

Sodium



0.5 grams sodium with a white hydroxide (NaOH) crust under paraffin oil. Original size in cm: 1 x 1.5 . Source: images-of-elements.com

Sodium is a metallic element that is abundant in the Earth's oceans. Having an atomic number of 11 and the atomic symbol Na, this element is a soft, silver-white, extremely reactive metal and a member of the alkali metals] within Group 1 of the periodic table. Sodium is an essential element to all animal life, as well as most plants.

Previous Element: Neon	11
Next Element: Magnesium	Na
	22.98976928
Physical Properties	
Color	silvery
Phase at Room Temp.	solid
Density (g/cm ³)	0.968
Hardness (Mohs)	.4
Melting Point (K)	371.01
Boiling Point (K)	1154.6
Heat of Fusion (kJ/mol)	2.594
Heat of Vaporization (kJ/mol)	99
Heat of Atomization (kJ/mol)	109
Thermal Conductivity (J/m sec K)	142
Electrical Conductivity (1/mohm cm)	209.6
Source	Halite (misc)
Atomic Properties	
Electron Configuration	[Ne]3s ¹
Number of Isotopes	1
Electron Affinity (kJ/mol)	52.868

First Ionization Energy (kJ/mol)	495.8
Second Ionization Energy (kJ/mol)	4562.4
Third Ionization Energy (kJ/mol)	6912.2
Electronegativity	0.93
Polarizability (Å ³)	23.6
Atomic Weight	22.98976928
Atomic Volume (cm ³ /mol)	23.8
Ionic Radius ²⁻ (pm)	---
Ionic Radius ¹⁻ (pm)	---
Atomic Radius (pm)	186
Ionic Radius ¹⁺ (pm)	116
Ionic Radius ²⁺ (pm)	---
Ionic Radius ³⁺ (pm)	---
Common Oxidation Numbers	+2
Other Oxid. Numbers	-1
Abundance	
In Earth's Crust (mg/kg)	2.36×10 ⁴
In Earth's Ocean (mg/L)	1.08×10 ⁴
In Human Body (%)	0.14 %
Regulatory / Health	
CAS Number	7440-23-5
OSHA Permissible Exposure Limit (PEL)	No limits
OSHA PEL Vacated 1989	No limits
NIOSH Recommended Exposure Limit	No limits
Sources: Mineral Information Institute Jefferson Accelerator Laboratory EnvironmentalChemistry.com	

Sodium's name is derived from the English word soda. Much like lithium, sodium is a light, very soft, silvery-white metal. It is even softer than lithium and can be cut with a knife. Sodium is very reactive with air and water. If a sufficient quantity comes in contact with water, sodium can actually explode. Sodium's low density allows it to float on water, although placing a large quantity of sodium in water would not be a good idea. Sodium is a very common element in the universe, being the fourth most abundant element on the Earth and very common in stars. Sodium light spectra is used by astronomers to identify stars that are similar to our Sun. The metal itself is used in making drugs, organic compounds and dyes. Due to its low melting point and high heat capacity, it also is used as a coolant in certain types of nuclear reactors. Sodium is replacing mercury in streetlights, providing a yellow-orange light, rather than the bluish-gray light of mercury vapor lights. Sodium compounds are used for a wide variety of household products, such as baking soda, lye, and table salt. Soap is a compound of sodium with fatty acids. Sodium carbonate (soda ash) is an important industrial chemical and used in making glass, paper, detergents and water treatment chemicals. Sodium's symbol (Na) comes from its Latin name natrium.

Sodium was discovered in 1807 Sir Humphry Davy.

Sodium is critical for life processes in animals and plants. It is necessary in the functioning of the nervous system and the brain in animals.

Sodium is an element that is vital to human life. Together with potassium and chlorine, it forms a very important part of blood plasma. Without sodium, our cells could not get the nutrients they need to survive. Sodium also allows our bodies to maintain the right blood chemistry and the correct amount of water in our blood. This element also allows our muscles to contract normally. Furthermore, our bodies need sodium to digest the food that we eat. Normal functioning of our nervous system also depends on this important element.

Humans require two to three grams of sodium daily, but excess sodium chloride is unhealthy for the cardiovascular system. Having the proper amount of sodium in our blood is so important that our bodies have special ways to maintain the right levels of this important element. For instance, if you eat a bag of salty potato chips (salt is actually a compound of sodium and chlorine), your body will soon sense that there is too much sodium in your body. Your body's first response will be to become thirsty. When you drink water, the sodium in your blood becomes diluted and then your kidneys can remove the excess sodium that you consumed when you ate the salty potato chips.

The foods that most Americans eat are very high in salt content (i.e. potato chips, french fries and popcorn). Salt is really a compound of sodium and chlorine. Therefore, most Americans consume far more sodium than our bodies actually need and it is uncommon that someone would not get enough of this element. One situation that a sodium deficiency can occur, however, is when you sweat a large amount from playing sports or exercising extensively. Your sweat contains a lot of sodium and if you sweat enough, you will lose too much sodium. This can lead to dehydration, weakness and mental confusion. Many athletes drink sports drinks that contain a lot of sodium, like Gatorade, to prevent this from happening.

The percentage amount in the human body is 0.14 %

Most sodium is obtained by electrolysis of molten mineral sodium chloride (halite). Some is obtained from trona and soda ash. It occurs in many other minerals as well, including amphibole, zeolite and cryolite. Halite is mined in the USA, China, Germany, Russia and Canada. Trona and soda ash are mined in the USA (Wyoming and California), Kenya, Mexico and Botswana.

Source:

<http://www.eoearth.org/view/article/51cbeee57896bb431f69b035/?topic=51cbfc79f702fc2ba8129ed6>