Stable isotopes of zinc available from ISOFLEX

Isotope	Z(p)	N(n)	Atomic Mass	Natural Abundance	Enrichment Level	Chemical Form
Zn-64	29	35	63.929146	48.60%	>99.00%	Metal
Zn-64	29	35	63.929146	48.60%	>99.00%	Oxide
Zn-66	29	37	65.926036	27.90%	≥98.70%	Metal
Zn-66	29	37	65.926036	27.90%	≥98.70%	Oxide
Zn-67	29	38	66.927131	4.10%	≥89.60%	Metal
Zn-67	29	38	66.927131	4.10%	≥89.60%	Oxide
Zn-67	29	38	66.927131	4.10%	≥89.60%	Sulphate
Zn-68	29	39	67.924847	18.80%	>99.00%	Metal
Zn-68	29	39	67.924847	18.80%	>99.00%	Oxide
Zn-70	29	41	69.925325	0.60%	>95.00%	Metal
Zn-70	29	41	69.925325	0.60%	≥98.70%	Oxide

Zinc was discovered in 1746 by Andreas Marggraf. It takes its name from the German word *zink,* which means “point” or “tine” and refers to the form of zinc crystals after smelting. Centuries earlier, zinc ores were used for making brass, a mixture of copper and zinc.

Zinc is a shining white metal with a bluish-gray luster (called “spelter”) and is brittle at room temperature. It is a good conductor of electricity, is soluble in acids and alkalis, and is insoluble in water. It has a hexagonal close-packed structure. Zinc is diamagnetic and is also highly electropositive, replacing less electropositive metals from their aqueous salt solutions or melts. The metal is attacked by mineral acids. Reactions with sulfuric and hydrochloric acids produce hydrogen.

Zinc is attacked by moist air at room temperatures. Dry air causes no reaction at ambient temperatures, but the metal combines with dry oxygen rapidly above 225 ºC. Zinc reacts with carbon dioxide in the presence of moisture at ordinary temperatures, forming a hydrated basic carbonate. The metal, on heating with dry halogen gases, yields zinc halides. However, in the presence of moisture, the reaction occurs rapidly at ambient temperatures. The metal dissolves in hot solutions of caustic alkalis to form zincates and to evolve hydrogen.

Some important applications of zinc include galvanizing steel, producing die castings, as a chemical addition to rubber and paints, in dry cells, in making electrodes, and as a reducing agent. Zinc forms numerous alloys, including brass, nickel silver, German silver, commercial bronze, soft solder, aluminum solder and spring brass. Zinc is also an essential nutrient element required for the growth of animals.

As an essential nutrient, zinc is not regarded as toxic. However, the metal fumes, oxide fumes and chloride fumes can produce adverse inhalation effects. Ingestion of soluble salts can cause nausea.

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Isotopes for Science, Medicine and Industry

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Properties of Zinc

Name	Zinc
Symbol	Zn
Atomic number	30
Atomic weight	65.39
Standard state	Solid at 298 °K
CAS Registry ID	7440-66-6
Group in periodic table	12
Group name	None
Period in periodic table	4
Block in periodic table	d-block
Color	Bluish pale gray
Classification	Metallic
Melting point	419.60 °C
Boiling point	907 °C
Vaporization point	907 ºC
Thermal conductivity	116.00 W/(m·K) at 298.2 °K
Electrical resistivity	5.92 μΩ·cm at 20 °C
Electronegativity	1.6
Specific heat	0.39 kJ/kg K
Heat of vaporization	119.00 $kJ \cdot mol^{-1}$
Heat of fusion	7.35 $kJ \cdot mol^{-1}$
Density of solid	7.14 g/cm^3
Electron configuration	$[Ar]3d^{10}4s^2$
Atomic radius	1.34 Å
Ionic radius	0.60 Å (coordination number 4) and 0.74 Å (coordination number 6)
Oxidation state	+2

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