

K750X Peltier Cooled Freeze Dryer

freeze dryer with peltier cooling and warming stage



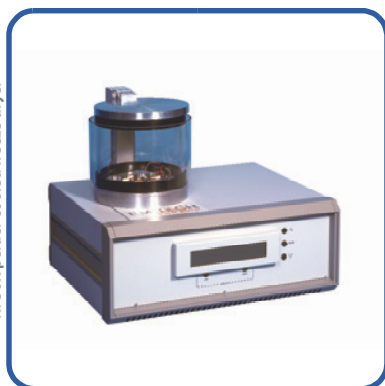
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fully automatic, low cost freeze dryer

K750X peltier cooled freeze dryer



K750X Peltier Cooled Freeze Dryer

The K750X Freeze Dryer operates at rotary pump vacuum using a 'Peltier' thermoelectric stage - drying temperatures of the order of -60°C can be achieved with back-up water cooling at 15°C . Both the temperature and the timer can be pre-selected and the drying cycle completed automatically.

Provision is made at the end of the drying cycle to allow the specimen to assume room temperature - or to be warmed prior to embedding. Disposable desiccant containers are positioned in the preparation chamber to enhance water vapour removal. Additionally, with a suitable container, the vacuum chamber can be used to prepare liquid nitrogen 'slush' for fast freezing.

Why freeze dry?

Freeze drying specimen preparation for TEM and SEM is a well established practice. It reduces the distortion and shrinkage effects that occur when a wet specimen dries by normal evaporation. Distortion is due to the forces of surface tension going from a liquid to a vapour phase, such as from water to water vapour - the normal situation with biological samples. The Freeze drying method overcomes this problem by careful sublimation of frozen specimens under vacuum - a process that avoids the liquid phase and thereby reduces distortion effects. The rate of sublimation is a function of temperature and vacuum, with typical drying times being several hours or longer. Ideally freeze drying should be carried out at temperatures below the recrystallisation point of ice, but this would require inordinately long drying times. In practice temperatures of -60°C have been found to give reasonable results under vacuums achievable with two-stage rotary pumps.

For certain applications, however, it is necessary to dry at temperatures below -80°C with lower sublimation rates for delicate specimens. This requires better vacuum than can be obtained using a rotary vacuum pump and the lower temperatures associated with liquid nitrogen. (see: over page for details of the K775X turbo pumped version)

See: www.quorumtech.com for full technical specification and additional details.

Key Features & Benefits

- Thermoelectric cooling and heating - accurate temperature control
- Peltier cooling/warming stage - convenient to use
- Accurate time monitoring - pre-select drying cycle
- Automatic drying cycle

Pumping Requirement

Requires a 90L/min rotary pump with oil mist filter (see: Product Specification below).

Options

- E4860 Water chiller
- K250 Carbon coating attachment (EK3121)
- K350 Sputter coating attachment (EK3125)

PRODUCT SPECIFICATIONS

Supplied with	Vacuum hose & connectors, moisture trap, desiccant containers & desiccant, operating manual
Work chamber	Borosilicate glass 165mm x 125mm H with polycarbonate safety shield
Weight & dimensions	450mm W x 350mm D x 175mm H. Weight: 18Kg
Temperature controller & monitor	-90°C to $+90^{\circ}\text{C}$, display resolution to 0.1°C
Timer	0 to 999 hours
Specimen stage	-60°C to $+60^{\circ}\text{C}$
Vacuum level	1×10^{-2} to 1×10^{-4} mbar
Vacuum pumping	90L/min rotary vacuum pump with oil mist filter (EK3180/E5005G)
Electrical	230V 50Hz (6A max including pump), 115V 60Hz (12A max including pump)

FREEZE DRYER



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