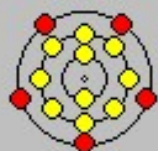




<u>N</u>	<u>P</u>	<u>As</u>	<u>Sb</u>	<u>Bi</u>	<u>Uup</u>	<u>Uhp</u>	<u>Bup</u>
7	15	33	51	83	115	165	215

## Phosphorous

Symbol	P
Atomic Number	15
Relative Atomic Mass $^{12}\text{C} = 12.0000$	30.973761
Atomic Radius pm	110 (white) 115 (red)
First Ionisation Energy $\text{kJ mol}^{-1}$	1011.7
Ionisation Energy (eV)	10,4867
Electronegativity	2.19
Density $\text{kg m}^{-3}$	1820 ( $\text{P}_4$ ) [293 K] 2690 (black) [293 K] 2200 (red) [293 K]
Molar Volume $\text{cm}^3$	17.02 ( $\text{P}_4$ )
Thermal Conductivity $\text{W m}^{-1} \text{K}^{-1}$	0.235 ( $\text{P}_4$ ) [300 K] 12.1 (black) [300 K]
Melting Point K	317.3 ( $\text{P}_4$ ) 683 (red, under pressure)
Boiling Point K	553 ( $\text{P}_4$ )
Number of Isotopes	10
Inner + outer Shells	2 + 1 = 3
Inner + outer Orbitals	10 + 5 = 15
Filling Orbital	3p <sup>3</sup>
Ground State Electron Configuration	[Ne] 3s <sup>2</sup> 3p <sup>3</sup>
Ground State Electron Configuration with free Orbitals (n= 3)	0, 0, 3



2, 8, 5



**Ground State Electron Configuration with compressed Orbitals (n=10)**

**0, 0, 10**



**Singularity**

$28 = 10 + 5 + 3 + 10$

	s	p	d	f	g	h	i	j
1	2							
2	2	6						
3	2	3	3	10				
4								
5								
6								
7								
8								

**Term Symbol**

$4S_{3/2}$

**Discovery**

Discovered by H. Brandt (Hamburg, Germany) in 1669

**Name Derived From**

Greek phosphoros meaning 'bringer of light'