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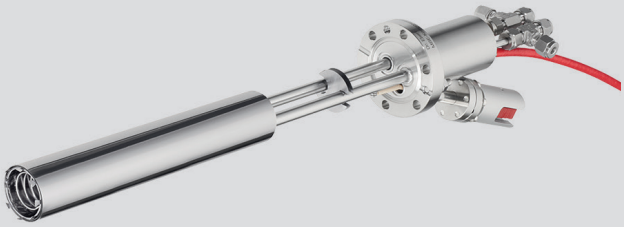
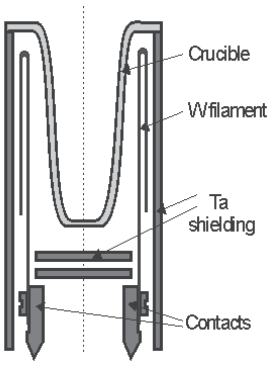
HIGH TEMPERATURE EFFUSION CELL HTEZ-W

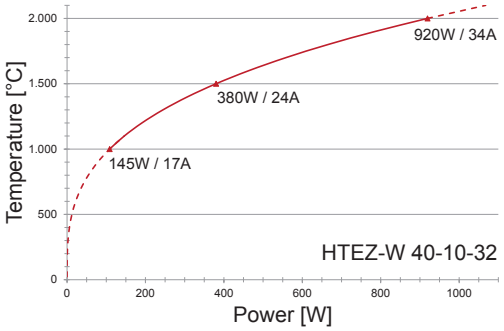
- Clean operation in UHV up to 2000°C
- Various crucible materials; crucible capacity 10 cm^3
- No ceramic insulation parts in hot area
- Free-standing thick tungsten wire filament
- Water-cooled current contacts



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



Schematic illustration of the HTEZ indicating the free standing W filament amongst other essential parts of the source.



Power vs temperature diagram of HTEZ-W 40-10-32

View into the orifice of a hot HTEZ-W cell. The red-hot filament is clearly visible.

The High Temperature Effusion Cells HTEZ-W are designed for clean UHV operation up to 2000°C. This is accomplished by a free-standing filament of thick tungsten wire. It has proved to be very stable, thus safeguarding a long lifetime even when working on the upper limit of the cell.

In contrast to the HTS sources, HTEZ-W cells predominantly heat the crucible from the side. The deep crucible design allows operation in angled port positions, combining large capacity with high temperature operation.

Only selected refractory metals are used in the hot zone. The HTEZ-W cells work completely without any additional ceramic insulation in the hot filament area. This unique design with free-standing W-filament and water-cooled current contacts ensures lowest possible outgassing at elevated temperatures up to 2000°C.

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

HTEZ-W cells are highly efficient, enable a very reproducible temperature measurement and allow precise adjustment as the thermocouple measuring point is close to the crucible.

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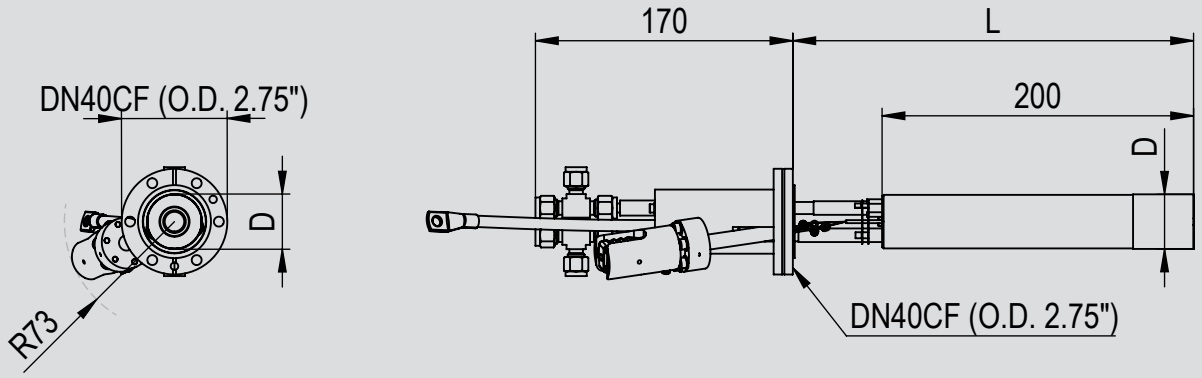
Applications

The HTEZ-W is designed for evaporation or sublimation of low vapor pressure elements and compounds at temperatures up to 2000°C, e.g. Fe, Cr, Ni, Co, V, Pt, Ti, La, etc. Typical applications are surface science analysis or thin film deposition of magnetic or oxide layers.

The maximum operating temperature of the HTEZ-W 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.

Technical Data

Mounting flange	DN40CF (O.D. 2.75")
Dimensions in vacuum	L=250-400 mm, D=36 mm
Filament type	free-standing tungsten filament
Thermocouple	W5%Re/W26%Re (type C)
Bakeout temperature	max. 250°C
Outgassing temperature	max. 2000°C, depending on crucible material
Operation temperature	max. 2000°C, depending on crucible material
Cooling	water cooled current contacts
Crucibles	10 cm^3; Al_2O_3, BeO, Ta, W crucibles (other materials on request)



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

Dr. Eberl MBE-Komponenten GmbH
Josef-Beyerle-Str. 18/1
71263 Weil der Stadt, Germany

Fon +49 7033 6937-0
Mail info@mbe-components.com
Web www.mbe-components.com