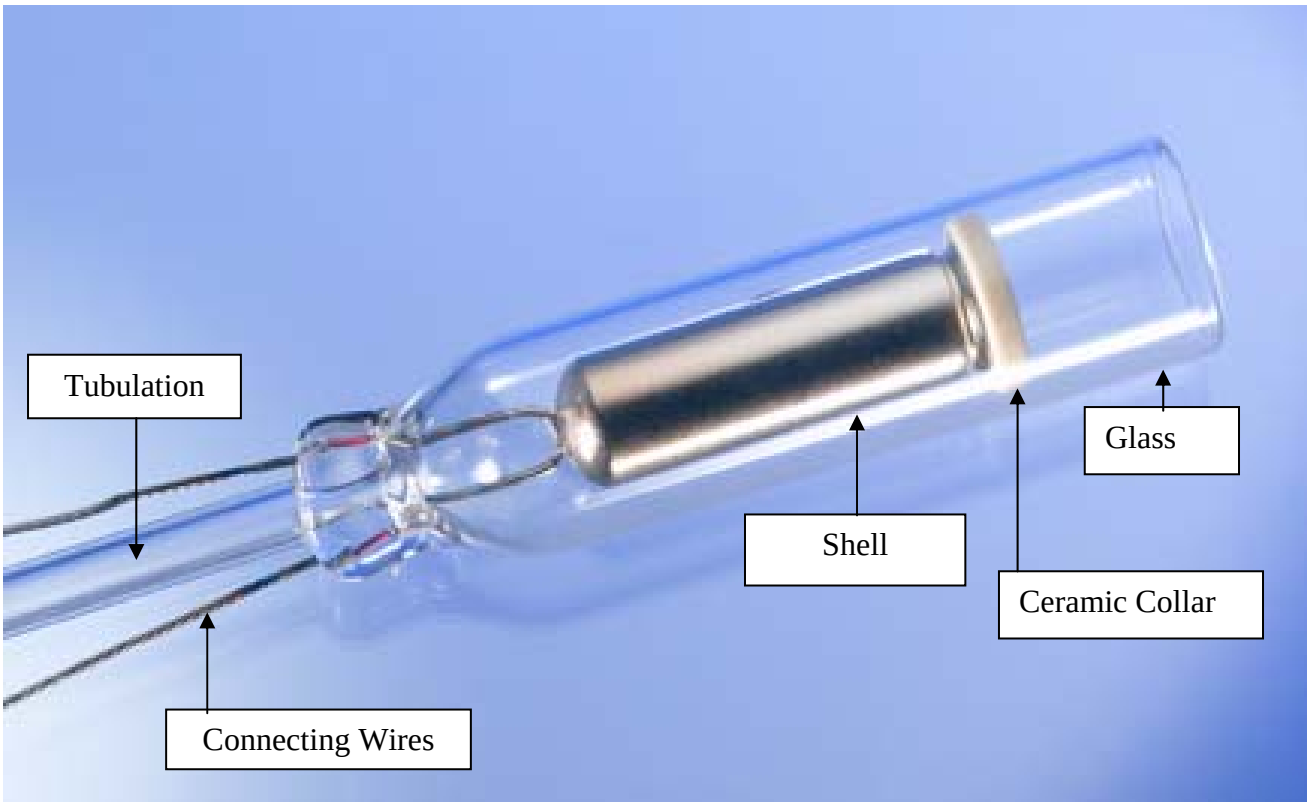
Product Information Lead Glass Electrodes

These electrodes are described as ‘cold cathodes’, which are made for the production of high voltage neon tubes using the ‘cold pump’ processing method. The metal conductor of the electrode enables the electric current to pass into the gas discharge.



Description of the important components:

Tubulation:

The tubulation is a capillary tube made of lead glass, which is used as the connection between the tube and the vacuum pump during processing. The tube is evacuated and filled with gas via the tubulation. After filling the tube with gas, the tubulation is sealed by melting the glass.

Connecting Wires:

A three part connecting wire is used. For the external electrical connection to the tube, a flexible multi-stranded nickel wire is used. This wire has high flexibility combined with strength and corrosion resistance. In the glass seal of the electrode, the middle part of the wire is made of Dumet wire, which guarantees a reliable and vacuum tight glass to metal seal. The third part of the wire is pure nickel. This is spot welded onto the electrode shell.

Electrode Shell and Activation:

The electrode shell is manufactured from pure soft iron. The shells are cleand and glowed after the forming process to eliminate rests of impurities. The shell is nickel plated to avoid corrosion. An even activation layer is applied automatically to the inside of the shell. This activation layer consists of carbonates of alkaline metals. This activation greatly increases the emission of electrons and together with the inside of the shell determines the maximum current that the electrode can stand.

Dimension of Electrode shells:

Nominal current	Shell – diameter in mm	Shell - length in mm
25 mA	6,00	19,50
50 mA	7,90	28,50
80 mA	9,70	32,50
90 mA	12,65	28,50
120 mA	12,65	32,50
150 mA	12,65	41,50
250 mA	12,65	49,50

Ceramic Collar:

The edge of the electrode shell at it's opening would be eroded by electrons bombarding the area, so this is protected by a ceramic collar.

Glass:

The electrode glass is made of lead glass. Lead glass and the above-mentioned Dumet wires give a reliable vacuum tight seal.

Maximum Current Capacity:

The electrode is described with the nominal current. We recommend a maximum constant load of approx. 2/3 for fluorescent tubes filled with blue gas, when operated by magnetic transformers:

Nominal current in mA	Recommended max. current in mA
25 mA	15 – 18 mA
50 mA	30 – 40 mA
80 mA	50 – 60 mA
90 mA	60 – 65 mA
120 mA	80 – 90 mA
150 mA	100 – 110 mA
250 mA	160 -190 mA