



HIGH VACUUM THERMAL EVAPORATOR- DTE

The High Vacuum Thermal Evaporator- DTE, or Desktop Thermal Evaporator, is a compact and cost-effective system designed for depositing thin layers of materials onto substrates. It is primarily used for research purposes and investigations through electron microscopy.

The DTE is set up as a material evaporator, making it suitable for conducting experiments involving sample evaporation. This system features a small chamber and operates under high-vacuum conditions, making it ideal for quickly depositing noble metals as well as oxidizing metals.

APPLICATIONS

- Metal Thin Films
- Nano & Microelectronic
- Solar Cell Applications
- Thin Film Sensors
- Fine Grain Structural Deposition for SEM & FE-SEM Sample Preparation
- Carbon Fiber Evaporation in Flash Mode for SEM Sample Preparation

FEATURES

Thermal Evaporation

The DTE comes with a high-current power supply and a low-voltage (resistive) thermal evaporation platform, making it versatile for various thermal evaporation tasks. This system enables precise control over the thermal evaporation process of a wide range of materials onto the substrate. It accommodates different types of thermal evaporation sources, including

boats, baskets, and coils, which can be mounted on a single thermal source holder.

The DTE is equipped with a 1.2 kW high-current DC power supply, allowing it to deposit a thin layer of the evaporant material onto different surfaces. This capability makes it suitable for diverse applications, including SEM sample preparation.

Hardware

- Semi-automatic control for material evaporation
- Equipped with a dedicated DC high-current power supply (maximum 12V, 100A)
- 170mm diameter vacuum chamber made from Borosilicate-SST
- Achieves a high vacuum level with a built-in turbo pump (Leybold 90 liters per second)
- Two-stage rotary pump (optional diaphragm or scroll pump available)
- Quartz crystal monitoring system for precise real-time thickness measurement (1 nanometer precision)
- Includes an electronic shutter for enhanced control
- Features two high-current electric feed-throughs for easy insertion of thermal sources
- Comes with a movable thermal source holder, allowing for both upward and downward deposition configurations
- Equipped with an automatic venting valve
- Includes a full range vacuum gauge
- Features an S-Clip sample holder on the chamber lead
- Optional 2-inch rotating sample holder available on the base plate
- Provides adjustable sample rotation, height, and tilt (for use with the optional 2-inch sample holder)
- Backed by a two-year warranty

Automation

- Intuitive touchscreen interface for easy control of the vacuum process and device manipulation.
- User-friendly software that can be updated via the network.

- Electronic shutter for precise control.

Clean Vacuum

- Vacuum chamber with an outer diameter (OD) of 170 mm and a height (H) of 140 mm.
- The DTE system is equipped with an internally mounted 90 L/s turbo molecular pump, optionally backed by a 6m³/h two-stage rotary vane pump.

Touch Screen Control

The DTE system is equipped with a 7-inch colored touch-screen panel featuring user-friendly software for controlling the deposition process data. Users can view vacuum and coating sequence information as digital data or curves displayed on the touch screen. The system also maintains records of the last 300 coatings, which can be accessed on the history page.

Desk Sputter Coater

Sample Holder

Desk Sputter Coater

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The DTE deposition system offers flexibility in metal evaporation with two distinct configurations:

1. Upward Deposition:

- In this setup, the material to be evaporated is loaded into a boat source.
- The sample is securely attached to the S-Clips located on the chamber lead, facilitating easy access during the deposition process.

2. Downward Deposition:

- For downward deposition, a small quantity of the desired material is loaded into a basket.
- Optionally, a rotating sample holder can be employed on the baseplate for this configuration.

DTE Operation Requirements

The DTE deposition system is characterized by its small chamber, which offers advantages such as compactness, lightweight design, quick vacuuming, and budget-friendly operation. However, it's important to consider some advisory notes when using this device:

1. Ideal for Short-Term Thin Film Coatings:

- The DTE system is well-suited for short-term thin film coatings.

- For extended, long-term, or thick-layer depositions, it's advisable to exercise caution, as such conditions may potentially impact the chamber.

2. Suitable for Low Vaporization Temperature Materials:

- This device is most effective when used for the deposition of source materials with low vaporization temperatures.

3. Maximum Sample Diameter Limitation:

- Please note that the maximum sample diameter that can be accommodated with the rotating substrate holder should not exceed 2 inches.

Should these coating conditions not align with your specific requirements, we recommend exploring our DTT model, which features a larger 300 mm diameter chamber and three thermal sources.

TECHNICAL SPECIFICATIONS

- Ultimate Vacuum: Less than 4×10^{-6} Torr
- Short-duration deposition process
- Records and plots parameters displayed on the touchscreen
- Transfers curves and deposition process data via a USB port to PC
- 0-12 V, 0-100 A DC high-current power supply
- Utilities: 220V-110V, 50/60Hz, 6/8A
- Instrument Dimensions: 450 Width × 450 Depth × 500 Height mm (without Rack)
- Net Weight: 30 kg (without backing pump)

Options and Accessories

Certainly, here are the options and accessories for the DTE Deposition System:

- Quartz crystal sensor
- Spare glass chamber
- Sealing gaskets
- Boats and baskets



Torontech Inc.

251 Consumers Road, Suite 1200
Toronto, Ontario, M2J 4R3, Canada 

Phone: +1 416 368 2721 | Fax: +1 416 981 7652
Email: info@torontech.com

Torontech, LLC

601 Brickell Key Drive, Suite 700
Miami, FL 33131, USA 

Toll-Free: 1-866-383-7919
Email: sales@torontech.com

Torontech ME FZE

Meydan Grandstand, 6th Floor,
Meydan Road, Nad Al Sheba,
Dubai-261440, UAE 

Phone: +971 488 19252
Email: me@torontech.com

