

# PLASTICS



## StabilitySolutions™ DRY

**Alcan Global Pharmaceutical Packaging – Plastics** has developed a ground breaking new product for the pharmaceutical industry with its **StabilitySolutions™ DRY** desiccant bottle for dry products, offering improved product protection and longer shelf life while adding line efficiencies that can provide significant cost savings. This patent pending technology incorporates a desiccant in the product contact layer of bi-layer co-extrusion blow molded containers, eliminating the need for desiccant sachet.

### Product Features

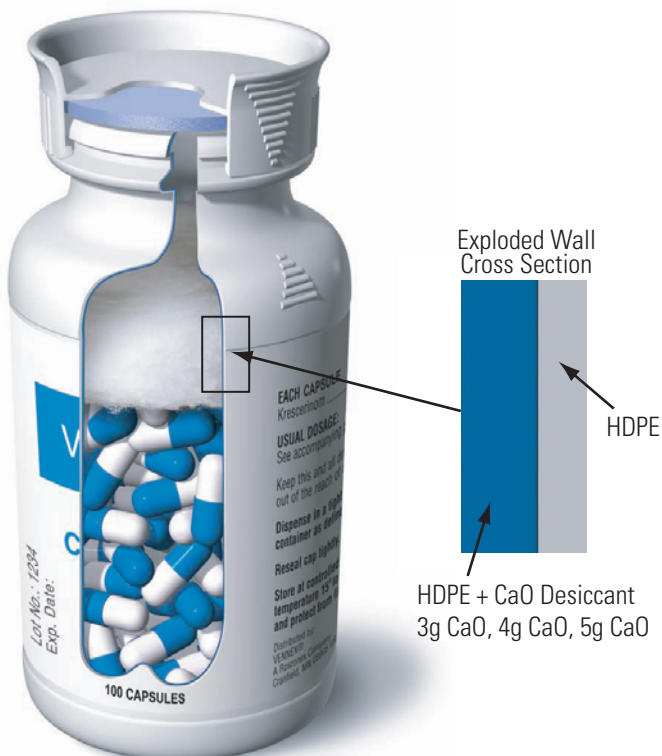
The container:

- Creates a dry headspace
- Maintains a dry headspace
- Regains a dry headspace even after exposure to high relative humidity (RH)
- The thickness of the desiccant layer and the outside structural layer can easily be tailored to optimize package performance.

### Product Benefits

- No Filling Line Desiccant Canister or Sachet Placement Equipment
  - Cost & Item Inventory
  - Filling Line Space
  - Assurance of Presence
- Reduced Chance of Product Contamination
  - Desiccant Dust
  - Desiccant Canister or Sachet Breakage
- Continual Protection Through Consumer Use
  - Desiccant Layer Invisible to Consumer
  - Can Not Be Discarded by Consumer upon Package Opening
  - No Consumer Ingestion of Canister or Sachet
  - No Interference with Product Removal from Package
- No Desiccant Canister to Fracture Product Tablets and Capsules

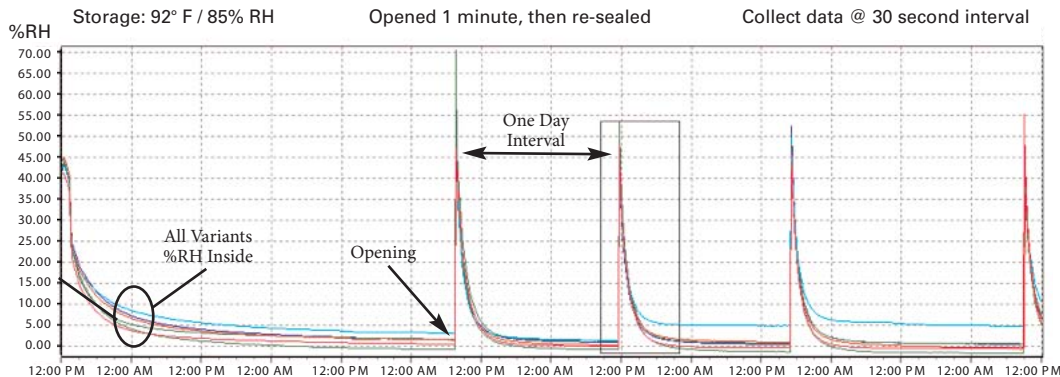
### Bi-Layer Container



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**Graph: Containers stored at 92°F / 85% RH, opened for 1 minute then re-sealed with %RH inside the sealed container monitored.**



## Technical Details

- Patent pending

- Calcium oxide (CaO) desiccant co-extrusion blow molded into bottle's product contact layer.
- CaO is generally recognized as safe (GRAS) for direct food contact (CFR 21.184).
- The CaO supplier has a Drug Master File.

- CaO reacts with moisture forming calcium hydroxide [Ca(OH)<sub>2</sub>].

- Ca(OH)<sub>2</sub> is generally recognized as safe (GRAS) for direct food contact (CFR 21.184).
- Theoretically 0.32g H<sub>2</sub>O + 1g CaO = Ca(OH)<sub>2</sub>.

- The number of container openings/closings to deplete desiccating action is dependent on:

- The quantity of CaO present in the desiccant layer.
- The relative humidity of the ambient air in which the container is opened.
- The temperature of the ambient air in which the container is opened.
- The duration the container is left open before resealing.
- The quantity of CaO can be tailored to customer need by modifying the thickness of the desiccant layer with respect to the package outside structural layer. This can influence container overflow capacity.


- The container outside layer can be colored as normally done with polyethylene or polypropylene.
- Existing extrusion blow molding tooling can be used for creation of desiccant bottles.
- Bottle overflow capacity will be reduced by the addition of the desiccant layer.
- Containers are sealed in barrier bags to insure optimum-desiccant performance at the time of filling and sealing. As long as bags are not compromised, performance is unaffected.
- While on the filling line, exposure of unsealed bottles to high temperature and relative humidity should be avoided, it can be tolerated, but should be minimized to less than one hour dependent on condition severity.
- Based on shipment of desiccant containers filled with glass beads then shipped "over road" across the US followed by glass bead analysis, indicates that calcium does not transfer to contained product.
- Samples of 75040 (3g CaO), White, 90cc Square WMP containers are available. Other samples can be made if desired.

## ALCAN PACKAGING

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