

Tailor-made solutions



Epsilon 2-6D Solvent
Epsilon 2-10D Solvent



Freeze-drying with solvents

Safely and sustainably

Solvents in freeze-drying processes

Freeze-drying of solvents is being used more and more. This gives end products containing solvents a longer shelf life without adversely affecting the required properties.

In physical terms, freeze-drying of solvents is not a problem. However, both liquid and volatile solvents can have a persistent adverse impact on freeze dryer components. This can lead to device outages or, in the worst case, pose a threat to user safety. Care is therefore required in choosing parts that come in contact with liquids and vapours.

Right from the start, Martin Christ has accumulated experience in solvent freeze-drying, leading to valuable product innovations and unique process solutions. As a result, there are now two pilot freeze dryers available that enable optimal drying of end products with highly concentrated solvents.

Based on experience, a simplified classification scheme (low, medium, high) can be applied to the solvents commonly used in freeze-drying. This allows a quick and easy decision regarding which freeze dryer configuration is the right solution for a particular solvent concentration.



Our solution for solvent freeze dryer

Products / Classification	Low	Medium	High
Laboratory freeze dryer			
• All lab units with standard accessories	●	○	○
• Alpha 3-4 LSCbasic	●	●	●
Pilot freeze dryer			
• Pilot units Standard 2.0	●	○	○
• Pilot special configuration	●	○	○
• Pilot units with extension option solvent	●	●	○
Epsilon 2-6D Solvent	●	●	●
Epsilon 2-10D Solvent	●	●	●

● Yes ○ No ○ Feasibility study

More about classification in low, medium and high:
<https://www.martinchrist.de/en/use-of-solvents>












Safe and reliable

Epsilon Solvent series

Optimal configuration for high solvent concentration

In this series, the defined product configurations Epsilon 2-6D Solvent and Epsilon 2-10D Solvent allow a safe freeze-drying process with high concentrations of solvents. The units feature a solvent-resistant and sturdy stainless steel door with a glass window. The vacuum is produced by an oil-free scroll pump with ATEX explosion protection certification as standard.

Benefits at a glance

-  Solvent-resistant version for high concentrations, e.g. 100 % acetonitrile, 100 % Dioxane, 60 % tert. Butanol and many other
-  Compact stand-alone units
-  Defined PAT tools for process control, e.g. LyoApp or WTMplus 2.0
-  High-quality materials
-  No ignition sources
-  2 capacitive vacuum sensors (measurement range 10 mbar - 0.005 mbar)
-  Scroll pump
-  Automatic inertisation to remove Oxygene
-  Natural refrigerants



Epsilon 2-6D Solvent

 6 kg  -88 °C  ~ 840 x 2 ml
~ 42 x 100 ml



Epsilon 2-10D Solvent

 10 kg  -88 °C  ~ 3.065 x 2 ml
~ 98 x 100 ml



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