

Group 12 / IIB; Zinc Group

Basics

- All elements of the zinc family have a rather low melting point, mercury (Hg) is the only metal liquid at room temperatures.
- Zinc (Zn; don't mix up with tin), tin (Sn) and Mercury (Hg) have been known in ancient times, tin is needed for making good tin-bronze and zinc for making brass. Zinc is still heavily used for coating iron and steel to make it more or less rust-proof.
- Zinc and tin are not particularly poisonous or dangerous; for mercury (Hg) and cadmium (Cd) the opposite is true. While the use of mercury is more and more restricted (it is still indispensable for fluorescent light), some cadmium compounds like cadmium sulfide (CdS) or cadmium telluride (CdTe) are important semiconductors, in particular for solar cells.

Table of Basic Data

Name <i>(German)</i>	Zink <i>Zink</i>	Cadmium <i>Cadmium</i>	Quecksilber <i>Mercury</i>
Atomic number	30	48	80
Atomic mass [u]	65,39	112,41	200,59
Melting point [K]	692	594	234,1
Melting point [°C]	419	321	-38,9
Melting point [°F]	786.2	609.8	-38
Boiling point [K]	1181	1040	630
Density [g/cm ³]	7,13	8,65	13,55
Ionization energy [eV]	9,4	10,4	10,4
Electronegativity	1,7	1,5	1,5
Atomic radius [pm]	138	154	157
Ionic radius [pm]	83	103	112
Oxidation numbers	2	1, 2	1, 2
Lattice type Transformation temp. [°C]	hcp -	hcp -	fcc -
Lattice constant [Å] (a or c)	2,66 4,95	2,97 5,61	1,57 3,0
Young's - Modulus [GPa]	92,2	50	?
Therm. expansion coefficient α [10 ⁻⁶ K ⁻¹]	?	?	?

- In case of doubt all numbers are for room temperatures
- fcc = [face centered cubic](#); lattice const. = a
- bcc = [body centered cubic](#)
- sc = [simple cubic](#)
- hp = simple [hexagonal](#)

hcp = [hexagonal close packed](#); lattice constants a and c.

op = [simple orthorhombic](#), [monoclinic](#), [triclinic](#)

tp = [simple tetragonal](#)

dia = [diamond structure](#)

r = [trigonal](#) or rhomboedral trigonal