



K975X/K975S Turbo-Pumped Thermal Evaporators

Quick Overview

K975X

The K975X is a compact, bench-mounted, multiple application thermal evaporator for vacuum deposition of thin layers of carbon and metals. It is ideal for a wide range of techniques, including the production of carbon support films and replicas for TEM and carbon/metal thin film applications. The K975X is available with a wide range of optional add-ons, including low-angle shadowing and sequential layer coating using dual-source evaporation (an additional metal evaporation source is required).

The system is fitted with an 80mm diameter flat rotation specimen stage, but this can be exchanged for optional stages and holders to meet differing user requirements. The K975X vacuum system is under fully automatic or manual control and uses a 100L/s turbomolecular pump to ensure rapid pump down and clean vacuum conditions.

K975S Carbon Evaporator for 8" wafers

The K975S is similar to the K975X but designed to coat an 8" wafer or similarly large specimen with carbon (C). The carbon rod evaporation source is directly mounted to the vacuum chamber top plate, allowing easy access to the carbon gun and giving the optimal source-to-specimen distance required for large diameter specimens. Unlike the K975X, the K975S is not fitted with a metal evaporation source or associated base plate mounting pillars, and also has a larger specimen access door.

Key Features

- * **Menu-driven 'user' key inputs** - ideal for multiple user sites
- * **Unique 'anti-stick' carbon rod gun evaporation assembly** - reproducible carbon films
- * **Metal evaporation source (filament, boat etc)**
- * **Specimens up to 140mm² or 200mm diameter**
- * **Wide selection of 'add-on' options** - allows future upgrade
- * **Rack-out drawer specimen loading system** - easy specimen exchange
- * **Restricted or full vent control** - prevents specimen disturbance during venting
- * **Three-year warranty**

Product Description

Coating sources

The K975X is fitted with a carbon rod gun and metal filament/boat source which can also be used for cleaning TEM and SEM apertures. An optional sputtering source is available.

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Work chamber

The borosilicate glass work chamber is 250mm diameter x 300mm and mounted on an aluminium support collar. A tough chamber implosion guard is included as standard. The chamber can accommodate specimens up to 8"/200mm in diameter. A unique rack-out specimen loading system gives the user easy specimen access and the hinged lid assembly makes other areas of the vacuum chamber readily accessible.

Menu-driven control

The menu-driven microcontroller allows the user access to a range of options, but readily 'defaults' to optimum operating conditions, allowing both fully-automatic and manual override as required.

Turbomolecular pumping and venting

The K975X uses a modern 100L/s turbomolecular pump backed up by an external rotary vacuum pump (not included, see EK3175) with the complete pumping sequence being under fully-automatic control.

The vacuum pump-down sequence is automatically controlled by the system microprocessor. Vacuum measurement is by a combined pirani/penning gauge and is displayed digitally.

Process gases (nitrogen for venting - if fitted - and argon for the optional EK4175 sputtering attachment) are automatically controlled and can be programmed for use during coating sequences. The vent valve has an adjustable restrictor and programmable vent time to prevent disturbing specimens due to the inrush of gas at the end of the cycle.

A very useful feature of the K975X is 'vacuum shut-down', which allows the process chamber to remain under vacuum when not in use. This helps to maintain a high level of system cleanliness and vacuum performance.

Specimen stages

The K975X is fitted with an 80mm flat stage as standard, but this may be exchanged for optional holders, such as a 3mm grid holder, low-angle shadowing attachment and a rotary planetary stage (see Options and Accessories). Specimen holders are supplied with a bayonet fixing for quick exchange.

The rotary stage is mounted on a sliding access port on the side of the chamber. This allows the user to exchange specimens quickly without having to remove the glass chamber and disturb any coating set-up. The standard flat stage may be tilted. For rotary shadowing techniques, the standard stage can be tilted from 0° to +/- 180°.

Chamber base plate and evaporation power supplies

The K975X is fitted with a 0-100A evaporation power supply with base plate terminals for carbon rod evaporation (14V/100A), evaporation from a metal filament (15V/35A), carbon string evaporation (25V/35A) and a terminal rated at 5V/35A for TEM and SEM aperture cleaning using a molybdenum (Mo) boat. A wide range of add-on options is available - see Options and Accessories.

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K975S Thermal Evaporator

The K975S is based on the K975X, but a special load lock door allows the loading of wafers up to 8"/200mm. Please contact us for more information.

Additional Information

Options and Accessories

- * AL410414 Holder for TEM grids
- * 10983 Film Thickness Monitor attachment with controller mounted in the K975X consol. Includes monitor and stage complete with quartz crystal holder and quartz crystal
- * EK4117 Additional metal evaporation source for filament/boat evaporation and aperture cleaning
- * EK4175 Sputtering module, including chromium (Cr) target (other targets available as options, see [Q150T](#) for full list)
- * EK4205 Rotating specimen stage (planetary style) with externally adjustable tilt angle
- * EK4160 Low-angle shadowing. Ideal for flat TEM specimens, such as DNA proteins and virus particles
- * AL410123 Manually-operated source shutter

Specifications

Weight and dimensions	450mm W x 500mm D x 300mm H. Weight: 65kg
Work chamber	Borosilicate glass with hinged top plate, 250mm Ø x 300mm H (can accommodate wafers to 8"/200mm if K975S is specified)
Safety shield	Polycarbonate cylinder - removable for maintenance
Carbon source	Adjustable height with tilt control of 0-200°. Uses 6.15mm Ø carbon rods
Metal source	Adjustable height with tilt control of 0-200°. Supplied with pack of 10 B5230 tungsten specimen baskets
Specimen stage	Includes 0-45° tilt facility
Vacuum gauge range	ATM - 1×10^{-7} mbar
Operating vacuum	1×10^{-5} mbar, typically achieved within 15 minutes
Low voltage evaporation supply	Pulsed or variable control. Selectable: 0-5V-15V-25V, out-gas current: 0-25A
Services	Nitrogen gas (if you used for venting). Argon gas (if the optional sputtering attachment is fitted)

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Vacuum pumping	100L/s turbomolecular pump. Requires a 50L/m 'backing' rotary pump with oil mist filter (EK3175)
Electrical supply	230V/50Hz (8A maximum including pump), 115V/60Hz (16A maximum including pump)
Supplied with	Accessory kit including: carbon rod (6.15mm x 100mm), evaporation filaments, S8651 manual rod shaper and operating manual

Ordering Information

K975X (EK3154)	Turbo-Pumped Thermal Evaporator
K975S (EK3153)	K975S Turbo-Pumped Thermal Evaporator with loading stage to accept an 8"/200mm wafer

Pumping NB: A 50L/m rotary pump is needed to 'back' the turbo pump (EK3175 recommended for normal use)

EK3175	Edwards RV3 50L/m two-stage rotary pump with vacuum hose, coupling kit and oil mist filter
O7803	Basic oil mist filter (spare)
A1944A	1L Ultragrade rotary pump oil (spare)
EK3170	Diaphragm pump MD1 23L/m
EK3172	XDS10 scroll pump

Stages and other options

EK4160	Low-angle shadowing. Ideal for flat TEM specimens
EK4205	Rotary planetary specimen stage with externally adjustable tilt
EK4175	Sputtering module, including chromium (Cr) target (other targets available as options, see Q150T for full list)
10983	Film Thickness Monitor attachment with controller mounted in the K975X console. Includes monitor and stage complete with quartz crystal holder and quartz crystal
A0754	Specimen baskets - tungsten, pack of 10
B5228	Molybdenum (Mo) boat (for use with EK4117)
B5230	Specimen baskets - tungsten, pack of 10
B5236	Basket heater (for use with EK4117)
B5240	Tungsten evaporation source (BN crucible for use with B5236)
B5246	Tungsten boat (for use with EK4117)
EK4117	Metal evaporation source/aperture cleaning head (spare)

Carbon Accessories

A0830A	Carbon rods - unshaped - 6.15mm Ø x 100mm
A0819	Carbon fibre cord - high purity (1m)

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A0819-5	Carbon fibre cord - high purity - 5m
C5421	Carbon fibre cord - standard grade (1m)
C5421-10	Carbon fibre cord - standard grade (10m)
C5421-100	Carbon fibre cord - standard grade (100m)
S8651	Manual shaper for 6.15mm Ø carbon rods (supplied with K975X/K975S)

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