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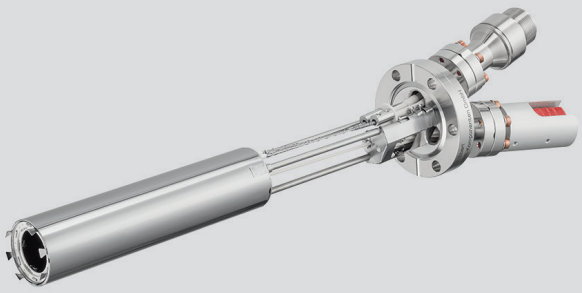
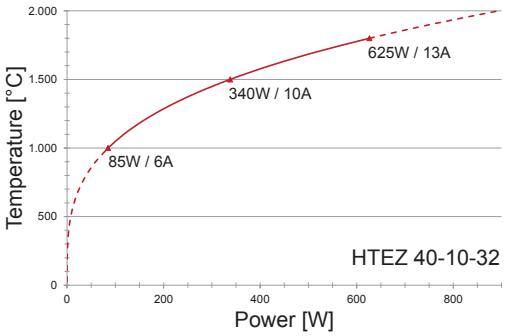
HIGH TEMPERATURE EFFUSION CELL HTEZ

- Various crucible sizes and materials
- Tungsten wire heater
- Clean operation in UHV up to 1900°C
- High reliability and long lifetime
- Options: cooling shroud and shutter
- Compatible with most MBE systems



HTEZ 40-10-32 on DN40CF (O.D. 2.75") flange



Power vs temperature diagram of HTEZ 40-10-32

The High Temperature Effusion Cell HTEZ is designed for clean UHV operation up to 1900°C.

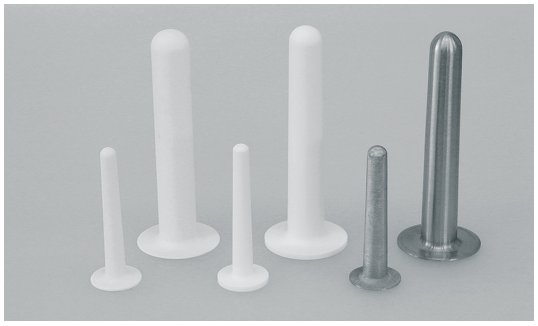
HTEZ cells predominantly heat the crucible from the side by means of a tungsten wire filament. The deep crucible design allows operation in angled port positions, combining large capacity with high temperature operation.

In the hot zone only selected refractory metals are used. On account of the elevated operating temperatures, the filaments are made of tungsten, with best possible avoidance of contact between filament and insulation parts. Insulating PBN ceramic parts are fully shielded by tantalum plates to prevent outgassing during operation.

The HTEZ design allows mounting ceramic crucibles (e.g. PBN, BeO, etc.) directly into the cell without an outer metal crucible. In this way a higher temperature of the evaporation material in the crucible can be achieved.

Standard crucible sizes are 1.5, 10 and 35 cm^3 (other shapes and dimensions available upon request).
Different crucible materials such as Al_2O_3, BeO, Ta, W, pyrolytic graphite (PG) and pyrolytic boron nitride (PBN) can be offered. Please ask for a recommendation according to the material which you want to evaporate.

HTEZ cells are highly efficient, enable a very reproducible temperature measurement and allow precise adjustment as the thermocouple measuring point is close to the crucible.
Well-designed tungsten filaments are demonstrably to be very stable, thus safeguarding a long lifetime even when working on the upper limit of the cells.



Different ceramic and metal crucibles (1.5 and 10 cm^3) for HTEZ

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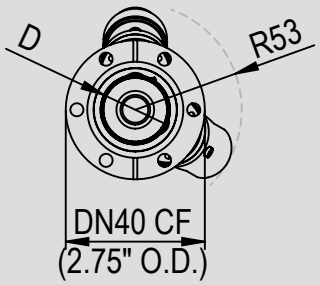
Applications

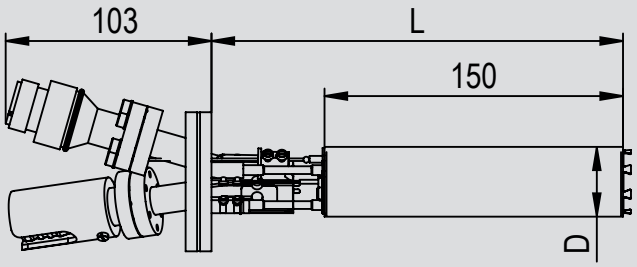
The HTEZ is designed for evaporation or sublimation of low vapor pressure elements and compounds at temperatures up to 1900°C, e.g. Fe, Cr, Ni, Co, Au, Ge, etc. Typical applications are surface science analysis or thin film deposition of magnetic topological insulation or oxide layers.

The maximum operating temperature of the HTEZ may be limited by the crucible choice, e.g. to 1600°C with PBN. Furthermore, possible reactions of evaporants with the crucible material should be taken into account, which may also reduce the maximum advisable temperature. Please request a recommendation.

Technical Data

Mounting flange	DN40CF (O.D. 2.75") or DN63CF (O.D. 4.5")
Dimensions in vacuum	L=216-400 mm, D=36, 56 or 95 mm
Filament type	self-supporting tungsten filament
Thermocouple	W5%Re/W26%Re (type C)
Bakeout temperature	max. 250°C
Outgassing temperature	max. 1900°C, depending on crucible material
Operation temperature	max. 1900°C, depending on crucible material and filament design
Cooling	integrated water cooling (K) or separate cooling shroud
Crucibles	1.5, 10, or 35 cm^3; Al_2O_3, BeO, Ta, W crucibles
	(other materials on request)
Option	integrated rotary shutter (S)





Schematic drawing of the High Temperature Effusion Cell HTEZ
(Drawing shows HTEZ 40-10-32)

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