



Spectral Lamp - Bivalent Metal - LP Mercury

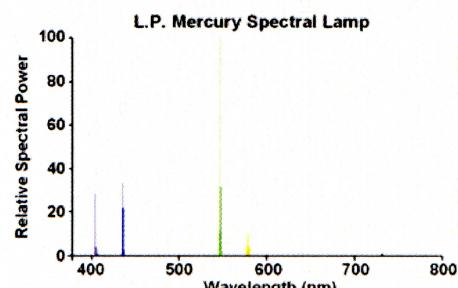


Spectral lamps find a home in special laboratory applications where they are commonly employed as stable, high quality sources of discrete spectral lines. Atomic spectra were originally produced by creating an arc between electrodes fabricated of the metal to be studied, or by sprinkling a powdered salt into a gas flame. Both methods produce somewhat unstable results and require constant attention. In the 1940s a range of electric discharge lamps was developed to supersede these crude methods, and delivered much more stable results by virtue of the high purity and constant output.

Five lamps make up the group containing Bivalent Metals in the Philips series. These are Mercury (both high and low pressure), Cadmium, Zinc, and a mixed lamp containing all three elements. The low pressure mercury lamp is similar lines to the noble gas family. The rest of this group is characterised by a much higher vapour pressure of the metal dose, achieved with compact arc tube of high wattage.

The electrodes and arc tubes resemble those found in low wattage mercury discharge lamps. It is standard practice to form narrow diameter quartz diaphragms just in front of each electrode, to constrain the arc along the central axis of the tube without wandering and flickering. Heat-reflective coatings of platinum paint are applied behind the electrodes to further raise the vapour pressure of the metals. The arc tube of the zinc lamp is further stretched into a capillary at its centre to raise the intensity of the discharge. Seals were originally formed to tungsten rods, as in the first mercury lamps but in later models the standard pinch-seal technique is employed. Outer bulbs are fabricated in hard glass to withstand the heat, or quartz if UV transmission is required.

Manufacturer:	Philips Lighting - Item No. 93123E	
Lamp Power:	12 Watts	
Lamp Current:	0.9 Amps	
Lamp Voltage:	14 Volts	400V Ignition
Cap:	E27s/27	Ni plated brass
Bulb Finish:	Clear	Borosilicate
Bulb Type:	T-32	
Overall Length:	183 mm	
Light Centre Length:	110 mm	
Electrodes:	Beehive coil of black tungsten with BCT emitter	
Inner / Outer Atmosphere:	Inner: Mercury, Argon	Outer: Nitrogen
Luminous Flux:	75 lumens	
Luminous Efficacy:	6 lm/W	
Colour Temperature & CRI:	CCT: 7,000K	CRI: Ra 1.5
Chromaticity Co-ordinates:	CCx: 0.277	CCy: 0.450
Burning Position:	Vertical cap down	
Rated Life:	Not published	
Warm Up / Re-strike Time:	15 minutes	Instantaneous
Factory:	Turnhout, Belgium	
Date of Manufacture:	October 1987	
Original / Present Value:	Unknown	



References: 1) Light Sources for Line Spectra, *W. Elenbaas and J. Riemens*, Philips Technical Review April 1950, V.11 No.10, pp. 299-302.
2) Spectrophotometric measurement of lamp.