

Alkali Metals

The **alkali metals** comprise the group 1 elements, along with hydrogen. The alkali metals are lithium, sodium, potassium, rubidium, cesium, and francium. Hydrogen, although a member of group 1, is not usually considered an alkali metal.

The alkali metals are all silver-colored except for cesium, which can have a golden tint. All are soft and have low density, melting points, and boiling points.

In chemical terms, all of the alkali metals react aggressively with the halogens to form salts. They also react with water to form hydrogen gas and strong bases. The heavier alkali metals react more vigorously than the lighter ones.

of valence electrons: _____

Alkaline Earth Metals

The **alkaline earth metals** are group 2 on the periodic table. They include beryllium, magnesium, calcium, strontium, barium, and radium.

The alkaline earth metals are soft, silver colored metals. They have extremely high melting points; so high that they remain solids in fire. With the exception of beryllium and magnesium, they have different colors when burned in a flame: orange for calcium, bright red for strontium, green for barium, and crimson red for radium.

When these metals react with oxygen they form basic (alkaline) solutions. They react with the halogens to form salts

While the alkaline earth metals do react with water to form hydrogen gas and basic solutions, they are not as reactive as the alkali metals. For example, while lithium, sodium, and potassium react with water at room temperature, magnesium only reacts with steam and calcium with hot water. Beryllium will actually not react with water at all.

of valence electrons: _____

Chalcogens

The **chalcogens** are group 16 on the periodic table. This group is also known as the oxygen family. It consists of the elements oxygen, sulfur, selenium, tellurium, and polonium.

Oxygen and sulfur are nonmetals. Selenium, tellurium, and polonium are metalloids (that means, their electrical properties are somewhere between those of a metal and a nonmetal).

of valence electrons: _____

Halogens

The **halogens** are group 17 on the periodic table. They include fluorine, chlorine, bromine, iodine, and astatine. The halogens is the only group on the periodic table that contains elements in all three states of matter (solid, liquid, and gas) at room temperature.

When these elements are in the gaseous phase, they have very distinct colors. Fluorine gas is pale yellow, chlorine gas is yellow-green, bromine gas is red, and iodine gas is purple.

Astatine is a metalloid; all the others are nonmetals.

Halogens are highly reactive, and can be harmful to living things. Fluorine is one of the most reactive elements in existence. It is a corrosive and highly toxic gas. Both chlorine and bromine are used as disinfectants in drinking water, swimming pools, wounds, spas, dishes, and surfaces. They kill bacteria and other harmful microorganisms.

The halogens are so reactive that they can actually form compounds with themselves. For example, two atoms of chlorine will react to form Cl_2 (chlorine gas).

The halogens react with hydrogen to form strong acids.

of valence electrons: _____

Noble Gases

The **noble gases** are group 18 on the periodic table. They include helium, neon, argon, krypton, xenon, and radon.

The melting points and boiling points of each of the noble gases are very close together (differing by less than 10°C). Thus, they are only liquids over a very small temperature range. At room temperature, they are all colorless, odorless gases. They will not burn under ordinary conditions.

The noble gases do not participate in chemical reactions.

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of valence electrons: _____