

General Information

Discovery

Neon was discovered by Sir William Ramsay and M.W. Travers in London in 1898.

Appearance

Neon is a colourless, odourless gas.

Source

Neon is a rare gas present in the atmosphere to the extent of 1 part in 65,000 of air. It is obtained by liquefaction of air and separation from other elements by fractional distillation.

Uses

In a vacuum discharge tube neon glows a reddish orange colour, and is therefore used in making the ubiquitous neon advertising signs, which accounts for its largest use. It is also used to make high-voltage indicators, lightning arrestors, wavemeter tubes and television tubes. Liquid neon is now commercially available and is an important economic cryogenic refrigerant. It has over 40 times more refrigerating capacity per unit volume than liquid helium and more than 3 times that of liquid hydrogen.

Biological Role

Neon has no known biological role. It is non-toxic.

General Information

Natural neon is a mixture of three isotopes, but five other unstable isotopes are known. It is a very inert element. A highly unstable compound with fluorine has been reported, but it is still questionable whether such a compound truly exists.

Physical Information

Atomic Number	10
Relative Atomic Mass ($^{12}\text{C}=12.000$)	20.180
Melting Point/K	24.48
Boiling Point/K	27.10
Density/kg m ⁻³	0.900 (gas, 273K)
Ground State Electron Configuration	[He]2s ² 2p ⁶
Electron Affinity (M-M ⁻)/kJ mol ⁻¹	+99

Key Isotopes

Nuclide	²⁰ Ne	²¹ Ne	²² Ne
Atomic mass	19.992	20.993	21.991
Natural abundance	90.51%	0.27%	9.22%
Half-life	stable	stable	stable

Ionisation Energies/kJ mol⁻¹

M - M ⁺	2080.6
M ⁺ - M ²⁺	3952.2
M ²⁺ - M ³⁺	6122
M ³⁺ - M ⁴⁺	9370
M ⁴⁺ - M ⁵⁺	12177
M ⁵⁺ - M ⁶⁺	15238
M ⁶⁺ - M ⁷⁺	19998
M ⁷⁺ - M ⁸⁺	23069
M ⁸⁺ - M ⁹⁺	115377
M ⁹⁺ - M ¹⁰⁺	131429

Other Information

Enthalpy of Fusion/kJ mol ⁻¹	0.324
Enthalpy of Vaporisation/kJ mol ⁻¹	1.736