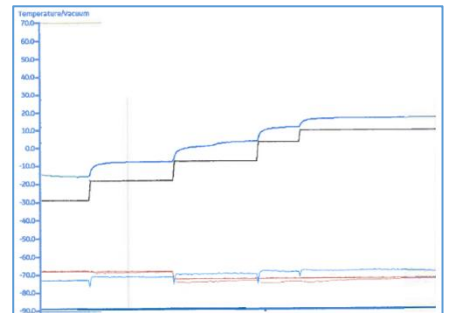


**Global Proficiency is an accredited provider of Proficiency Testing (PT) Programmes and Reference Materials (RM) to the Food & Environmental Testing Industries, operated in compliance with ISO/IEC 17043 - General requirements for the competence of Proficiency Testing Providers and ISO 17034 - General requirements for the competence of Reference Material Producers.**

As a PT provider and RM producer, Global Proficiency has a range of procedures it uses in the production of PT items (samples) and reference materials. These procedures must ensure that product being used in a PT round or as an RM is consistent across the batch and will not undergo deterioration, which could have the potential to affect sample performance. Procedures for sample preservation are numerous and may include a processing treatment of the product itself; the addition of preservative agents; customised packaging materials and techniques; controlled storage conditions, or a combination of methods.

A well-recognised approach to preserve food or other organic materials is to remove the water (solvent) component, essentially slowing or halting biological processes. An excellent way to ensure product retains its characteristics and heat-sensitive components are not affected, is to use freeze drying – also known as lyophilisation. Freeze drying ensures product temperature is kept low by freezing at very low temperatures. A strong vacuum is then applied and the dryer’s shelf temperature slowly raised over time to introduce heat energy thereby initiating the process of sublimation. Sublimation is when a solid (ice) changes directly to a vapour without first going through a liquid (water) phase. Water then migrates from the product to a condenser running at a colder temperature than the drying chamber where it condenses as ice, leaving product dry. Incorporation of two drying phases ensures that not only free water is removed through sublimation (primary phase), but bound water is also removed through a desorption process (secondary phase).



## GLOBAL PROFICIENCY’S FREEZE DRYERS

Global Proficiency operates two pilot shelf freeze dryers, each with a 9-shelf configuration, with tray dimensions being L: 480mm; W: 250mm; D: 35mm. Pilot freeze dryers while useful for small volume production applications, can also be used for product R&D and process development prior to scaling-up to full production.

Product is either dispensed into vials or loaded in bulk directly into a product tray where it is fully frozen prior to the drying process being initiated. Where vials are used, standard procedure involves the partial placement of rubber stoppers into the neck of the vial to allow space for the water to migrate from the sample to the condenser. Once complete, a stoppering system can be initiated while the chamber is still under vacuum resulting in vials with an evacuated headspace removing the chance for hygroscopic product to start reabsorbing water. Addition of aluminium caps ensures stoppers are held in-place.

## HOW WE CAN HELP YOU

- Are you a laboratory wanting to preserve samples for long-term use, or storage?

*Consider our freeze-drying service as an option for long-term sample preservation ensuring sample integrity, space saving and cost savings.*

- Would your laboratory like to produce its own product-specific quality control (QC) materials?

*Not only can we offer our freeze-drying service to preserve your samples, but we can also take your bulk product, mix it, dry it, pack it and send it back to you, or ship it to other destinations. In addition, we can characterise (provide data values) by applying your test results, or we can organise for testing to be done for you, then undertake data analysis (ask about our LabQCPak service).*

## OUR FREEZE-DRYING EXPERIENCE

- Development of comprehensive freeze-drying protocols for the manufacture of microbiological samples for use in proficiency testing rounds (and as QC materials)
- Creating artificially contaminated freeze-dried samples from slurries for use in PT rounds (or as RM/QC materials), including:
  - Milk powders contaminated with nitrates / nitrites and heavy metals.
  - Milk products contaminated with aflatoxins.
  - Food products containing targeted allergens (e.g. gluten).
- Developing freeze-dried meat RM/QC materials to required specifications for use by the meat testing industry.
- Providing freeze-drying services for organisations wanting to preserve product for R&D purposes.



If this sounds like something you would like to investigate further, please contact us as detailed below.

**CONTACT US TO DISCUSS YOUR REQUIREMENTS**

**[enquiries@global-proficiency.com](mailto:enquiries@global-proficiency.com)**