



Key Properties

Atomic Mass	158.925
Category	Lanthanides
State at 20°C	solid
Melting Point	1359°C
Boiling Point	3230°C
Density	8.23
Electron Config	[Xe] 4f96s2
Electronegativity	null
Year Discovered	1843
Discovered By	Carl Gustaf Mosander

Did You Know?

- 1 It is a key component in producing the green phosphor used in trichromatic lighting, such as fluorescent lamps and modern TV and smartphone screens.
- 2 The alloy Terfenol-D, made with terbium, dysprosium, and iron, expands or contracts when exposed to a magnetic field (a property called magnetostriction) and is used in advanced sonar systems and sensors.
- 3 Like its neighbors yttrium, erbium, and ytterbium, it is named after the village of Ytterby in Sweden.
- 4 It is a silvery-white metal that is soft enough to be cut with a knife.
- 5 It is used as a dopant in solid-state devices and as a crystal stabilizer in fuel cells that operate at high temperatures.

APPEARANCE

Terbium is a silvery-white, malleable, rare earth metal.

SUPERHERO PERSONA

"The Green-Screen, the hero who brings the vibrant green to energy-efficient lights and TV screens."

EVERYDAY CONNECTION

Terbium is found in the green phosphor in a low-energy fluorescent light bulb.

POP CULTURE

Terbium is a key part of Terfenol-D, an alloy that changes shape in magnetic fields used in sonar systems.

Terbium: The Element That Puts the Sound in a Window

Terbium is a soft, silvery metal and part of the lanthanide series (rare earth elements). It's prized for its unusual magnetic and optical properties, which give it a starring role in modern electronics, lighting, and even sound technology.

Why Is Terbium Useful?

Terbium's special abilities make it a key player in high-tech materials:

Smart Materials: An alloy of terbium, dysprosium, and iron called Terfenol-D can change its shape when exposed to a magnetic field (a property called magnetostriction). This allows it to create loudspeakers that turn flat surfaces—like a window pane—into a speaker!

Lighting: Terbium is used in fluorescent lamps and low-energy light bulbs to create light that looks closer to natural white.

X-ray Technology: Terbium helps make safer medical X-rays by allowing the same image quality with shorter exposure times, reducing the patient's radiation dose.

Electronics & Lasers: Its optical properties make it useful in solid-state devices and laser systems.

Natural Abundance & History

Terbium is never found in pure form—it's always mixed with other rare earths in minerals like monazite and bastnaesite. Extracting it is difficult and requires ion exchange and solvent extraction. The pure metal is produced by reducing terbium fluoride with calcium.

1843 – Discovery: Swedish chemist Carl Gustaf Mosander discovered terbium while studying the mineral yttrium. He separated it into new oxides, one of which was terbium oxide, with its distinct yellow color. This was one of the first steps in the long, complicated process of identifying the many rare earth elements, which are often found together.

Biological Role

Terbium has no known biological role and is considered to have low toxicity.