

MENDELEEV'S PREDICTIONS FOR "EKA-SILICON"

Among the predictions made by Mendeleev were the existence, and the properties, of several undiscovered elements. One of these elements was the element now called Germanium; Mendeleev called it "eka-silicon," meaning "beyond silicon" on his table.

Chemical or physical property	Predicted in 1871 by Mendeleev	Properties of Germanium (discovered in 1886)
Atomic weight	About 72	72.59
Appearance	Dark gray metal	Gray metal
Density	5.5 g/cm ³	5.47 g/cm ³
Melting point	High	958° C
Chemical properties	Slightly attacked by HCl, will not react with NaOH	Not dissolved by HCl; does not react with NaOH
How element would be isolated in pure form	By reaction of K ₂ EF ₆ with metallic sodium, or from its oxide	By reaction of K ₂ GeF ₆ with metallic sodium
Specific heat	0.31 J/g °C	0.32 J/g °C
Formula of oxide, and how obtained	EO ₂ , formed by heating in air or oxygen	GeO ₂ , formed by heating in air or oxygen
Density of oxide	4.7 g/cm ³	4.70 g/cm ³
Melting point of oxide	High	1100 °C
Reaction of oxide with water	Will form hydrated compound, soluble in acid and easily reprecipitated.	Forms Ge(OH) ₄ , soluble in acids, easily reprecipitated with base or by dilution.
Formula of chloride	ECl ₄	GeCl ₄
Properties of chloride	Volatile liquid, B.P. under 100 °C, density 1.9 g/cm ³	Volatile liquid, B.P. 86 °C. density 1.88 g/cm ³
Formula of sulfide	ES ₂	GeS ₂
Properties of sulfide	Insoluble in water but soluble in ammonium sulfide	Insoluble in water but soluble in ammonium sulfide