



### Key Properties

Atomic Mass	[226]
Category	Alkaline Earth Metals
State at 20°C	solid
Melting Point	696°C
Boiling Point	1500°C
Density	5.5
Electron Config	[Rn] 7s2
Electronegativity	0.9
Year Discovered	1898
Discovered By	Marie & Pierre Curie

### Did You Know?

- 1 It was discovered by Marie and Pierre Curie, who laboriously extracted a tiny amount from tons of uranium ore.
- 2 For decades, radium was used in self-luminous paints for the dials of watches, clocks, and aircraft instruments, until the severe health risks to the dial painters became known.
- 3 The \
- 4 It is over a million times more radioactive than the same mass of uranium.
- 5 The element's name comes from the Latin word 'radius', meaning 'ray', because of the intense radiation it emits.

#### APPEARANCE

Radium is a silvery-white, highly radioactive metal.

#### SUPERHERO PERSONA

*"The Glow-in-the-Dark, a hero from a bygone era who painted the world with a dangerous, radioactive light."*

#### EVERYDAY CONNECTION

Radium is found in the glowing hands on an antique watch or clock.

#### POP CULTURE

Radium's tragic history is tied to the Radium Girls, who suffered radiation poisoning from luminous paint.

### Radium: The Highly Radioactive Metal

Radium is a soft, silvery, highly radioactive metal named after its intense radioactivity. Its glow is so strong that it can make the air around it shine faintly blue. Radium forms naturally as part of the radioactive decay chain of uranium.

### Why Is Radium Useful?

Because of the health dangers linked to its strong radioactivity, radium has very limited modern uses. However, it does have one important medical application:

**Targeted Cancer Therapy:** The isotope radium-223 is used to treat prostate cancer that has spread to the bones. Since radium behaves chemically like calcium, bones absorb it easily. Once inside, the alpha particles it emits kill cancer cells while causing less harm to surrounding healthy tissue.

**Historical Use – Luminous Paint:** In the early 20th century, radium was used in glow-in-the-dark paints for watch dials, clocks, and instrument panels. However, this practice was banned once its severe health risks became known.

### Biological Role & Natural Abundance

Radium has no biological role and is extremely toxic due to its radioactivity.

It is very rare in nature, found in tiny amounts in uranium ores. To extract just 1 milligram of radium, the Curies had to process ten tonnes of pitchblende ore. Today, less than 100 grams per year are produced worldwide, usually from spent nuclear fuel rods.

### History of Discovery

1898: Marie and Pierre Curie discovered radium while studying uranium ores. After months of painstaking chemical separation, they identified it as a brand-new element because its spectrum showed unknown lines.

1911: Marie Curie and André Debierne succeeded in isolating pure radium metal by electrolyzing radium chloride with a mercury cathode.