

RELATION OF MONATOMIC ION CHARGES TO THE PERIODIC TABLE

The noble gas electronic configurations are the most stable available. Atoms either gain or lose electrons to achieve a noble gas electronic configuration. If electrons are gained, as in nonmetals, negative ions are formed. If electrons are lost, as in metals, positive ions are formed.

Note that hydrogen can both gain one or lose one electron. It normally loses one to form the hydrogen ion, H^{1+} . This ion is very odd because it is a simple proton. Its size is that of the proton, very small indeed. It has unique properties as a result of its small size. Hydrogen can gain an electron and form the hydride, H^{1-} ion, when it reacts with alkali or alkaline earth metals. The -ide suffix provides the clue that the charge is -1.

4-/+	3-	2-	1-		1+	2+	3+
			1		1		
			H	2	3	4	5
			H	He	Li	Be	B
6	7	8	9	10	11	12	13
C	N	O	F	Ne	Na	Mg	Al
14	15	16	17	18	19	20	31
Si	P	S	Cl	Ar	K	Ca	Ga
32	33	34	35	36	37	38	49
Ge	As	Se	Br	Kr	Rb	Sr	In
50	51	52	53	54	55	56	81
Sn	Sb	Te	I	Xe	Cs	Ba	Tl
82	83	84	85	86	87	88	
Pb	Bi	Po	At	Rn	Fr	Ra	
gain 4 (4-) lose 4 (4+)	gain 3 (3-)	gain 2 (2-)	gain 1 (1-)		lose 1 (1+)	lose 2 (2+)	lose 3 (3+)