

Answer on Question #54605 – Chemistry – General Chemistry

Question:

Discuss the basic properties of halogens

Answer:

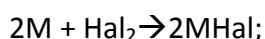
The halogens are non-metallic elements found in a group 17 of the periodic table, according to the IUPAC nomenclature. This group includes fluorine (F), chlorine (Cl), bromine (Br), iodine (I) and astatine (At). Elemental halogens are diatomic molecules.

Basic properties:

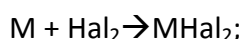
- Halogens are highly reactive
- Halogens have low melting and boiling points that increase down the group.
- Due to their high effective nuclear charge, halogens are highly electronegative.
- Poor thermal and electrical conductors in all phases.

Examples of reactions between halogens (Hal) and different compounds:

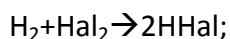
With alkali metals (M):



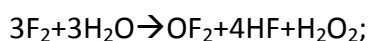
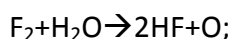
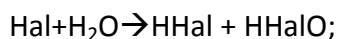
With alkaline-earth metals:



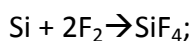
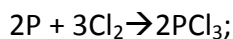
With H₂:



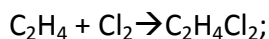
With H₂O:



With nonmetals:



With unsaturated hydrocarbons:



Halogens have physical properties typical for all nonmetals. Particular qualities of halogens caused by their high effective nuclear charge. Halogens have seven valence electrons in their outermost energy level, so they can gain an electron by reacting with atoms of other elements to satisfy the octet rule. The halogens become less reactive as they atomic number increases.