



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

ACTINIUM

Atomic symbol - Ac
Atomic weight - (227.0278)
Atomic number - 89
Electron configuration - 2-8-18-32-18-9-2
Oxidation states - +3
State of matter - solid
Heavy metal-ductile
Discovered in 1899 by André Louis Debierne
Boils at unknown, melts at unknown

Notes:

Actinium is a radioactive element that has a silvery white color. It's extremely radioactive and gives off a blueish glow in the dark.

ALUMINUM

Atomic Symbol - Al
Atomic weight - 26.981539
Atomic number - 13
Electron configuration - 2-8-3
Oxidation states - +3
State of matter - solid
Heavy metal-low melting
Discovered in 1827 by Friedrich Wöhler
Boils at 2467 °C, melts at 660 °C

Notes:

It occurs in a variety of silicate rocks, mainly mica, and feldspar. These rocks disintegrate by a process called weathering, in which moisture and carbon dioxide form clay, and ultimately aluminum oxide. The principal aluminum ore, bauxite, is formed by this process. Aluminum also occurs as cryolite. Because of its light weight, resistance to corrosion and tensile strength, it is excellent for the construction of the structure of a building. Because it can easily be rolled into sheets, much is used for aluminum foil. Aluminum powder is sometimes used in certain types of paint.

AMERICIUM

Atomic Symbol - Am
Atomic weight - (243.0614)
Atomic number - 95
Electron configuration - 2-8-18-32-25-8-2
Oxidation states - +3, +4, +5, +6
State of matter - synthetic
Heavy metal-ductile
Discovered in 1944 by Glenn T. Seaborg, Ralph A. James, Leon O. Morgan, and Albert Ghiorso
Boils at unknown, melts at above 850 °C

Notes:

Americium is a radioactive element that has a silvery white color that sullies in air. It has been used in fluid-density gauges, aircraft fuel gauges, and distance sensing devices

ANTIMONY

Atomic Symbol - Sb
Atomic weight - 121.75
Atomic number - 51
Electron configuration - 2-8-18-18-5
Oxidation states - ±3, +5
State of matter - solid
Heavy metal-low melting
Discovered in ancient times
Boils at 1380 °C, melts at 630.5 °C

Notes:

Antimony exists in many allotropic forms such as a bright silvery white metal which is hard and brittle. It is a poor conductor of electricity and heat and doesn't tarnish in air unless the air is moist in which case it slowly oxides. When antimony is combined with other metals it is extremely useful. It shows a rare characteristic of expanding when it solidifies and thus is good for casting and type metals. Combined with either tin, lead, or copper it forms antifriction alloys that are used in machinery bearings.

ARGON

Atomic Symbol - Ar
Atomic weight - 39.948
Atomic number - 18
Electron configuration - 2-8-8
Oxidation states - 0
State of matter - gas
Noble gas
Discovered in 1894 by Lord Rayleigh and Sir William Ramsay
Boils at -185.7 °C, melts at -189.2 °C

Notes:

Obtained from the fractional distillation of liquid air. Argon is used with nitrogen in filling electric light bulbs. Argon with helium is used as an inert atmosphere in scientific work.

ARSENIC

Atomic Symbol - As
Atomic weight - 74.92159
Atomic number - 33
Electron configuration - 2-8-18-5
Oxidation states - ±3, +5



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

State of matter - solid

Non-metal

Discovered in 1649

Melts at 814 °C

Notes:

Arsenic is found in both the yellow and gray crystalline forms. Gray arsenic is very brittle and tarnishes in the air. It sublimates under high heat. Because arsenic is highly toxic, it makes a good weed killer and insecticide. The radioactive isotopes have been used in medical diagnostic procedures.

ASTATINE

Atomic Symbol - At

Atomic weight - (209.9871)

Atomic number - 85

Electron configuration - 2-8-18-32-18-7

Oxidation states - ± 1 , +5, +7

State of matter - solid

Non-metal

Discovered in 1940 by Dale R. Corson and K.R. MacKenzie and Emilio Segrè
Boils at unknown temp.,
melts at unknown temp.

Notes:

Astatine is a radioactive element that was synthetically produced.

BARIUM

Atomic Symbol - Ba

Atomic weight - 137.327

Atomic number - 56

Electron configuration - 2-8-18-18-8-2

Oxidation states - +2

State of matter - solid

Light metal

Discovered in 1808 by Sir Humphry Davy

Boils at 1640 °C, melts at 725 °C

Notes:

Barium is used in metallurgy, pyrotechnics, radiology, and petroleum mining. It has a silvery-white lustre when cut. Like many other light elements, it is very reactive. It displaces hydrogen in water to form barium hydroxide.

BERKELIUM

Atomic Symbol - Bk

Atomic weight - (247.0703)

Atomic number - 97

Electron configuration - 2-8-18-32-27-8-2

Oxidation states - +3, +4

State of matter - synthetic

Heavy metal-ductile

Discovered in 1949 by Stanley G. Thompson, Albert Ghiorso, and Glenn T. Seaborg

Boils at unknown, melts at unknown

Notes:

Berkelium is a radioactive element.

BERYLLIUM

Atomic Symbol - Be

Atomic weight - 9.012182

Atomic number - 4

Electron configuration - 2-2

Oxidation states - +2

State of matter - solid

Light metal

Discovered in 1798 by Louis-Nicholas Vauquelin

Boils at 2970 °C, melts at 1278 °C

Notes:

Beryllium is very rare. Its principal ore is beryl, a complex aluminosilicate. When beryl has traces of chromium impurities, it's the emerald. When beryl contains traces of iron it's aquamarine. Beryllium does not occur free in nature. Beryllium is primarily used in alloys, especially copper to form non-sparking tools.

BISMUTH

Atomic Symbol - Bi

Atomic weight - 208.98037

Atomic number - 83

Electron configuration - 2-8-18-32-18-5

Oxidation states - +3, +5

State of matter - solid

Heavy metal-low melting

Discovered in 1450 by Basil Valentine

Boils at 1560 °C, melts at 271.3 °C

Notes:

Bismuth shows the greatest opposition to being magnetized of all metals. It has a tin-white color with a red tinge. Its alloys are used in fire-sprinkler heads, fire-door release lines, fuses, and other fire-detection and temperature-control devices.



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

BORON

Atomic Symbol - B
Atomic weight - 10.811
Atomic number - 5
Electron configuration - 2-3
Oxidation states - +3
State of matter - solid
Non-metal
Discovered in 1808 by Joseph Louis Gay-Lussac and Louis-Jacques Thénard
Boils at 2550 °C, melts at 2300 °C
Notes:
Boron is relatively rare, and is never found free, it's always found combined with oxygen in borates. The most important source of it is borax, or sodium tetraborate, found in the desert regions of California. Boric acid, another compound, is found in the volcanic regions of Italy. Boron is very hard and brittle, and is found in two allotropic forms, crystalline and amorphous. Boron is used in flares to give off a green color, it's used as an igniter in rockets, as filaments in aerospace structures, and in silicon semiconductors to improve conductivity.

BROMINE

Atomic Symbol - Br
Atomic weight - 79.904
Atomic number - 35
Electron configuration - 2-8-18-7
Oxidation states - ±1, +5
State of matter - liquid
Non-metal
Discovered in 1826 by Antoine-Jérôme Balard
Boils at 59 °C, melts at -7.2 °C
Notes:
Bromine which is very poisonous is a deep-red fuming liquid in the halogen family. It is the only non-metal that is a liquid at normal temperatures and pressures. It is extracted from ocean water by oxidation by chlorine. Bromine is used in making some dyes. Compounded with other elements it is widely used in medical practice because of its sedative action. Silver bromide is light sensitive and used in photography film. Exposed to potent bromine vapor can be fatal. The solid form of bromine is black. Bromine is a strong oxidizing agent and reacts violently with other elements resulting in light.

CADMIUM

Atomic Symbol - Cd
Atomic weight - 112.411
Atomic number - 48
Electron configuration - 2-8-18-18-2
Oxidation states - +2
State of matter - solid
Heavy metal-low melting
Discovered in 1817 by Friedrich Strohmeyer
Boils at 765 °C, melts at 321 °C
Notes:
Cadmium is a silvery-white metal that is as nearly as soft as tin and like tin emits a crackling sound when bent. It is a rare element. Most cadmium is used in electroplating various alloys to help prevent corrosion.

CALCIUM

Atomic Symbol - Ca
Atomic weight - 40.078
Atomic number - 20
Electron configuration - 2-8-8-2
Oxidation states - +2
State of matter - solid
Light metal
Discovered in 1808 by Sir Humphry Davy
Boils at 1484 °C, melts at 839 °C
Notes:
Calcium is just behind aluminum and iron in the list of abundant metals, and makes up 3% of the Earth's crust. Calcium Carbonate can be found as limestone, marble, chalk seashells, and calcite. It is found as dolomite when combined with magnesium. Calcium is a good reducing agent and forms heavy hydroxide coats with contact with moist air.

CALIFORNIUM

Atomic Symbol - Cf
Atomic weight - (251.0796)
Atomic number - 98
Electron configuration - 2-8-18-32-28-8-2
Oxidation states - +3
State of matter - synthetic
Heavy metal-ductile
Discovered in 1950 by Stanley G. Thompson, Kenneth Street, Jr., Albert Ghiorso, and Glenn T. Seaborg
Boils at unknown, melts at unknown
Notes:
Californium is a radioactive element.



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

CARBON

Atomic Symbol - C
Atomic weight - 12.011
Atomic number - 6
Electron configuration - 2-4
Oxidation states - +2, ±4
State of matter - solid
Non-metal
Discovered in ancient times
Sublimes, melts at 3600 °C
Notes:

Carbon is found free as the mineral graphite or diamonds. It is essential to all animal and plant life. Graphite in large crystals is mined, or is obtained by heating coke and pitch in furnaces at very high temperatures. Volatiles are driven off and large graphite crystals grow in the furnace. Graphite crystals are made up of sheets of carbon atoms and is black in color. Graphite is used as a lubricant and when molded with clay, forms pencil leads. Graphite is also used as electrodes for batteries and electric arc furnaces.

CERIUM

Atomic Symbol - Ce
Atomic weight - 140.115
Atomic number - 58
Electron configuration - 2-8-18-20-8-2
Oxidation states - +3, +4
State of matter - solid
Heavy metal-brittle
Discovered in 1803 by Jöns Jacob Berzelius and Wilhelm Hisinger
Boils at 3257 °C, melts at 798 °C
Notes:

Cerium is an iron grayish color that is about as soft and ductile as tin.

CESIUM

Atomic Symbol - Cs
Atomic weight - 132.90543
Atomic number - 55
Electron configuration - 2-8-18-18-8-1
Oxidation states - +1
State of matter - solid
Light metal
Discovered in 1860 by Robert Bunsen and Gustav Kirchhoff
Boils at 671 °C, melts at 28.5 °C
Notes:

Cesium was the first element to be discovered spectroscopically. It is a silvery-white metal that is extremely

reactive and becomes a liquid in a warm room. Cesium causes explosive reaction when dropped in water. Cesium atomic clocks have been built.

CHLORINE

Atomic Symbol - Cl
Atomic weight - 35.4527
Atomic number - 17
Electron configuration - 2-8-7
Oxidation states - ±1, +5, +7
State of matter - gas
Non-metal
Discovered in 1774 by Carl Wilhelm Scheele
Boils at -35 °C, freezes at -101 °C
Notes:

Chlorine is very poisonous because of its great activity. Also because of its activity it is not found free in nature. Chlorine is the most abundant halogen. Chlorine is found in seawater, rock salt beds, human gastric juices. Practically all chlorine comes from the electrolysis of brine, or a concentrated solution of salt. Chlorine has a sharp, disagreeable odor that attacks the skin and mucous membranes of the nose and throat. Much chlorine is used to bleach wood pulp for the paper industry and cotton and linen fabrics. Tap water is chlorinated to kill bacteria and likewise swimming pools.

CHROMIUM

Atomic Symbol - Cr
Atomic weight - 51.9961
Atomic number - 24
Electron configuration - 2-8-13-1
Oxidation states - +2, +3, +6
State of matter - solid
Heavy metal-brittle
Discovered in 1797 by Louis-Nicolas Vauquelin
Boils at 2482 °C, melts at 1890 °C
Notes:

Chromite is the chief ore of chromium. Chromium is bluish-white, brittle metal that is both hard and corrosion resistant. It is a very important steel alloy metal.

COBALT

Atomic Symbol - Co
Atomic weight - 58.93320
Atomic number - 27
Electron configuration - 2-8-15-2
Oxidation states - +2, +3
State of matter - solid



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

Heavy metal-ductile

Discovered in 1735 by Georg Brandt

Boils at 2908 °C, melts at 1495 °C

Notes:

Cobalt is a silvery metal with a bluish tint. Alloyed with steel, it is used as permanent magnets. Cobalt occurs mainly as smaltite. Cobalt compounds can be used as a catalyst to speed up reactions.

COPPER

Atomic Symbol - Cu

Atomic weight - 63.546

Atomic number - 29

Electron configuration - 2-8-18-1

Oxidation states - +1, +2

State of matter - solid

Heavy metal-ductile

Discovered in ancient times

Boils at 2595 °C, melts at 1083

Notes:

Its primary ores are chalcocite, chalcopyrite, and cuprite. Copper is soft and extremely ductile and malleable. Its a reddish brown. It is a very good conductor of electricity and is commonly found in electric wires. Alloyed with copper and zinc are known as brass.

CURIUM

Atomic Symbol - Cm

Atomic weight - (247.0703)

Atomic number - 96

Electron configuration - 2-8-18-32-25-9-2

Oxidation states - +3

State of matter - synthetic

Heavy metal-ductile

Discovered in 1944 by Glenn T. Seaborg, Ralph A. James, and Albert Ghiorso

Boils at unknown, melts at approx. 1340 °C

Notes:

Curium is a radioactive element that has a silvery color. Isotopes 242 and 244 are suited for use in space because they can be used as compact, long-lived sources of electricity from the conversion of heat from radioactive decay by thermoelectric and thermoionic devices.

DYSPROSIUM

Atomic Symbol - Dy

Atomic weight - 162.50

Atomic number - 66

Electron configuration - 2-8-18-28-8-2

Oxidation states - +3

State of matter - solid

Heavy metal-brittle

Discovered in 1886 by P.-É. Lecoq de Boisbaudran

Boils at 2335 °C, melts at 1409 °C

Notes:

A hard and reactive metal, dysprosium has few uses. Its compounds can be used as catalysts in oil refining, and components in some electronics. Near absolute zero, dysprosium is superconducting.

EINSTEINIUM

Atomic Symbol - Es

Atomic weight - (252.083)

Atomic number - 99

Electron configuration - 2-8-18-32-29-8-2

Oxidation states - +3

State of matter - synthetic

Heavy metal-ductile

Discovered in 1952 by Albert Ghiorso and co-workers

Boils at unknown, melts at unknown

Notes:

Einsteinium is a radioactive element.

ERBIUM

Atomic Symbol - Er

Atomic weight - 167.26

Atomic number - 68

Electron configuration - 2-8-18-30-8-2

Oxidation states - +3

State of matter - solid

Heavy metal-brittle

Discovered in 1843 by C.G. Mosander

Boils at 2510 °C, melts at 1522 °C

Notes:

Erbium is a metal with few uses. It is a grayish-silver color. It can be used as an infra-red absorbing glass and as an activator in some phosphorescent materials.

EUROPIUM

Atomic Symbol - Eu

Atomic weight - 151.965

Atomic number - 63

Electron configuration - 2-8-18-25-8-2

Oxidation states - +2, +3

State of matter - solid

Heavy metal-brittle

Discovered in 1896 by Eugène-Anatole Demarcay



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

Boils at 1597 °C, melts at 822 °C

Notes:

Europium is the least dense, softest, and most volatile element in the lanthanide series. It is usually found in the trivalent state.

FERMIUM

Atomic Symbol - Fm

Atomic weight - (257.0951)

Atomic number - 100

Electron configuration - 2-8-18-32-30-8-2

Oxidation states - +3

State of matter - synthetic

Heavy metal-ductile

Discovered in late 1952 to early 1953? by Albert Ghiorso and co-workers

Boils at unknown, melts at unknown

Notes:

Fermium is a radioactive element.

FLOURINE

Atomic Symbol - F

Atomic weight - 18.9984032

Atomic number - 9

Electron configuration - 2-7

Oxidation states - -1

State of matter - gas

Non-metal

Discovered in 1886 by Henri Moissan

Boils at -188 °C, freezes at -220 °C

Notes:

This is the most active member in the halogen family, and produces the most stable compounds. Flourine is very poisonous because of its great activity. It is so active that it is not found free in nature, but in the combined state, and is very abundant. It occurs as either the mineral flourine, or the mineral cryolite. Freon, the reffridgerant, contains flourine. Cryolite or sodium aluminum floride, is an important flux in the electrolytic production of aluminum metal. Compounds of flourine and carbon are important because of their heat and fire resistance. Flourine is found in tap water and toothpaste, which have benifical effects on the teeth. Other flourine compounds are used as insecticides and wood preservatives.

FRANCIUM

Atomic Symbol - Fr

Atomic weight - (223.0197)

Atomic number - 87

Electron configuration - 2-8-18-32-18-8-1

Oxidation states - +1

State of matter - solid

Light metal

Discovered in 1939 by Marguerite Perey

Boils at unknown, melts at unknown

Notes:

Francium is a radioactive element.

GADOLINIUM

Atomic Symbol - Gd

Atomic weight - 157.25

Atomic number - 64

Electron configuration - 2-8-18-25-9-2

Oxidation states - +3

State of matter - solid

Heavy metal-brittle

Discovered in 1880 by J.-C.- G. de Marignac and P.-É Lecoq de Boisbaudran

Boils at 3223 °C, melts at 1311 °C

Notes:

Gadolinium has a silvery-white color and is moderately ductile. It becomes ferromagnetic below 17 °C, and near absolute zero, becomes superconducting. It is used for some electronics, high-temperature refratories, and as an alloying agent.

GALLIUM

Atomic Symbol - Ga

Atomic weight - 69.723

Atomic number - 31

Electron configuration - 2-8-18-3

Oxidation states - +3

State of matter - solid

Heavy metal-low melting

Discovered in 1875 by Paul-Émile Lecoq de Boisbaudran

Boils at 2403 °C, melts at 29.78 °C

Notes:

Gallium liquifies just above room temperature. It is silvery white, and soft enough to be cut with a knife. It may take on a bluish tinge due to superficial oxidation. Gallium expands when solidified and supercools readily, sustaining its liquid form as low as 0 °C. It can be used as a coating for optical mirrors, as a liquid seal in strongly heated apparatus, and a substitute for mercury in ultraviolet lamps.



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

GERMANIUM

Atomic Symbol - Ge
Atomic weight - 72.61
Atomic number - 32
Electron configuration - 2-8-18-4
Oxidation states - +2, +4
State of matter - solid
Heavy metal-low melting
Discovered in 1886 by Clements Winkler
Boils at 2830 °C, melts at 937.4 °C
Notes:

Germanium is an important element used in the manufacture of transistors, and photocells. Germanium is never found free and is actually quite brittle even though the atoms of a germanium crystal are found in the same arrangement as carbon atoms in a diamond. It reacts quickly with the halogens to form tetrahalides.

GOLD

Atomic Symbol - Au
Atomic weight - 196.96654
Atomic number - 79
Electron configuration - 2-8-18-32-18-1
Oxidation states - +1, +3
State of matter - solid
Heavy metal-ductile
Discovered in ancient times
Boils at 2966 °C, melts at 1063 °C
Notes:

It is dense, precious, and has a bright yellow color. It is a good conductor of heat and electricity and is soft and very malleable and ductile. It is the malleablest (if that's even a word!) metal known to man. An ounce of it can be pounded in to a sheet of 300 square feet. In thin sheets it transmits green light. It is used in printed circuits and semiconductors.

HAFNIUM

Atomic Symbol - Hf
Atomic weight - 178.49
Atomic number - 72
Electron configuration - 2-8-18-32-10-2
Oxidation states - +4
State of matter - solid
Heavy metal-ductile
Discovered in 1923 by Dirk Coster and George Charles de Hevesy
Boils at 5400 °C, melts at 2150 °C
Notes:
Chemically similar to zirconium (40), hafnium is used as nuclear control rods.

HELIUM

Atomic Symbol - He
Atomic weight - 4.002602
Atomic number - 2
Electron configuration - 2
Oxidation states - 0
State of matter - gas
Noble gas element
Discovered in 1895 by Sir William Ramsay
Boils at -268.9 °C, melts at -272.2 °C
Solubility, ml./100 ml. water is 1.49
Notes:

Helium is obtained from natural gas deposits by liquefying all other constituents and collecting helium. The percentage obtained from these deposits may range from 1% to 2%.

HOLMIUM

Atomic Symbol - Ho
Atomic weight - 164.93032
Atomic number - 67
Electron configuration - 2-8-18-29-8-2
Oxidation states - +3
State of matter - solid
Heavy metal-brittle
Discovered in 1878 by J.L. Soret and M. Delafontaine
Boils at 2720 °C, melts at 140 °C
Notes:
One of the most paramagnetic sources known. It has a silvery color.

HYDROGEN

Atomic Symbol - H
Atomic weight - 1.00794
Atomic number - 1
Electron configuration - 1
Oxidation states - ±1
State of matter - gas
Alkali metal
Discovered in 1790 by Henry Cavendish
Boiling point: -252.8 °C
Melting point is -259.14 °C
Notes:
Free hydrogen is rare because of the reactivity of this element. Hydrogen is not very reactive at room temperature but at higher temperatures it burns vigorously, and often explosively, in air or oxygen to form water. In the presence of a catalyst and under pressure hydrogen will combine with vegetable oils to form solid fats used as shortening, this process is known as hydrogenation. This process is extensively used in the refining of oil products to increase the yields of



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

gasoline. It's also commonly used to make ammonia and many other chemical substances. Other uses are to fuel rockets and in fuel cells to generate electricity.

INDIUM

Atomic Symbol - In
Atomic weight - 114.82
Atomic number - 49
Electron configuration - 2-8-18-18-3
Oxidation states - +3
State of matter - solid
Heavy metal-low melting
Discovered in 1863 by Ferdinand Reich and Theodor Richter
Boils at 2080 °C, melts at 156.61 °C
Notes:
Indium is about as rare as silver. It has a silvery-white lustre. Like tin it emits a screeching sound when bent. It is used in coating aircraft engine bearings because it improves corrosion resistance and lets the bearing to retain a more adherent oil film.

IODINE

Atomic Symbol - I
Atomic weight - 126.90447
Atomic number - 53
Electron configuration - 2-8-18-18-7
Oxidation states - ±1, +5, +7
State of matter - solid
Non-metal
Discovered in 1811 by Bernard Courtois
Boils at 184 °C, melts at 113.5 °C
Notes:
Iodine has a black color and is crystalline. At room temperature iodine sublimates into a violet vapor that irritates the eyes, nose, and throat. It dissolves in alcohol and partially in water to make a brown colored solution.

IRIDIUM

Atomic Symbol - Ir
Atomic weight - 192.22
Atomic number - 77
Electron configuration - 2-8-18-32-15-2
Oxidation states - +3, +4
State of matter - solid
Heavy metal-ductile
Discovered in 1804 by Smithson Tennant
Boils at 4527 °C, melts at 2410 °C
Notes:
Very dense and rare, iridium has a silvery-white color. Its main use is in the form of platinum alloys.

IRON

Atomic Symbol - Fe
Atomic weight - 55.847
Atomic number - 26
Electron configuration - 2-8-14-2
Oxidation states - +2, +3
State of matter - solid
Heavy metal-ductile
Discovered in ancient times
Boils at 3000 °C, melts at 1535 °C
Notes:
Iron is relatively soft. It's silvery white. Iron is very ductile and malleable. It's also a good conductor of heat and electricity. It's strongly magnetic. The main ores of iron are hematite, magnetite (also known as lodestone), and pyrites (also known as fool's gold).

KRYPTON

Atomic Symbol - Kr
Atomic weight - 83.80
Atomic number - 36
Electron configuration - 2-8-18-8
Oxidation states - 0
State of matter - gas
Noble gas
Discovered in 1898 by Sir William Ramsay and Morris W. Travers
Boils at -152.3 °C, melts at -156.6 °C
Notes:
Having an octet structure, it would seem that krypton would not combine with other elements. But in the 1960's, it was discovered that it would combine with fluorine. Molecules of krypton consist of only one atom. About 20 radio- active isotopes have been created by nuclear fission of uranium and other elements. As a gas it is used in certain florescent lamps and special flash- lamps used in high-speed photography.

LANTHANUM

Atomic Symbol - La
Atomic weight - 138.9055
Atomic number - 57
Electron configuration - 2-8-18-18-9-2
Oxidation states - +3
State of matter - solid
Heavy metal-brittle
Discovered in 1839 by Carl Gustaf Mosander
Boils at 3454 °C, melts at 920 °C



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

Notes:

Lanthanum is ductile, malleable, silvery-white metal in the lanthanide series. Lanthanum has three allotropic forms. At -268 °C it becomes a superconductor.

LAWRENCIUM

Atomic Symbol - Lr
Atomic weight - (262.11)
Atomic number - 103
Electron configuration - 2-8-18-32-32-9-2
Oxidation states - +3
State of matter - synthetic
Heavy metal-ductile
Discovered in 1961 by Albert Ghiorso, T. Sikkeland, A.E. Larsh, and R.M. Latimer
Boils at unknown, melts at unknown
Notes:
Lawrencium is a radioactive element.

LEAD

Atomic Symbol - Pb
Atomic weight - 207.2
Atomic number - 82
Electron configuration - 2-8-18-32-18-4
Oxidation states - +2, +4
State of matter - solid
Heavy metal-low melting
Discovered in ancient times
Boils at 1744 °C, melts at 327.5 °C
Notes:
Lead is a soft silvery-white or gray metal. It is very malleable, ductile, and dense. It is used in bullets and in blocking X-Rays and other electromagnetic short-wave radiation. It is also used in vulcanizing rubber.

LITHIUM

Atomic Symbol - Li
Atomic weight - 6.941
Atomic number - 3
Electron configuration - 2-1
Oxidation states - +1
State of matter - solid
Light metal
Discovered in 1817 by Johan August Arfwedson
Boils at 1342 °C, melts at 180.5 °C
Specific heat 0.850
Atomic heat 6.0

Notes:

When heated sufficiently it emits light radiation that's red in color. Lithium is a good electron source in photoelectric cells and cyclotrons.

LUTETIUM

Atomic Symbol - Lu
Atomic weight - 174.967
Atomic number - 71
Electron configuration - 2-8-18-32-9-2
Oxidation states - +3
State of matter - solid
Heavy metal-brittle
Discovered in 1907-1908 by Carl Auer von Welsbach and Georges Urbain
Boils at 3315 °C, melts at 1656 °C
Notes:
Lutetium is the hardest and densest rare earth. The radioactive isotope has been used to compare the age of meteorites and the age of earth.

MAGNESIUM

Atomic Symbol - Mg
Atomic weight - 24.3050
Atomic number - 12
Electron configuration - 2-8-2
Oxidation states - +2
State of matter - solid
Light metal
Discovered in 1808 by Sir Humphry Davy
Boils at 1090 °C, melts at 649 °C
Notes:
Burns with a brilliant white color. It is an important structural metal. It's often used in either pure or alloyed form with aluminum in the construction of aircraft, and other objects requiring light weight. Powdered magnesium is sometimes used in place of aluminium in the thermite reaction.

MANGANESE

Atomic Symbol - Mn
Atomic weight - 54.93805
Atomic number - 25
Electron configuration - 2-8-13-1
Oxidation states - +2, +3, +4, +6, +7
State of matter - solid
Heavy metal-brittle
Discovered in 1774 by Carl Wilhelm Scheele
Boils at 2097 °C, melts at 1244 °C



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

Notes:

Manganese is quite abundant. It is a grey-white, hard, brittle metal which is essential to the process of steel making. Nearly all aluminum and magnesium alloys contain manganese for improved corrosion resistance.

MENDELEVIUM

Atomic Symbol - Md
Atomic weight - (258.10)
Atomic number - 101
Electron configuration - 2-8-18-32-31-8-2
Oxidation states - +2, +3
State of matter - synthetic
Heavy metal-ductile
Discovered in 1955 by Albert Ghiorso, Bernard G. Harvey, Gregory R. Choppin, Stanley G. Thompson, and Glenn T. Seaborg
Boils at unknown, melts at unknown
Notes:
Mendelevium is a radioactive element.

MERCURY

Atomic Symbol - Hg
Atomic weight - 200.59
Atomic number - 80
Electron configuration - 2-8-18-32-18-2
Oxidation states - +1, +2
State of matter - solid
Heavy metal-low melting
Discovered in ancient times
Boils at 356.9 °C, melts at -38.87 °C
Notes:
The only elemental metal that is liquid at room temperature. It has silvery- white color. Electricity discharged through mercury vapor produces a bluish glow with lots of ultraviolet light; a property utilized in ultraviolet, fluorescent, and mercury-vapor lamps. It is sometimes used in dental fillings. Mercury is toxic. It can be lethal if the vapors are breathed, come in contact with skin, or ingested as a soluble compound.

MOLYBDENUM

Atomic Symbol - Mo
Atomic weight - 95.94
Atomic number - 42
Electron configuration - 2-8-18-13-1
Oxidation states - +6
State of matter - solid
Heavy metal-ductile
Discovered in 1782 by Peter Jacob Hjelm
Boils at 5560 °C, melts at 2610 °C
Notes:

Molybdenum is a silvery-gray that is not found free in nature. Its properties resemble that of tungsten. The major use of this element is in strengthening and protecting against corrosion as an alloy.

NEODYMIUM

Atomic Symbol - Nd
Atomic weight - 144.24
Atomic number - 60
Electron configuration - 2-8-18-22-8-2
Oxidation states - +3
State of matter - solid
Heavy metal-brittle
Discovered in 1885 by Carl Auer von Welsbach
Boils at 3127 °C, melts at 1010 °C
Notes:
Used in special alloys and glasses, neodymium is a silvery-white color. It is used in electronics, manufacture of steel and in alloys; especially in cigarette lighter flints. In ceramics it is used as a glaze and to color glass. The crude oxide is used to counteract the green color in iron in glass; and the more pure compound is used in the manufacture of purple glass.

NEON

Atomic Symbol - Ne
Atomic weight - 20.1797
Atomic number - 10
Electron configuration - 2-8
Oxidation states - 0
State of matter - gas
Noble gas
Discovered in 1898 by Sir William Ramsay and Morris W. Travers
Boils at -246 °C, melts at -248.7 °C
Notes:
Obtained from the fractional distillation of liquid air. Its main use is in neon signs. Neon sign are made of helium, neon, argon, or mercury at different pressures. These are put into different colored glass which give off different colors.

NEPTUNIUM

Atomic Symbol - Np
Atomic weight - (237.0482)
Atomic number - 93
Electron configuration - 2-8-18-32-22-9-2
Oxidation states - +3, +4, +5, +6
State of matter - synthetic
Heavy metal-ductile
Discovered in 1940 by Edwin M. McMillan and Philip H.



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

Abelson

Boils at unknown, melts at 640 °C

Notes:

Neptunium is a radioactive element. It has a silvery color. It exists in three crystalline modifications; the alpha form is orthorhombic.

NICKEL

Atomic Symbol - Ni

Atomic weight - 58.69

Atomic number - 28

Electron configuration - 2-8-16-2

Oxidation states - +2, +3

State of matter - solid

Heavy metal-ductile

Discovered in 1751 by Baron Axle Fredrik Cronstedt

Boils at 2732 °C, melts at 1453 °C

Notes:

Nickel is ferromagnetic. It's a hard white metal that resists tarnish. It's one of the most important steel alloys. When divided into tiny pieces it becomes an excellent catalyst, especially in the hydrogenation of fats and oils. Nickel dioxide was used as the cathode in Edison's storage battery. Nickel compounds have become important in electroplating and various other things.

NIObIUM

Atomic Symbol - Nb

Atomic weight - 92.90638

Atomic number - 41

Electron configuration - 2-8-18-12-1

Oxidation states - +3, +5

State of matter - solid

Heavy metal-brittle

Discovered in 1801 by Charles Hatchett

Boils at 4927 °C, melts at 2468 °C

Notes:

Niobium is soft and ductile when in pure form. It's used in alloys, tools, dyes, and superconductive magnets. It's quite corrosion resistant but needs protection from oxidation at temperature in excess of 400 °C. It is useful in the manufacture of cryogenic electronic devices that draw low power.

NITROGEN

Atomic Symbol - N

Atomic weight - 14.00674

Atomic number - 7

Electron configuration - 2-5

Oxidation states - ±1, ±2, ±3, +4, +5

State of matter - gas

Non-metal

Discovered in 1772 by Daniel Rutherford

Boils at -195.8 °C, melts at -209.86 °C

Notes:

The principal source of combined nitrogen is the guano deposits found along the coast of Chile. These are bird droppings that accumulated over centuries and contain as much as 50% sodium nitrate. It is usually obtained by the fractional distillation of liquid air. The process of including nitrogen to combine chemically with other substances is known as the fixation of nitrogen. Lots of nitrogen is used in the fixation processes which produce the raw materials for fertilizers, explosives, drugs, and dyes. It is used in rooms which store explosives, and in light bulbs to lengthen the life of the filament by preventing its oxidation.

NOBELIUM

Atomic Symbol - No

Atomic weight - (259.1009)

Atomic number - 102

Electron configuration - 2-8-18-32-32-8-2

Oxidation states - +2, +3

State of matter - synthetic

Heavy metal-ductile

Discovered in 1958 by Albert Ghiorso, T. Sikkeland, J.R.

Walton, and Glenn T. Seaborg

Boils at unknown, melts at unknown

Notes:

Nobelium is a radioactive element.

OSMIUM

ATOMIC SYMBOL - Os

ATOMIC WEIGHT - 190.2

ATOMIC NUMBER - 76

ELECTRON CONFIGURATION - 2-8-18-32-14-2

OXIDATION STATES - +3, +4

STATE OF MATTER - SOLID

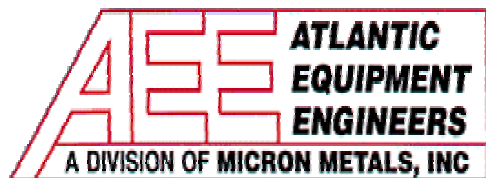
HEAVY METAL-DUCTILE

DISCOVERED IN 1804 BY SMITHSON TENNANT

BOILS AT 5000 °C, MELTS AT 3000 °C

Notes:

Osmium is the densest naturally occurring element. It has a gray-white color and is hard, and brittle. It has been used in phonograph needles.



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ated
ot
se is

OXYGEN

Atomic Symbol - O
Atomic weight - 15.9994
Atomic number - 8
Electron configuration - 2-6
Oxidation states - -2
State of matter - gas
Non-metal
Discovered in 1774 by Joseph Priestly
Boils at -183 °C, melts at -218.4 °C
Notes:
At high temperatures oxygen combines with most elements and many compounds, especially those containing carbon and hydrogen, to form oxides of all elements. A substance combining with oxygen is always oxidized, and all such combinations produce heat energy.

PALLADIUM

Atomic Symbol - Pd
Atomic weight - 106.42
Atomic number - 46
Electron configuration - 2-8-18-18-0
Oxidation states - +2, +4
State of matter - solid
Heavy metal-ductile
Discovered in 1803 by William Hyde Wollaston
Boils at 2927 °C, melts at 1552 °C
Notes:
Palladium is the lightest and has the lowest melting point of all of the platinum metals of transition Group VIII of the periodic table. A use is of a catalyst. It is a precious gray-white metal that is extremely ductile. Small amounts of palladium alloyed with gold produce the best white gold. Its chief use is for electrical contacts on telephone equipment.

PHOSPHORUS

Atomic Symbol - P
Atomic weight - 30.973762
Atomic number - 15
Electron configuration - 2-8-5
Oxidation states - ±3, +5
State of matter - solid
Non-metal
Discovered in 1669 by Hennig Brand
Boils at 280 °C, melts at 44.1 °C
Notes:
Too active to be found in nature. Most of it is found combined with oxygen. Its principal ores are phosphorite and apatite. White phosphorus is waxy, soft, and translucent which becomes brittle at 5.5 °C. It's crystalline and insoluble in water. It's extremely poisonous and reactive with oxygen.

ELEMENT PROPERTIES

Atomic number - 78
Electron configuration - 2-8-18-32-16-2
Oxidation states - +2, +4
State of matter - solid
Heavy metal-ductile
Discovered in 1557 by Julius Caesar Scaliger
Boils at 3827 °C, melts at 1769 °C
Notes:
Platinum is very heavy and very precious. It has a silvery-white color. It's soft and ductile and has good resistance to corrosion and chemical attack. It is used as crucibles, electrodes, and dishes in the lab for heating up materials. It also makes for a good catalyst.

PLUTONIUM

Atomic Symbol - Pu
Atomic weight - (244.0642)
Atomic number - 94
Electron configuration - 2-8-18-32-24-8-2
Oxidation states - +3, +4, +5, +6
State of matter - synthetic
Heavy metal-ductile
Discovered in 1940 by Glenn T. Seaborg, Edwin M. McMillian, Joseph W. Kennedy, and Arthur C. Wahl
Boils at 3235 °C, melts at 639.5 °C
Notes:
Plutonium is a radioactive, silvery colored metal that is used in nuclear reactors (fuel) and nuclear weapons. It is warm from alpha decay. It takes on yellow tarnish in air. Plutonium and elements of higher atomic number are radiological poisons because of high alpha emission and specific absorption in bone marrow. It has six allotropic forms.

POLONIUM

Atomic Symbol - Po
Atomic weight - (208.9824)
Atomic number - 84
Electron configuration - 2-8-18-32-18-6
Oxidation states - +2, +4
State of matter - solid
Heavy metal-low melting
Discovered in 1898 by Pierre and Marie Curie
Boils at 962 °C, melts at 254 °C
Notes:
Polonium is a radioactive element that is colored silver-gray or black. It is used in eliminating static electricity in paper rolling, sheet plastics, and synthetic fibers. It is also used on brushes for removing dust on photographic film.



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

POTASSIUM

Atomic Symbol - K
Atomic weight - 39.0983
Atomic number - 19
Electron configuration - 2-8-8-1
Oxidation states - +1
State of matter - solid
Light metal
Discovered in 1807 by Sir Humphry Davy
Boils at 760 °C, melts at 63.3 °C
Notes:
Too active to be found in nature. It's intensely reactive. More reactive than sodium or lithium. It's very soft and silvery. Excellent conductor of heat and electricity. When sufficiently heated it emits a violet color. Busts into flame when in contact with water. Alloyed with sodium it form an important heat transfer medium in nuclear power plants. Is a good electron source for cyclotrons and photoelectric cells.

PRASEODYMIUM

Atomic Symbol - Pr
Atomic weight - 140.90765
Atomic number - 59
Electron configuration - 2-8-18-21-8-2
Oxidation states - +3
State of matter - solid
Heavy metal-brittle
Discovered in 1885 by Carl Auer von Welsbach
Boils at 3212 °C, melts at 931 °C
Notes:
Praseodymium is used in special alloys and glasses. It is moderately soft, ductile, and malleable, and is a silvery color. Small amounts of praseodymium are used in a rare-earth alloy used to make cigarette lighter flints and high-strength, low-creep magnesium alloys used for jet-engine parts.

PROMETHIUM

Atomic Symbol - Pm
Atomic weight - (144.9127)
Atomic number - 61
Electron configuration - 2-8-18-23-8-2
Oxidation states - +3
State of matter - synthetic
Heavy metal-brittle
Discovered in 1947 by J.A. Marinsky, L.E. Glendenin, and C.D. Coryell
Boils at 2460 °C, melts at 1080 °C
Notes:
Promethium was the last of the rare-earth metals to be discovered. Its soft beta radiation can be converted into

electricity by sandwiching promethium and semiconductors such as silicon together; these "batteries" can last as long as 5 years in extreme temperatures.

PROTACTINIUM

Atomic Symbol - Pa
Atomic weight - (231.0359)
Atomic number - 91
Electron configuration - 2-8-18-32-20-9-2
Oxidation states - +4, +5
State of matter - solid
heavy metal-ductile
Discovered in 1913 by Kasimir Fajans and O.H. Göhring
Boils at unknown, melts at unknown
Notes:
Protactinium is a radioactive element.

RADIUM

Atomic Symbol - Ra
Atomic weight - (226.0254)
Atomic number - 88
Electron configuration - 2-8-18-32-18-8-2
Oxidation states - +2
State of matter - solid
Light metal
Discovered in 1898 by Pierre and Marie Curie and assistant G. Bémont
Boils at approx. 1737 °C, melts at approx. 700 °C
Notes:
Radium is used in cancer therapy and luminescent paint. Concentrated radium glows in the dark and gives off heat. It has a silvery white color.

RADON

Atomic Symbol - Rn
Atomic weight - (222.0176)
Atomic number - 86
Electron configuration - 2-8-18-32-18-8
Oxidation states - 0
State of matter - solid
Noble gas
Discovered in R.B. Owens and Ernest Rutherford
Boils at -62 °C, melts at -71 °C
Notes:
Radon is a radioactive element that gives off a soft yellow light to orange-red when in the solid state. A compound has been found called radon fluoride.



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

Notes:

Polonium is a radioactive element that is colored silver-gray or black. It is used in eliminating static electricity in paper rolling, sheet plastics, and synthetic fibers. It is also used on brushes for removing dust on photographic film.

RHENIUM

Atomic Symbol - Re
Atomic weight - 186.207
Atomic number - 75
Electron configuration - 2-8-18-32-13-2
Oxidation states - +4, +6, +7
State of matter - solid
Heavy metal-ductile
Discovered in 1925 by Ida and Walter Noddack and Otto Carl Berg
Boils at 5627 °C, melts at 3180 °C

Notes:

Rhenium is one of the most dense elements. The metal and its alloys have such uses as in fountain pen points, high-temperature thermocouples, catalysts, electrical contact points, instrument bearing points, and in electrical components. It has a silvery-white color.

RHODIUM

Atomic Symbol - Rh
Atomic weight - 102.90550
Atomic number - 45
Electron configuration - 2-8-18-16-1
Oxidation states - 3
State of matter - solid
Heavy metal-ductile
Discovered in 1803 by William Hyde Wollaston
Boils at 3727 °C, melts at 1966 °C

Notes:

Rhodium's primary use is that in an alloying agent for hardening platinum. It is a precious silvery white metal that is not corroded or tarnished in the atmosphere at room temperature. It is also highly resistant to attack by acids.

RUBIDIUM

Atomic Symbol - Rb
Atomic weight - 85.4678
Atomic number - 37
Electron configuration - 2-8-18-8-1
Oxidation states - +1
State of matter - solid
Light metal
Discovered in 1861 by Robert Bunsen and Gustav Kirchhoff
Boils at 688 °C, melts at 38.9 °C

Notes:

Rubidium is the second second most reactive metal and has a silvery white lustre. It is very soft. It ignites spontaneously in the presence of air and reacts violently with water.

RUTHENIUM

Atomic Symbol - Ru
Atomic weight - 101.07
Atomic number - 44
Electron configuration - 2-8-18-15-1
Oxidation states - +3
State of matter - solid
Heavy metal-ductile
Discovered in 1844 by Karl Karlovich Klaus
Boils at 3900 °C, melts at 2250 °C

Notes:

Ruthenium is useful in hardening platinum and palladium as an alloy. Silver-gray ruthenium looks like platinum but is harder, more brittle, and rarer. Ruthenium is found among the fission outputs of uranium and plutonium in nuclear reactors. Ruthenium has four allotropic forms. The metal doesn't tarnish in air at normal temperatures and resists attack to many strong acids.

SCANDIUM

Atomic Symbol - Sc
Atomic weight - 44.955910
Atomic number - 21
Electron configuration - 2-8-9-2
Oxidation states - +3
State of matter - solid
Heavy metal-brittle
Discovered in 1879 by Lars Fredrick Nilson
Boils at 2832 °C, melts at 1539 °C

Notes:

Very few uses of this unusual metal have been discovered. Its low density and high melting point suggest applications as an alloying agent for devices requiring light-weight metals. It emits a strong gamma radiation with an 85-day half-life. The chemistry of this element is similar to aluminium and titanium.

SELENIUM

Atomic Symbol - Se
Atomic weight - 78.96
Atomic number - 34
Electron configuration - 2-8-18-6
Oxidation states - +4, +6, -2
State of matter - solid
Non-metal



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

Discovered in 1818 by Jöns Jacob Berzelius

Boils at 685 °C, melts at 50 or 217 °C

Notes:

Selenium occurs in both the amorphous and gray states, that is why it has two melting points. Both are listed respectively. It is very similar in both chemical and physical properties to sulphur and tellurium. It is a metalliod. In the amorphous form it is red when in powder form and adn black when in a glassy form. It can convert light directly into electricity and thus makes a good element for solar cells. It can convert AC power to DC and thus makes a good rectifier.

SILICON

Atomic Symbol - Si

Atomic weight - 28.0855

Atomic number - 14

Electron configuration - 2-8-4

Oxidation states - +2, ±4

State of matter - solid

Non-metal

Discovered in 1824 by Jöns Jacob Berzelius

Boils at 2355 °C, melts at 1415 °C

Notes:

Silicon is never found free, but always combined with oxygen. The two principal combinations of silicon are silicon dioxide, which is found as flint, quartz, sand, sandstone, agate, and amethyst, and silicate rocks. These rocks range from garnet to asbestos.

SILVER

Atomic Symbol - Ag

Atomic weight - 107.8682

Atomic number - 47

Electron configuration - 2-8-18-18-1

Oxidation states - 1

State of matter - solid

Heavy metal-ductile

Discovered in ancient times

Boils at 2212 °C, melts at 960.8 °C

Notes:

Silver is a precious metal that has the highest conductivity of electricity and heat of all metals. It is very rare, for every 10,000,000 parts of iron, there are about 2 parts of silver. The largest percent of silver is found in lead sulfide (galena). Silver bearing ores are called argentiferous. The biggest demand for silver comes from the photographic industry because silver is used in photographic film. The silvering of mirrors requires the action of a chemical reducing agent such as invert sugar, Rochelle salt, or formaldehyde.

SODIUM

Atomic Symbol - Na

Atomic weight - 22.989768

Atomic number - 11

Electron configuration - 2-8-1

Oxidation states - +1

State of matter - solid

Light metal

Discovered in 1807 by Sir Humphry Davy

Boils at 883 °C, melts at 97.8 °C

Notes:

Sodium is too reactive too active to be found in nature. When sufficiently heated, it burns a yellow color. It reacts vigorously with water, so that when large chunks of it are dropped in it, it often explodes. Most metallic sodium is used in the manufacture of tetraethyl lead, an antiknock additive for gas. Other uses are for the manufacture of a variety of organic chemicals, to light highways, and the reduction of titanium metal. This is also a good electron source for photoelectric cells and cyclotrons.

STRONTIUM

Atomic Symbol - Sr

Atomic weight - 87.62

Atomic number - 38

Electron configuration - 2-8-18-8-2

Oxidation states - +2

State of matter - solid

Light metal

Discovered in 1808 by Sir Humphrey Davy

Boils at 1384 °C, melts at 769 °C

Notes

Strontium is an ingredient in red signal flares. It has a silvery lustre but oxidizes quickly to turn yellow. To prevent oxidation it is stored in kerosene. It is ductile and malleable and can easily conduct current. Strontium-90 is considered the most dangerous constite of radioactive fallout. The heat it radioactive strontium emits due to radioactive decay can be used to generate small amounts of electricity. When finely divided it spontaneously ignites in the presence of air.

SULFUR

Atomic Symbol - S

Atomic weight - 32.066

Atomic number - 16

Electron configuration - 2-8-6

Oxidation states - +4, +6, -2

State of matter - solid

Non-metal



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

Discovered in ancient times

Boils at 444.7 °C, melts at 112.8 °C

Notes:

Because sulfur is the least reactive non-metal at room temperature, much occurs free in nature. Chemically combined, sulfur is found as sulfide ores, sulfate ores, in petroleum, and in organic matter. Free sulfur is obtained by the Frasch process. Sulfur has three allotropic forms, rhombic sulfur, stable at room temperature, monoclinic sulfur, which is stable between 95.6 °C and the melting point of sulfur, and amorphous sulfur, a plastic rubbery form. All forms slowly revert back to the rhombic form if allowed to stand at room temperature. Its uses are in the making of sulfur dioxide, sulfuric acid, matches, black gunpowder, insecticides and sulfa drugs. Much is used in vulcanizing rubber a process where the wearing properties of rubber increases.

TANTALUM

Atomic Symbol - Ta

Atomic weight - 180.9479

Atomic number - 73

Electron configuration - 2-8-18-32-11-2

Oxidation states - +5

State of matter - solid

Heavy metal-ductile

Discovered in 1802 by Anders Gustaf Ekeberg

Boils at 5425 °C, melts at 2996 °C

Notes:

Tantalum is a very hard, silvery-gray metal. Properties are similar to that of the element niobium (41). Some uses for this rare metal are: electrolytic capacitors and corrosion resistant chemical equipment.

TECHNETIUM

Atomic Symbol - Tc

Atomic weight - (97.9072)

Atomic number - 43

Electron configuration - 2-8-18-13-2

Oxidation states - +4, +6, +7

State of matter - synthetic

Heavy metal-ductile

Discovered in 1937 by Carlo Perrier and Emilio Segrè

Boils at 4877 °C, melts at 2172 °C

Notes:

Technetium was the first synthetically produced element. It is a radioactive metal that was produced by bombarding molybdenum (42), with deuterons in a cyclotron. It becomes a superconductor when the temperature drops to 11.2 K or below. Its properties are similar to rhenium (75). It has been said that technetium compounds and alloys are very effective in the prevention of corrosion.

TELLURIUM

Atomic Symbol - Te

Atomic weight - 127.60

Atomic number - 52

Electron configuration - 2-8-18-18-6

Oxidation states - +4, +6, -2

State of matter - solid

Non-metal

Discovered in 1782 by Franz Joseph Müller von Reichenstein

Boils at 989.9 °C, melts at 449.8 °C

Notes:

Tellurium is a semi-metallic element that resembles both physically and chemically to selenium (34). Tellurium exists in two forms: a silvery-white, brittle, crystalline solid that has a metallic lustre and a amorphous powder that is dark grey to brown. It burns in air and oxygen with a blue-green flame.

TERBIUM

Atomic Symbol - Tb

Atomic weight - 158.92534

Atomic number - 65

Electron configuration - 2-8-18-27-8-2

Oxidation states - +3

State of matter - solid

Heavy metal-brittle

Discovered in 1843 by Carl Gustaf Mosander

Boils at 3041 °C, melts at 1360 °C

Notes:

Terbium has a silvery-white color.

THALLIUM

Atomic Symbol - Tl

Atomic weight - 204.3833

Atomic number - 81

Electron configuration - 2-8-18-32-18-3

Oxidation states - +1, +3

State of matter - solid

Heavy metal-low melting

Discovered in 1861 by Sir William Crookes

Boils at 1457 °C, melts at 303.5 °C

Notes:

Thallium is poisonous and has few uses. It has a metallic lustre that dulls to bluish gray in air. Two crystalline forms of thallium are known.

THORIUM

Atomic Symbol - Th

Atomic weight - 232.0381

Atomic number - 90



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

Electron configuration - 2-8-18-32-18-10-2

Oxidation states - +4

State of matter - solid

Heavy metal-ductile

Discovered in 1828 by Jöns Jacob Berzelius

Boils at about 4000 °C, melts at about 1700 °C

Notes:

Thorium is a radioactive element. It is silvery white but when exposed to air turns gray or black.

THULIUM

Atomic Symbol - Tm

Atomic weight - 168.93421

Atomic number - 69

Electron configuration - 2-8-18-31-8-2

Oxidation states - +3

State of matter - solid

Heavy metal-brittle

Discovered in 1879 by Per Teodor Cleve

Boils at 1727 °C, melts at 1545 °C

Notes:

Useful in small portable X-Ray units, thulium has few other uses.

TIN

Atomic Symbol - Sn

Atomic weight - 118.710

Atomic number - 50

Electron configuration - 2-8-18-18-4

Oxidation states - +2, +4

State of matter - solid

Heavy metal-low melting

Discovered in ancient times

Boils at 2260 °C, melts at 231.88 °C

Notes:

Tin is a silvery-white metal with a blueish tinge. Tins most wide uses are as solder, metals used for bearings and plating steel cans for food containers. It is nontoxic, malleable, and ductile. Tin exists in two allotropes, white and gray tin. Gray tin changes to white tin when heated to 55.8 °F and more rapidly at 212 °F. The reverse happens at low temperatures.

TITANIUM

Atomic Symbol - Ti

Atomic weight - 47.88

Atomic number - 22

Electron configuration - 2-8-10-2

Oxidation states - +2, +3, +4

State of matter - solid

Heavy metal-brittle

Discovered in 1795 by Martin Heinrich Klaproth

Boils at 3260 °C, melts at 1675 °C

Notes:

Titanium constitutes 0.6% of the Earth's crust. It occurs as rutile, ilmenite, ilmenite. It is very light and strong and fairly corrosion resistant. Its use as a structural metal is increasing. It is extremely reactive with both oxygen, and nitrogen. In steel this metal is ferrititanium. Its principal uses are as special gears and tools.

TUNGSTEN

Atomic Symbol - W

Atomic weight - 183.85

Atomic number - 74

Electron configuration - 2-8-18-32-12-2

Oxidation states - +6

State of matter - solid

Heavy metal-ductile

Discovered in 1783 by Juan José and Fausto Elhuyar

Boils at 5927 °C, melts at 3410 °C

Notes:

Used in steel because tungsten is a strong metal. Tungsten has a second name of Wolfram. It has a nickel-white to grayish lustre.

URANIUM

Atomic Symbol - U

Atomic weight - 238.0289

Atomic number - 92

Electron configuration - 2-8-18-32-21-9-2

Oxidation states - +3, +4, +5, +6

State of matter - solid

Heavy metal-ductile

Discovered in 1789 by Martin Heinrich Klaproth

Boils at 3818 °C, melts at 1132.3 °C

Notes:

Uranium is a radioactive element that is the heaviest naturally occurring element. It is an important nuclear fuel. One pound of uranium renders about the same amount of energy as three million pounds of coal. It has a silvery white color. It is ductile, malleable, and competent of taking a high polish. Uranium-238 after being absorbed by neutrons and undergoing negative beta decay becomes the element plutonium.

VANADIUM

Atomic Symbol - V

Atomic weight - 50.9415

Atomic number - 23

Electron configuration - 2-8-11-2



13 FOSTER STREET
BERGENFIELD, NJ 07621 USA
ISO 9002 REGISTERED FIRM

TEL: 800-486-2436

TEL: 1-201-384-5606 FAX: 1-201-387-0291

Website: <http://www.micronmetals.com>

ELEMENT PROPERTIES

Oxidation states - +2, +3, +4, +5
State of matter - solid
Heavy metal-brittle
Discovered in 1801 by Andrès Manuel del Rio
Boils at 3000 °C, melts at 1890 °C

Notes:

Vandium is quite rare. It is a silvery-white soft metal. Alloyed with steel and iron, high-strength structural steel and wear-resistant cast iron can be produced.

XENON

Atomic Symbol - Xe
Atomic weight - 131.29
Atomic number - 54
Electron configuration - 2-8-18-18-8
Oxidation states - 0
State of matter - gas
Noble gas
Discovered in 1898 by Sir William Ramsay and Morris W. Travers

Boils at -107.1 °C, melts at -111.9 °C

Notes:

Xenon is a heavy and extremely rare gas. It is inert, meaning it does not react with other elements and has an octet atomic structure. It is colorless, odorless, and tasteless. Xenon is used in high-speed photography for lamps that produce intense, short flashes of light. Xenon flash lamps are used to activate ruby lasers. It was the first noble gas to combine with other elements in 1962 by Neil Bartlet (that was previously thought to be impossible.)

YTTERBIUM

Atomic Symbol - Yb
Atomic weight - 173.04
Atomic number - 70
Electron configuration - 2-8-18-32-8-2
Oxidation states - +2, +3
State of matter - solid
Heavy metal-brittle
Discovered in 1878 by J.-C.-G. de Marignac
Boils at 1193 °C, melts at 824 °C

Notes:

Ytterbium has few commercial uses. It is soft and silvery-white in color. It has two allotropic forms.

YTTRIUM

Atomic Symbol - Y
Atomic weight - 88.90585
Atomic number - 39
Electron configuration - 2-8-18-9-2

Oxidation states - +3
State of matter - solid
Heavy metal-brittle
Discovered in 1794 by Johan Gadolin
Boils at 3337 °C, melts at 1523 °C

Notes:

Yttrium is used for red phosphorus in color TV's. It is a silvery metal, ductile, and fairly reactive. Yttrium is the first rare earth element discovered. Yttrium can occur as a by-product of nuclear fission. It is an important element in the high-tech superconductor, yttrium barium copper oxide.

ZINC

Atomic Symbol - Zn
Atomic weight - 65.39
Atomic number - 30
Electron configuration - 2-8-18-2
Oxidation states - +2
State of matter - solid
Heavy metal-low melting
Discovered in the 13th century by Indians
Boils at 907 °C, melts at 419 °C

Notes:

Zinc, a silvery white metal, is used extensively in galvanized iron.

ZIRCONIUM

Atomic Symbol - Zr
Atomic weight - 91.224
Atomic number - 40
Electron configuration - 2-8-18-10-2
Oxidation states - +4
State of matter - solid
Heavy metal-brittle
Discovered in 1824 Jöns Jacob Berzelius
Boils at 3578 °C, melts at 1852 °C

Notes:

Zirconium is characteristically found in S-type stars