

Lyophilisation/ Freeze Drying

Optimise your freeze-drying process to increase yield, reduce costs and improve performance



A wide range of products go through freeze-drying:

- Antibiotics
- Vaccines
- Antibodies
- Proteins
- Enzymes
- Blood products
- Bacteria
- Viruses
- Fine chemicals

Freeze-drying, also known as lyophilisation, plays an important role in drug manufacturing by stabilising delicate pharmaceutical and biological products in a dehydrated form. The process allows for the preservation of an extensive range of sensitive, high-value constituents and products such as antibiotics, blood plasma, antibodies, enzymes, bacteria, viruses and small-chemical drugs susceptible to physical and chemical degradation, as well as other injectables like vaccines, which must remain effective to the point of patient administration.

What does Air Products' freeze-drying technology allow you to do?

The preservation process is comprised of freezing the substance at ultra-low temperatures with liquid nitrogen, followed by dehydrating it in a vacuum and removing the ice through sublimation. This is in contrast to dehydration by conventional methods that evaporate water using heat – which is unsuitable for many fragile biological and pharmaceutical materials.

The use of liquid nitrogen is both a highly effective and economical alternative to mechanical refrigeration, typically delivering a higher yield. By providing more reliable refrigeration with lower capital investment, freeze drying with liquid nitrogen can significantly help to improve overall operational performance.

Air Products provide a range of nitrogen cooling solutions to optimise your freeze-drying applications:

- Improve performance
- Optimise freeze-drying applications
- Improve reliability
- Increase operating flexibility
- Reduce costs compared to mechanically cooled freeze-drying systems
- Increase yield
- Reduce complexity
- Enhance process control

Unrivalled knowledge and state-of-the-art equipment

Air Products' batch and in-line chilling and freezing equipment is rapid, reliable and helps reduce cooling and freezing times or shorten the overall processing of pharmaceutical and biotechnology materials with minimal up-front capital investment.



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For more information, please contact us or visit our website to contact your local representatives.

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