATION SUPPORT

Avantor has a staff of application engineers available to work with you to implement a process that provides a total solution encompassing the use of J.T.Baker® performance chemistries in your existing tools or new facilities. Evaluations can be conducted at your manufacturing sites or at one of Avantor's collaboration laboratories.



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