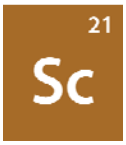
Stable Isotopes of Scandium

Isotope	Z(p)	N(n)	Atomic Mass	Natural Abundance	Nuclear Spin
Sc-45	21	24	44.955910	100.00%	7/2-



Scandium was discovered in 1879 by Lars Fredrik Nilson in the minerals euxenite and gadolinite, which had not yet been found anywhere except in Scandinavia. Its name originates from the Latin word *Scandia*, which means “Scandinavia.”

Scandium is a silvery white solid that is soft and light and turns slightly yellow when exposed to air. It is chemically similar to the rare earths. It does not tarnish in air, and it decomposes in water. It exhibits two allotropic modifications: a *hexagonal close-packed structure* that is stable up to 1335 ºC transforms into a *body-centered cubic form* above 1335 ºC. Scandium is strongly electropositive. It reacts with oxygen, forming its only oxide, Sc_2O_3. The reaction is slow on bulk metal at ordinary temperatures but rapid above 500 ºC. The metal reacts with water, liberating hydrogen. Scandium metal reacts rapidly with most acids, liberating hydrogen and forming salts upon evaporation of the solution.

The metal is used to produce high-intensity lights. Its iodide is added to mercury vapor lamps to form very bright indoor lights. Radioactive Scandium-46 is used as a tracer for crude oil.

Properties of Scandium

Name	Scandium
Symbol	Sc
Atomic number	21
Atomic weight	44.956
Standard state	Solid at 298 °K
CAS Registry ID	7440-20-2
Group in periodic table	3
Group name	None
Period in periodic table	4
Block in periodic table	d-block

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Properties of Scandium (continued)

Color	Silvery white
Classification	Metallic
Melting point	1541 °C
Boiling point	2831 °C
Thermal conductivity	15.80 W/(m·K) at 298.2 °K
Electrical resistivity	61.00 μΩ·cm at 22 °C
Electronegativity	1.30
Specific heat	0.57 kJ/kg K
Heat of vaporization	318.00 $kJ \cdot mol^{-1}$
Heat of fusion	16.00 $kJ \cdot mol^{-1}$
Density of solid	2.99 g/cm^3
Electron configuration	$[Ar]3d^1 4s^2$
Atomic radius	1.62 Å
Ionic radius	Sc^{3+}: 0.75 Å (coordination number 6)
Oxidation state	+3

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