



# Spectral Lamp - Noble Gas - Helium



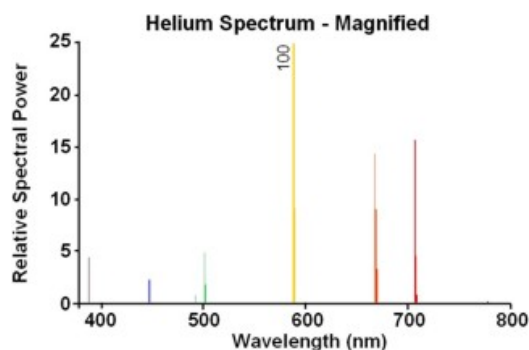
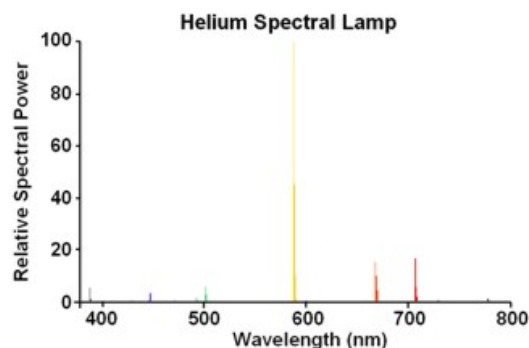
Spectral lamps find a home in special laboratory applications where they are commonly employed as stable, high quality sources of discrete spectral lines. Atomic spectra were originally produced by creating an arc between electrodes fabricated of the metal to be studied, or by sprinkling a powdered salt 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 Noble Gas group in the Philips series. These are Helium, Neon, Argon, Krypton and Xenon. They have employed a variety of different discharge tube styles over the years. Originally all were fabricated in soft glass tubes. The Helium lamp however dissipates a rather greater power than any of the others, and its discharge tube operates at a proportionately higher temperature. For this reason, the end chambers around the temperature electrodes are formed into bulbous regions to limit the glass temperature. In more recent years, quartz arc tubes have superseded original glass types on account of the fact that semi-mechanised equipment could be employed for their production.

The electrode assembly in each of the noble gas lamps is based on the same design employed for low pressure sodium vapour lamps. A triple coil of black tungsten wire is wound into a beehive shaped hollow cathode, the spaces between the coils being filled with an emissive compound of barium, strontium and calcium oxides. The outer envelopes of these lamps are evacuated, except for the helium lamp which is nitrogen-filled to prevent overheating of the discharge tube.



Manufacturer:	Philips Lighting - Item No. 93098E	
Lamp Power:	60 Watts	
Lamp Current:	0.9 Amps	
Lamp Voltage:	75 Volts	400V Ignition
Cap:	E27s/27	Ni plated brass
Bulb Finish:	Clear	Soda-lime
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: Helium	Outer: Nitrogen
Luminous Flux:	20 lumens	
Luminous Efficacy:	0.3 lm/W	
Colour Temperature & CRI:	CCT: 1960K	CRI: Ra -28
Chromaticity Co-ordinates:	CCx: 0.538	CCy: 0.421
Burning Position:	Vertical cap down	
Rated Life:	Not published	
Warm Up / Re-strike Time:	Instantaneous	Instantaneous
Factory:	Turnhout, Belgium	
Date of Manufacture:	June 1985	
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.