

CATHODEON HOLLOW CATHODE DISCHARGE LAMPS

CATHODEON HOLLOW CATHODE DISCHARGE LAMPS

Cathodeon Ltd with over 60 years experience in vacuum/glass electronic devices is the worlds leading specialist in spectral source technology. The company is Europe's undisputed leader in the manufacture of hollow cathode lamps having been at the heart of their design and development since the early years of atomic absorption analysis in the 1960's.

Cathodeon hollow cathode lamps are fitted as original equipment by many of the worlds foremost atomic absorption instrument manufacturers, and as replacements by discerning users the world over.

The Cathodeon hollow cathode lamp programme includes 70 single element and the widest range of proven multi element combinations.

All this experience has now been channelled in to a new range of hollow cathode lamps specifically engineered to meet the requirements of the Perkin Elmer 'AAnalyst' range of atomic absorption spectrometers, priced to meet todays budgets.

GENERAL CONSTRUCTION

Hollow cathode lamps consist of a cathode made from the element of interest, an anode and an inert filler gas contained in a glass envelope. This new range of lamps is fitted with a specific base compatible to the Perkin Elmer range of 'AAnalyst' instruments within which is a timer to record the usage of the lamp throughout its life. This range of lamps is 'data coded' enabling the instrument to automatically detect the lamp element, and so to default to a set of analytical parameters suitable for that element.

ENVELOPE AND WINDOWS

The envelope is constructed from a special borosilicate glass chosen to achieve a good seal between the envelope and the pin base. Cathodeon lamps feature direct fused-on window construction essential for exceptional lifetimes and purity of spectral output

The window material is selected to achieve the optimum transmission of the key spectral lines of the cathode element.

INTERNAL CONSTRUCTION

The pin base is pressed from the same glass as the envelope of the lamp to ensure a good stress free seal. Combined with careful matching of the expansion coefficients of the base glass and the alloy pins this guarantees a long life gas tight seal ensuring maximum performance throughout the life of the lamp.

Accurate and consistent positioning of the anode and cathode are maintained by precision ceramic and mica insulators which not only hold the structure centrally but also insulate the cathode from other parts of the lamp. Such a design ensures the lamp beam is focused through the centre of the window and minimises spurious discharge problems.

THE CATHODE

The cathode is manufactured from either the pure element or the element alloyed with another suitable material. Alloys are used when a pure material is not appropriate, or to balance outputs in multi element lamps, the alloying elements being carefully chosen to prevent spectral interference. All materials are chosen from the highest purity available usually 99.99% or better to ensure high spectral line intensity, stability, and low noise with good analytical sensitivity.

FILL GAS

Hollow cathode lamps are filled with an inert monoatomic gas of high purity, chosen to ensure that the elemental spectral output of interest is free from interference. Neon is the preferred gas for its ease of processing and clean stable outputs. Other gases are used for those elements where interference from the neon gas lines is possible.



hi-Tech lamps

800-229-6509

info@hi-techlamps.com

The use of the Perkin Elmer name is intended for convenience and does not imply that the products are of Perkin Elmer origin. AAnalyst is the registered trademark of Perkin Elmer inc., Wellesley, MA, USA.

Contact us at: www.cathodeon.com • Tel: +44 (0)1223 424100

APPLICATIONS

This range of lamps is fully compatible with the Perkin Elmer range of 'AAnalyst' atomic absorption spectrometers and offers performance and lifetime founded on 40 years at the forefront of hollow cathode lamp development

CATHODEON HOLLOW CATHODE DISCHARGE LAMPS

SINGLE ELEMENT LAMPS

ALUMINIUM - Al
ANTIMONY - Sb
ARSENIC - As
BARIUM - Ba
BERYLLIUM - Be
BISMUTH - Bi
BORON - B
CADMIUM - Cd
CAESIUM - Cs
CALCIUM - Ca
CERIUM - Ce
CHROMIUM - Cr
COBALT - Co
COPPER - Cu
DYSPROSIUM - Dy
ERBIUM - Er
EUROPIUM - Eu
GADOLINIUM - Gd
GALLIUM - Ga
GERMANIUM - Ge
GOLD - Au
HAFNIUM - Hf
HOLMIUM - Ho
INDIUM - In
IRIDIUM - Ir
IRON - Fe
LANTHANUM - La
LEAD - Pb
LITHIUM - Li
LUTETIUM - Lu
MAGNESIUM - Mg
MANGANESE - Mn
MERCURY - Hg
MOLYBDENUM - Mo
NEODYMIUM - Nd
NICKEL - Ni
NIOBIUM - Nb
OSMIUM - Os
PALLADIUM - Pd
PHOSPHORUS - P
PLATINUM - Pt
POTASSIUM - K
PRASEODYMIUM - Pr
RHENIUM - Re
RHODIUM - Rh
RUBIDIUM - Rb
RUTHENIUM - Ru
SAMARIUM - Sm
SCANDIUM - Sc
SELENIUM - Se
SILICON - Si
SILVER - Ag
SODIUM - Na
STRONTIUM - Sr
TANTALUM - Ta
TELLURIUM - Te
TERBIUM - Tb
THALLIUM - Tl
THULIUM - Tm
TIN - Sn
TITANIUM - Ti
TUNGSTEN - W
URANIUM - U
VANADIUM - V
YTTERBIUM - Yb
YTTORIUM - Y
ZINC - Zn
ZIRCONIUM - Zr

PART NO.	GAS	WINDOW	MAX CURRENT	PRINCIPAL W/LENGTH
5UN/Al	Ne	UV Glass	30	309.3
5QN/Sb	Ne	Quartz	25	217.6
5QN/As	Ne	Quartz	18	193.7
5BA/Ba	Ar	Borosilicate	30	553.5
5QN/Be	Ne	Quartz	30	234.9
5QN/Bi	Ne	Quartz	15	223.1
5UN/B	Ne	UV Glass	30	249.8
5QN/Cd	Ne	Quartz	10	228.8
5BN/Cs	Ne	Borosilicate	10	852.1
5UN/Ca	Ne	UV Glass	10	422.7
5UN/Ce	Ne	UV Glass	20	520.0
5UN/Cr	Ne	UV Glass	12	357.9
5UN/Co	Ne	UV Glass	40	240.7
5UN/Cu	Ne	UV Glass	20	324.8
5BN/Dy	Ne	Borosilicate	30	421.2
5BN/Er	Ne	Borosilicate	30	400.8
5BA/Eu	Ar	Borosilicate	30	459.4
5UN/Gd	Ne	UV Glass	30	368.4
5UN/Ga	Ne	UV Glass	20	287.4
5UN/Ge	Ne	UV Glass	30	265.2
5UN/Au	Ne	UV Glass	20	242.8
5UA/Hf	Ar	UV Glass	30	307.3
5BN/Ho	Ne	Borosilicate	30	410.4
5UN/In	Ne	UV Glass	25	303.9
5QN/Ir	Ne	Quartz	30	208.9
5UN/Fe	Ne	UV Glass	30	248.3
5UA/La	Ar	UV Glass	30	550.1
5QN/Pb	Ne	Quartz	15	217.0
5BA/Li	Ar	Borosilicate	20	670.8
5UA/Lu	Ar	UV Glass	20	336.0
5QN/Mg	Ne	Quartz	10	285.2
5UN/Mn	Ne	UV Glass	30	279.5
5UN/Hg	Ne	UV Glass	8	253.6
5UN/Mo	Ne	UV Glass	40	313.3
5BN/Nd	Ne	Borosilicate	30	492.5
5QN/Ni	Ne	Quartz	30	232.0
5UA/Nb	Ar	UV Glass	40	334.4
5UN/Os	Ne	UV Glass	10	290.9
5UN/Pd	Ne	UV Glass	25	247.6
5QN/P	Ne	Quartz	25	213.6
5UN/Pt	Ne	UV Glass	25	265.9
5BN/K	Ne	Borosilicate	12	766.5
5BN/Pr	Ne	Borosilicate	30	495.1
5UA/Re	Ar	UV Glass	30	346.1
5UA/Rh	Ar	UV Glass	30	343.5
5BN/Rb	Ne	Borosilicate	10	780.0
5UN/Ru	Ne	UV Glass	30	349.9
5UN/Sm	Ne	UV Glass	30	429.7
5UN/Sc	Ne	UV Glass	30	391.2
5QN/Se	Ne	Quartz	15	196.0
5QN/Si	Ne	Quartz	40	251.6
5UA/Ag	Ar	UV Glass	10	328.1
5UN/Na	Ne	UV Glass	10	589.0
5BA/Sr	Ar	Borosilicate	20	460.7
5UN/Ta	Ne	UV Glass	40	271.5
5QN/Te	Ne	Quartz	30	214.3
5BN/Tb	Ne	Borosilicate	30	432.7
5UN/Tl	Ne	UV Glass	10	276.8
5UN/Tm	Ne	UV Glass	30	371.8
5QN/Sn	Ne	Quartz	30	224.6
5UN/Ti	Ne	UV Glass	30	365.4
5UN/W	Ne	UV Glass	40	255.1
5UA/U	Ar	UV Glass	25	358.5
5UN/V	Ne	UV Glass	40	318.5
5UN/Yb	Ne	UV Glass	30	398.8
5BN/Y	Ne	Borosilicate	30	410.2
5QN/Zn	Ne	Quartz	20	213.9
5UN/Zr	Ne	UV Glass	40	360.1

PROCESSING AND TESTING

The envelope and base complete with assembled structure are carefully sealed together to minimise extraneous contamination and damage to the cathode. Once sealed the lamp is attached to the vacuum processing equipment and subjected to a 16 hour programme of evacuation, baking and cathode processing prior to a final fill with gas.

The lamp is removed from the processing equipment and then aged overnight with power supplies specific to the lamps final application to assure a stable and consistent output.

Finally the lamp is tested for output, noise, drift, and chemical sensitivity on a fully operational atomic absorption spectrometer.

Each stage is monitored and recorded on a test sheet and final test results entered into a SPC system used for regular trend analysis to ensure product consistency. All procedures including calibration of process and test instrumentation against traceable standards are regularly audited in strict adherence to the company's ISO9000 registration.

WARRANTY

Cathodeon hollow cathode lamps are manufactured to the highest standards and are warranted free from electrical and mechanical defect caused either by workmanship or materials. The lamps provide satisfactory service when used within the limits of our written specification and when used in equipment of standard manufacture.

This range of lamps is warranted to emit spectra for a period of 24 months from the date of despatch or 5000 milliampere hours usage, whichever occurs first. The milliampere usage is calculated by multiplying the hours of lamp operation by the lamp operating current.

Should any failure occur within the warranty period the lamp will be replaced free of charge providing that the lamp in question is returned, carriage paid, in its original packing with the warranty card, and that following testing in the factory it is agreed that the lamp is faulty.

The lamp will only be replaced if the company is satisfied that the lamp has been operated at the recommended currents, and that it has not failed due to accidental damage or misuse by the operator. If a replacement lamp is supplied the validity of the guarantee shall date from the shipment of the first lamp.

APPLICATIONS

With an immediate indication of lamp life remaining and automatic setting of the instrument parameters, maintaining analytical excellence has never been easier.

Hi-Tech lamps

800-229-6509

info@hi-techlamps.com