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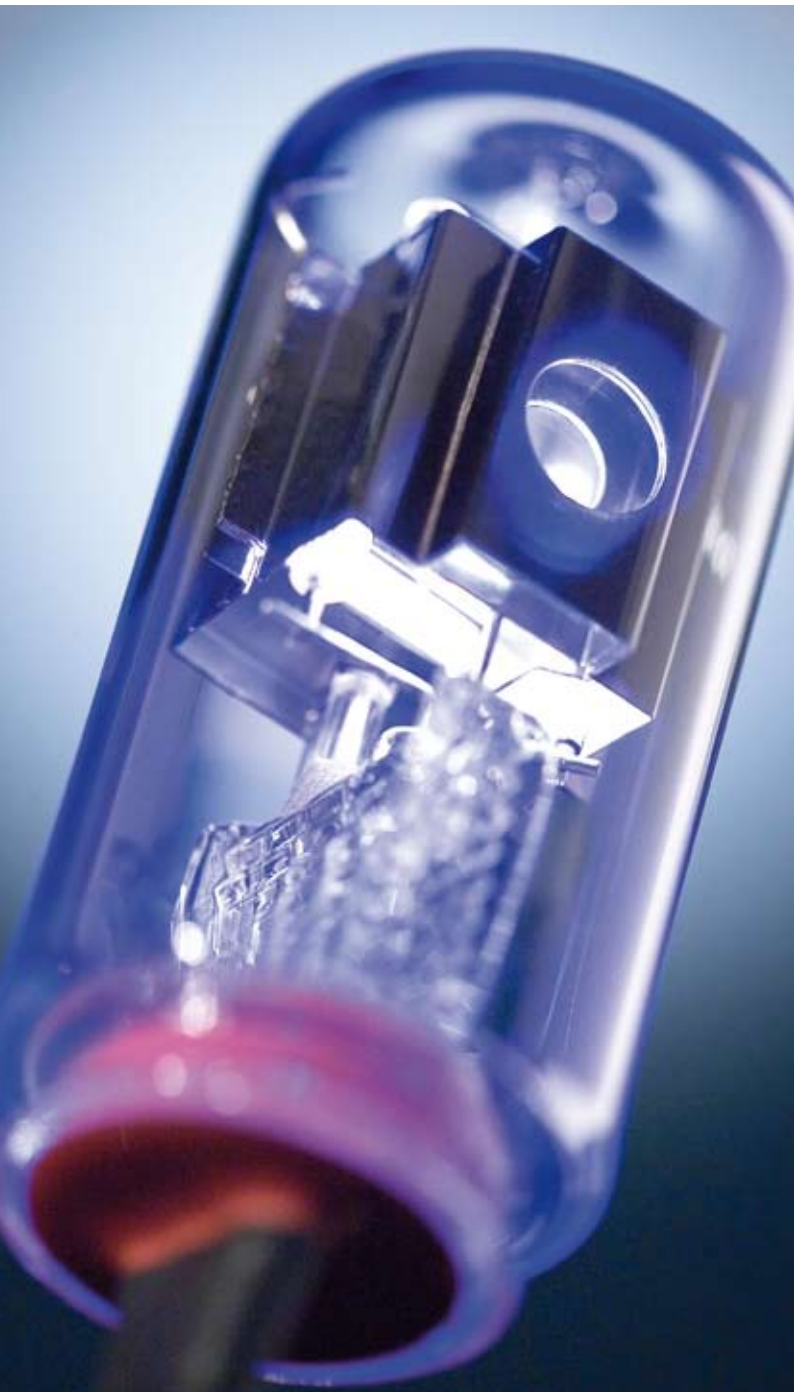
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Deuterium Lamps



Deuterium lamps are light sources that utilise the discharge of excited deuterium gas (D2). They emit a continuum of UV light within the wavelength range 185–400 nm and discrete lines around this. Therefore they are widely used as an ultraviolet source in analytical equipment, such as UV-Vis spectrophotometers and High Performance Liquid Chromatography (HPLC) instruments.

Over the years, Heraeus has developed a lamp technology that meets the ever increasing demands of instrument manufacturers in terms of extremely low detection limits and sensitivity.

For such state-of-the-art instruments Heraeus offers deuterium lamps with the highest stability, intensity and a long service life of more than 2,000 hours. To meet the requirements of your application and power supply, they are available with a variety of transmission windows, filament ratings, apertures and alignment configurations.

Heraeus engineers work closely with instrument manufacturers (OEMs) to optimise the lamp for the specific operating conditions within the instrument.

Through our approved worldwide dealer network, replacement deuterium lamps are available for the majority of existing HPLC instruments and spectrophotometers.

Applications

- High Pressure Liquid Chromatography (HPLC + UHPLC)
- UV-Vis Spectrophotometry
- Atomic Absorption Spectroscopy (AAS)
- High Performance Capillary Electrophoresis (HPCE)
- Thin Layer Chromatography (TLC)
- Pollution Monitors
- Solar simulation (MgF_2 window)
- Photoionising light source (MgF_2 window)
- Film Thickness measurements
- Semiconductor inspection
- Fluorescence Spectrophotometry
- Removal of electrostatic charges from semiconductor wafers etc.



Long Nose Lamp



High Stability Lamp



High Intensity Lamp

High Stability Long-Life Deuterium Lamps
Using the improved cathode technology, Heraeus long-life D2 lamps combine a guaranteed lifetime of 2,000 hours with unmatched output stability over their entire life. This sets them apart from many other long-life lamps on the market and makes them the ideal choice for high-end HPLC instruments.

High Intensity Lamps
Heraeus high intensity deuterium lamps with the new "Enhanced Lifetime Performance (ELP)" technology maintain twice the residual intensity compared to standard D2 lamps at the end of life. The patent pending ELP coating protects D2 lamp bulbs against degradation caused by VUV radiation and reactive plasma components. It provides a particular advantage in the deep UV region between 160 to 230 nm for all Heraeus D2 lamps with a synthetic quartz envelope. The entire DO 600 series is available with the new ELP technology.

See-Through Deuterium Lamps
See-through lamps offer a straight-line arrangement of a tungsten halogen lamp, deuterium lamp and optical system. Simplification and cost reduction of UV-Vis spectrophotmeters can be achieved using this approach, for example, through the elimination of the moveable mirror.

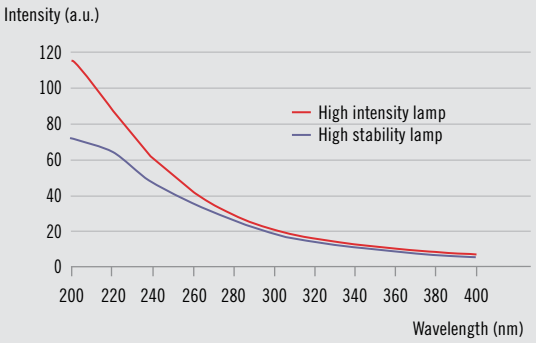
See-through lamps offer the same unmatched stability as the high stability types above and are available with the same diversity of heater voltages and aperture sizes.

Vacuum UV (VUV) Deuterium Lamps
VUV lamps are deuterium lamps with a MgF_2 window allowing the transmission of VUV radiation down to 115 nm. Heraeus offers lamps with 30 W and 200 W power consumption. The 200 W type is water-cooled and delivers a radiant flux 4–5 times higher than 30 W lamps. They are also available with flanges for mounting on a vacuum chamber.

Lamp Type

Feature	High Stability	High Intensity	VUV Lamps	VUV Lamps water-cooled
All purpose	•	•	•	•
See-Through	•	•	–	–
Lifetime	2,000 h	2,000 h	1,000 h	1,000 h
Cathode	2.0/2.5/3.0/ 10-12 V	2.0/2.5/3.0/ 10-12 V	10 V	6 V
Aperture size diameter	0.5/1.0 mm	0.5/1.0 mm	1.0 mm	1.0 mm
Noise	≤ 0.005 % p-p	≤ 0.05 % p-p	≤ 0.05 % p-p	≤ 0.05 % p-p
Power	30 Watt	30 Watt	30 Watt	200 Watt

Spectral Distribution of Deuterium Lamp

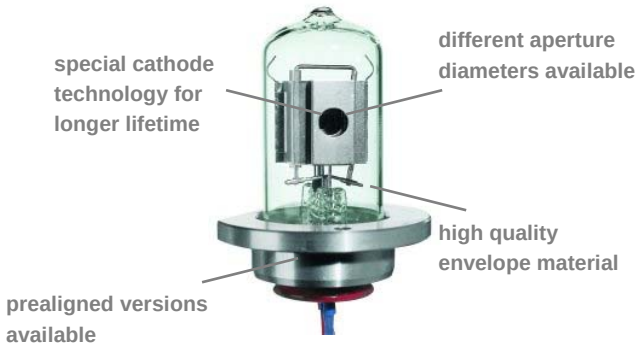




Heraeus

OPTICS + ANALYTICS

Selection Guide for Heraeus Deuterium Lamps



Heraeus' broad range of deuterium lamps fulfils all of the needs of instrument manufacturers: standard or extended lifetime, quartz glass or UV glass envelopes, optional see-through versions and many specialist lamps e.g. for very short wavelengths (vacuum UV) or boosted output.

Our selection guide helps you to find the right deuterium lamp in terms of materials, geometry and operating parameters.

Power Consumption	Feature	Heater/Filament Rating	Main Lamp Model
30 Watt	High Stability 2000 h	2.5 V	DX 202 R
		10-12 V	DX 246
	High Intensity	2.0 V	DO 605 T
		10-12 V	DO 650 J
	See-Through	2.0 V	DO 660/05 J
		2.5 V	DX 277/05 J
		3.0 V	PR 41016
		10-12 V	DO 680 J
	VUV lamps	10 V	V01
200 Watt	Water cooled type	6 V	D 200 F

Heraeus



High Stability Deuterium Lamps – Lifetime 2000 hours*

Heraeus long-life deuterium lamps combine a guaranteed lifetime of 2000 hours with unmatched stability of the output over the entire life. This sets them apart from many other long-life lamps on the market and makes them the ideal choice for high-end HPLC instruments.

Lamp Code	Window Material	Spectral Range	Aperture Diameter	Strike Voltage	Anode Current	Anode Voltage	Output Stability		Filament Rating				Part Number
							Noise	Drift	Warm-up		Operation		
									Voltage	Current	Voltage	Current	
		(nm)	(mm)	(V)	(mA dc)	(V)	% p-p	%/h	V dc	A dc	V dc	A dc	
DX 202 R	Fused silica	185-400	1.0	350	300	80	0.005	± 0.5	2.5	5.8	0	0	80001131
DX 201/05 RJ	Fused silica	185-400	0.5	350	300	80	0.005	± 0.5	2.5	5.8	0	0	80008685
DX 223	Fused silica	185-400	1.0	350	300	80	0.005	± 0.5	2.5	4	0	0	80006631
DX 226/05	Fused silica	185-400	0.5	350	300	80	0.005	± 0.5	2.5	4	0	0	80033068
DX 227/05 J	Fused silica	185-400	0.5	350	300	80	0.005	± 0.5	2.5	4	0	0	80035276
PR 41069	UV Glass	190-400	0.5	400	300	80	0.005	± 0.5	10	0.9	6	0.5	80051960
DX 246	Fused silica	185-400	1.0	350	300	80	0.005	± 0.5	10-12	0.8-1.0	3-6	0.3-0.45	80006934
DX 246/05 J	Fused silica	185-400	0.5	350	300	80	0.005	± 0.5	10-12	0.8-1.0	3-6	0.3-0.45	80013440

* The guaranteed lifetime is defined as the time in which the radiant power of the lamp has dropp ed to 50% of its initial value measured at 230nm and 300mA operating current.

High Intensity Lamps - Lifetime 1000 hours*

Heraeus high intensity deuterium lamps with the new “Enhanced Lifetime Performance” (ELP) technology maintain twice the residual intensity compared to standard D2 lamps at the end of life. It provides a particular advantage in the deep UV region between 160 to 230nm for all Heraeus D2 lamps with synthetic quartz window.

Lamp Code	Window Material	Spectral Range	Aperture Diameter	Strike Voltage	Anode Current	Anode Voltage	Output Stability		Filament Rating				Part Number
							Noise	Drift	Warm-up		Operation		
									Voltage	Current	Voltage	Current	
		(nm)	(mm)	(V)	(mA dc)	(V)	% p-p	%/h	V dc	A dc	V dc	A dc	
DO 605 T	Synthetic Silica	160-400	1.0	350	300	75	0.05	± 0.5	2	5.8	0	0	80052430
Do 605 TJ	Synthetic Silica	160-400	1.0	350	300	75	0.05	± 0.5	2	5.8	0	0	80052431
DO 660/05 J	Synthetic Silica	160-400	0.5	350	300	85	0.05	± 0.5	2	5.8	0	0	45002349
DO 650 J	Synthetic Silica	160-400	1.0	350	300	80	0.05	± 0.5	10-12	0.9	3-6	0.3-0.45	80051718
DO 655 J	Synthetic Silica	160-400	1.0	350	300	75	0.05	± 0.5	10-12	0.9	3-6	0.3-0.45	80002154
R07	Synthetic Silica	160-400	1.0	350	300	80	0.05	± 0.5	10	1.0	7	0.7	80013769
R47	Synthetic Silica	160-400	0.5	350	300	75	0.05	± 0.5	10	1.5	7	1	80013793

* The guaranteed lifetime is defined as the time in which the radiant power of the lamp has dropped to 50% of its initial value measured at 230nm and 300mA operating current.

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