

Applications



General Lab



- To fully control the freeze-drying process both pressure and temperature during freezing and drying are crucial.
- A basic manifold freeze dryer has no control of the temperature of the shelves during the process.
- They only control pressure and time, which can only be achieved by adding expensive accessories with a significant cost implication.
- Alternatives are to use pilot freeze dryers using trays. Very expensive
- CryoDry developed the CD8 allowing full control over the shelf temperatures in a unit costing the same, or less than the basic manifold freeze dryers of comparable capacity.
- Labs deserve a better affordable freeze drier that brings the advantages of a shelf drier to the scientist that want an easily accessible instrument.

General Lab

- Benchtop unit
- Tray freeze dryer
- Designed for bulk application (not vials)
- Full process control
- Cost effective

General Lab

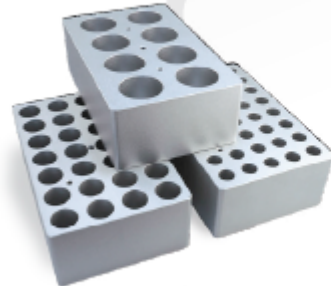
- 9, 7, 5, 3 or 1 heated shelf options
- Shelf distances from 19 mm to 204 mm
- Simple plug-and-play interchange of shelf stack



Flasks



Microtiter Plates



Efficiency

Range of heating blocks allowing efficient freeze drying in tubes. Sizes range from Eppendorf tubes to 50 ml Falcon tubes. The blocks allow for better heat transfer, resulting in shorter run times. Custom sizes available.



Powerful, Pure & Quiet

The PSP12 Scroll Vacuum Pump offers excellent performance at an extremely attractive price and low cost of ownership.

Food

- Massive opportunity in food ingredients space, healthy snacking, sports nutrition, outdoor lifestyle, emergency prep and defense meals
- Automatic Mode and Auto Stop end of method to save time and energy
- Simple touch screen interface that allows you to easily set the drying temperature and time, as well as monitor the progress of your food.
- With a changeable shelf configuration from 1 to 9 shelves, it can handle up to 9.6 kg of food at a time.
- Powerful Scroll Pump which does not require oil and has a long service interval between services.
- The drying chamber is also easy to clean, with removable shelves that can be washed and dried.



Nutrient Preservation: Freeze drying retains the nutritional content of foods, preserving vitamins, minerals, and antioxidants.

Extended Shelf Life: Freeze-dried foods have a significantly longer shelf life without the need for preservatives.

Enhanced Flavor and Texture: The process maintains the original flavor and texture of foods, which can be rehydrated to near-fresh quality.

Lightweight and Convenient: Freeze-dried foods are lightweight and easy to transport, making them ideal for on-the-go consumption.



Food Waste



The numbers surrounding food waste are staggering:

- According to the Food and Agriculture Organization (FAO), approximately 1.3 billion metric tons of food - equivalent to a third of all produced food - ends up wasted each year.
- Enhanced Shelf Life: By extracting moisture from food at ultra-low temperatures, the [CryoDry CD8 freeze dryer](#) extends the shelf life of various products by up to 25 years, depending on the item.
- Retained Nutritional Value: Studies show that freeze-dried fruits and vegetables retain up to 90% of their original vitamins, minerals, and antioxidants.
- Cost Savings: The [CryoDry CD8 freeze dryer](#) enables households to take advantage of bulk purchases and seasonal sales.
- Production waste upcycling: CD8 can be sold as pilot unit for product development and testing prior to scale up into production

Drinks



- Freeze drying of botanicals prior to distillation to increase extraction yield
- Freeze drying of garnishes for use in bars, hospitality and home
- Sublimation preserves many of the precious flavor compounds found in food and drink that means the reconstituted product retains most of its original characteristics.
- If reconstituted in a smaller volume as the original that can mean that the flavor is intensified!
- For example orange juice can be freeze dried and stored.
- What about ready made cocktails such as a cosmopolitan, make the cranberry mix and lyophilize the water away then reconstitute with Vodka and voila a cocktail

Insects



- Freeze drying is also commonly used in the field of entomology, the study of insects.
- Insect specimens are often preserved using freeze drying technology to maintain their natural color, shape, and texture.
- This process involves first killing the insect, then freezing it, and finally placing it in a vacuum chamber where the ice sublimates.
- The result is a preserved insect specimen that can be used for scientific research or educational purposes.
- Insects are also an important source of protein in many areas around the world.

Flowers



- A unique application of freeze drying is in the preservation of flowers.
- Freeze-dried flowers are a popular choice for weddings, as they retain their natural beauty and color for many years.
- Freeze Drying is the perfect process to preserve that special moment, sublimation of the moisture from the flowers preserves the appearance of the bouquet whatever the celebration
- The result is a delicate and beautiful flower that retains its shape and color, making it an ideal keepsake for special occasions

Coffee



- One of the most unexpected applications of freeze-drying technology is in the coffee industry.
- Freeze-dried coffee is a popular product that is created by first brewing coffee and then freezing it into slabs.
- The frozen coffee is then broken up into small pieces and placed in a vacuum chamber, where the ice is allowed to sublime.
- This process results in a dry and highly concentrated coffee powder that can be rehydrated by adding hot water.
- Freeze-dried coffee has a longer shelf life than other forms of coffee, and it's lightweight and easy to transport, making it a popular choice for camping trips and outdoor adventures.

Pet Food

- Premium pet food can be freeze-dried just like that for human consumption.
- Snacks and treats for all kind of pets can be preserved, here is one example from an Australian customer:



Reduce the Load



- Weight can be problematic, particularly if you are carrying it. Water is an unnecessary incumbrancer when travelling if it can be added at the destination
- It costs \$25,0000 in rocket fuel for every 1Kg shipped into space for example
- 1kg removed from food is a much lighter load for:
 - Hiking
 - Shipping
 - Military rations
 - Sport
 - Camping
- The food still retains the nutrients and flavour so just add water.

Documents



- When there has been water damage to documents one of the most effective ways of removing the moisture whilst keeping the integrity of the documents is Freeze drying
- Keep the paper moist and then freeze, and sublime the water out of the paper
- Sublimation keeps the integrity of the paper in place so that the information included in the text on the paper is kept intact

Archeology



- Artifacts found in archeological excavations can be preserved by the moist environment that they are discovered in
- Once the moisture is removed then degradation can set in quickly
- One answer is to keep the artifacts moist, but this is expensive and inconvenient
- Freeze Drying stabilizes the artifact and therefore preserves it for future display or examination
- Some very large archeological finds have been freeze dried such as the flag ship of the American Fleet during the war of independence (needs citation)
- But organise personal items such as food and shoes from the Mary Rose in the UK were also preserved that way
- The price point of the CD8 brings this technique for preservation into the reach of many more Archeological surveys

Taxidermy

- Whether a trophy or a pet Taxidermy is an imotive subject, but the first step is to stabilize the subject
- For all of the reasons we have outlined then removing the water is the first step in that stabilization so that there is no bacterial degradation of the sample
- The CD8 can remove the moisture from your treasured companion and then the taxidermy process can begin



Flood Damage

- It is one of the hazard of the modern world that electronics can get damaged by water
- You could put the damaged device in an oven and try to dry it out... but oven temperatures can also cause significant harm
- Why not put the effected device in a freeze drier and remove the moisture under vacuum at low temperature therefore minimizing the circuit damage while removing the problem.



Home Freeze Drying

- Whether it is for long term storage or the minimization of food waste while improving your carbon footprint Freeze Drying is the solution to keeping quality flavorful food stable for a long time.
- We have already covered food preservation but for many of us this gives us security in uncertain times that our personal needs are fulfilled no matter what situations happen in the socioeconomic climate of the world
- Plan for the worst, hope for the best.



Mothers Milk

- One cannot imagine a more important food stuff to preserve than mothers milk that has been expressed for use later.
- Having to keep frozen milk in the safe frozen temperature range is problematic
- Freeze Drying solves this problem, sublimation of the water out of the milk stops bacterial degradation
- It is easy to transport the dehydrated powder and keep it long term

