HyperCOOL

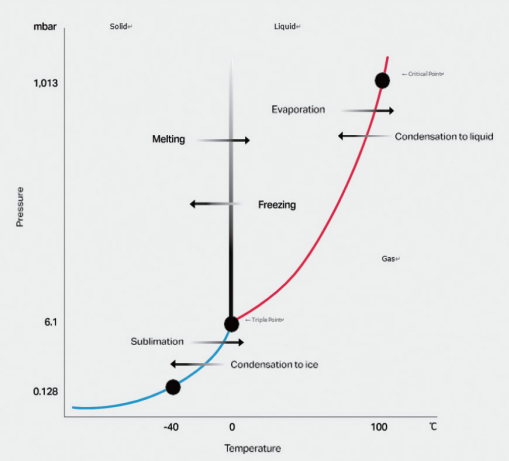
FREEZING



For long-term storage and preservation.

The HyperCOOL, freeze dryer (lyophilizer) is a dependable laboratory instrument designed for the effective removal of moisture from a pre-frozen samples by applying a deep vacuum to convert the frozen water molecules directly into vapor, bypassing the liquid phase. This process ensures complete drying while preserving the structure and quality of the drying sample. The system operates at ultra-low temperatures, ranging from -55°C or -110°C, making it suitable for a wide variety of samples, including biological materials, aqueous products, and solvents with low freezing points.
The HyperCOOL is a practical solution for laboratories needing reliable sample preservation. It serves as a
solution for applications in biotechnology, food preservation, environmental science, and research, ensuring samples remain stable and ready for long-term storage or further analysis.

Freeze Drying



The freeze drying, also known as lyophilization is a dehydration technique through sublimation process, the shift from the solid directly into the gas without passing through liquid phase. The materials must be frozen completely to remain as solid state during sublimation process. Additionally, applying vacuum enables to lower the pressure below triple point, which to avoid the liquid phase. The freeze drying technique is used in various applications in food industry, pharmaceutical and biotechnology field and other industrial areas. HyperCOOL system allows complete removal of residual moisture.

Freezing Point Depression

$\Delta T = iKfm$
ΔT = Decrease in solution freezing point
Kf = Freezing point depression constant for the solvent
m= Molality

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APPLICATIONS

Biological Samples

Tissues, cells, enzymes, and proteins for preservation and research. Nucleotides and DNA/RNA for genomic studies.

Food and Beverage Samples

Fruits, vegetables, and flavor compounds for nutritional and sensory preservation.

Environmental Samples

Water and soil extracts for pollutant analysis.

Chemical and Organic Solvents

Volatile solvents such as acetonitrile, methanol, ethanol, and other compounds used in chemical synthesis or chromatography preparation.

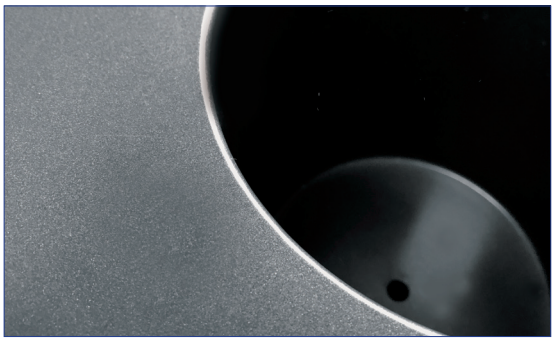
Specialized Research Samples

Delicate organic materials like flowers for display or research.
Reactive or unstable compounds requiring precise temperature control.

Biotechnological Samples

Drug development materials and sensitive biological products requiring ultra-low temperatures.

Sectors	Avaliable Sample Type
Biological Samples	Tissues, Cells, Enzymes
	DNA/RNA, Nucleotides
	Proteins
Food and Beverage Samples	Fruits, Vegetables
	Flavor Compounds
Environmental Samples	Water Extracts
	Soil Extracts
Chemical and Organic Solvents	Acetonitrile, Methanol
	Ethanol
	Hexane
Specialized Research Samples	Flowers
	Reactive Compounds



Durability

The whole top plate and internal chamber are Teflon-coated; providing excellent resistance against aggressive solvents.



Shortened total cycle time

Hidden cooling coils allows condensed Ice to be pulled out after a quick de-ice function for quick repetitive run setting.



Easy maintenance

The condenser, a key freeze dryer component, is located at the front covered by a magnetic, detachable cover for easy maintenance.

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Technical Specifications

	HC3055P	HC3110P
Ultimate Chamber Temp.	-55 °C	-110 °C
Cold Trap Volume	4 L	4 L
Cold Trap Size	Ø 165 x H 202 mm	Ø 165 x H 202 mm
Ice Condensing Capacity	3 kg	3 kg
Display Type	4" LCD	4" LCD
Display Parameters	Vacuum, Time, Temperature	Vacuum, Time, Temperature
Control	ON / OFF (Vacuum, Defrost)	ON / OFF (Vacuum, Defrost)
Ice Condensing Performance	2.5 kg / 24h	2.5 kg / 24h
Power Requirement (Resting)	642 (VA)	819 (VA)
Power Supply	AC 230 V, 50 Hz (AC 220-230 V, 50/60 Hz; 110 V optional)	AC 230 V, 50 Hz (AC 220-230 V, 50/60 Hz; 110 V optional)
Dimension	W 400 x D 660 x H 570 mm	W 400 x D 660 x H 570 mm
Weight	58 (kg)	72 (kg)
Cat. No.	HC-3055P	HC-3110P

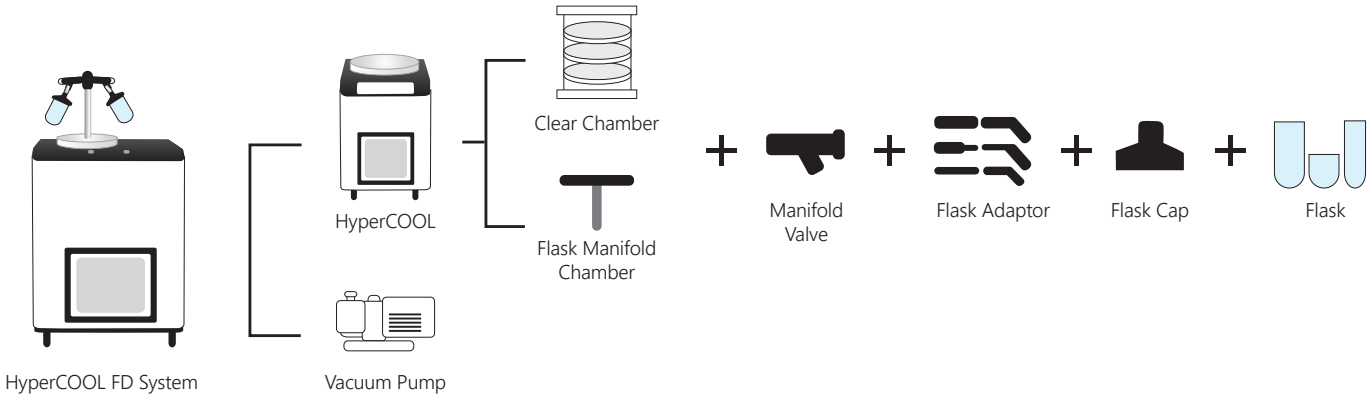
*The ultimate chamber temperature should be 15°~20°C lower than the sample's freezing temperature.



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System Diagram of HyperCOOL Freeze Drying System





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Standard Manifold for Freeze Drying

Manifold (4, 6, 8, 12)

Manifold type accessory designed for freeze drying samples in a Flask. Depending on the number of samples per run, (4, 6, 8 or 12) valve manifold can be selected. Configured with Glass base plate.

** Provides excellent chemical resistance for organic or rigorous samples.*

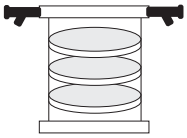


Description	No. of Valve	Cat. No.
Tree-type manifold	4	HC-MF-4V
	6	HC-MF-6V
T-type manifold	8	HC-MF-8V
Double (6+6) manifold	12	HC-MF-12V
Glass Base plate for 3055/3110		HC-CPB-G

Chamber + Manifold (4, 8)

Chamber type accessory designed for freeze drying samples in vials and also in flasks through the integrated manifold (4 or 8). Configured with Basic SUS Rack with 3 x ø25cm trays (HC-CR25) and Acrylic base plate,

** Cannot be used for organic samples or rigorous samples.*

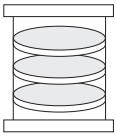


Description	Cat. No.
Acrylic chamber with 4 valve top	HC-CH30-4V
Acrylic chamber with 8 valve top	HC-CH30-8V
Acrylic Base plate for 3055/3110	HC-CPB
SUS rack with 3 trays	HC-CR25
Additional tray (1EA)	HC-CR-TS

Chamber

Chamber type accessory designed for freeze drying samples in vials. Configured Basic SUS Rack with 3 x ø25cm trays (HC-CR25) and Acrylic base plate.

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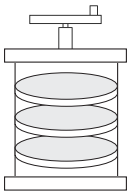


Description	Cat. No.
Acrylic chamber with top	**HC-CH30P**
Acrylic Base plate for 3055/3110	**HC-CPB**
SUS rack with 3 trays	**HC-CR25**
Additional tray (1EA)	**HC-CR-TS**

Stoppering Chamber

Stoppering Chamber type accessory designed for freeze drying samples in vials and to seal them under vacuum state.

** Cannot be used for organic samples or rigorous samples.*



Description	Cat. No.
Stoppering Acrylic chamber including rack & trays	HC-SP30M
Acrylic Base plate for 3055/3110	HC-CPB

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Essential Accessories for Full System Configuration

Description	Cat. No.
 Glass base plate for HyperCOOL to connect manifold accessories to the main body.	HC-CPB-G
 Acrylic base plate for HyperCOOL to connect chamber type accessories to the main body.	HC-CPB
 Rotary vane pump Pumping speed: 50Hz – 200 L/min Ultimate pressure: 1 x 10^{-3} torr	GVP-W2V20
 Oil mist trap for rotary vane pump	GVP-WOF150

Compatible Accessories for Manifolds

Manifold Accessories	Cat. No.
 Freeze drying flask for manifold drying. ø60 (150 / 300 mL) ø90 (300W ~ 1,200 mL)	HC-AGF150 HC-AGF300 HC-AGF300W HC-AGF600 HC-AGF900 HC-AGF1200
 2 mL tube holder for (900 / 1,200) mL flasks, 3 x 20 x 2 mL	HC-TR9-2 / HC-TR12-2
 15 mL tube holder for (900 / 1,200) mL flasks, 12 x 15 mL conical	HC-TR9-15 / HC-TR12-15
 50 mL tube holder for (900 / 1,200) mL flasks, 4 x 50 mL conical	HC-TR9-50 / HC-TR12-50
 Ampoule pod for 16 x ø13.5 mm Ampoules, incl. 2 tubing clamps and 16 tube caps	HC-APC-16
 Vacuum Box for 6 x MTP or 3 x DWP (Max. height 25/51 mm)	HC-VBOX-SET

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