

Holmium (Ho) is a **silvery-white, rare-earth metal with the atomic number 67, known for its strong magnetic properties and ability to absorb neutrons**, making it useful in magnets, nuclear reactors, and medical applications. [1, 2, 3, 4, 5, 6]

Here's a more detailed breakdown: [2, 3, 7]

Key Properties and Characteristics: [2, 3, 7]

- **Appearance:** Holmium is a silvery-white metal. [2, 3, 7]
- **Magnetic Properties:** It has a high magnetic moment and is ferromagnetic at temperatures below 19 K (-254.2 °C; -425.5 °F), making it useful in creating strong magnetic fields. [1, 2]
- **Neutron Absorption:** Holmium is a good absorber of neutrons, making it useful in nuclear reactors to control chain reactions. [3, 8]
- **Discovery:** It was discovered in 1878 by Swiss chemists Marc Delafontaine and Jacques-Louis Soret. [9, 10]
- **Name Origin:** The name "holmium" comes from the Latin word "Holmia," meaning Stockholm, the native city of Per Teodor Cleve, who also contributed to its discovery. [9, 10]
- **Location in Periodic Table:** Holmium is a lanthanide, a group of elements also known as rare earth elements, located in the f-block of the periodic table. [5, 9, 11]
- **Abundance:** While considered a rare earth element, holmium is 20 times more abundant than silver. [12, 13]
- **Uses:** [5, 6]
 - **Magnets:** Holmium is used in the production of magnets, especially in devices requiring strong and stable magnetic fields, such as MRI machines. [5, 6]
 - **Nuclear Reactors:** Its neutron absorption properties make it useful in controlling nuclear reactions. [3, 8]
 - **Medical Applications:** Holmium garnets are used in lasers for medical and dental applications, and holmium-166 is used in some cancer treatments. [4, 5, 14]
 - **Other Applications:** Holmium is also used as a dopant in garnets, cubic zirconia, and glass, and its compounds have unique spectral and magnetic properties. [5, 15]
- **Chemical Properties:** Holmium exhibits a stable trivalent state, meaning it predominantly forms compounds in the +3 oxidation state. [15]
- **Radioactive Isotopes:** Naturally occurring holmium consists entirely of a single isotope, holmium-165, which is not radioactive. The longest-lived radioactive isotope is holmium-163 with a half-life of 4,570 years. [16]

Generative AI is experimental.

[1] <https://en.wikipedia.org/wiki/Holmium>

[2] <https://www.britannica.com/science/holmium>

[3] <https://periodic-table.rsc.org/element/67/holmium>

- [4] <https://www.mayoclinic.org/tests-procedures/holmium-laser-prostate-surgery/about/pac-20384871>
- [5] <https://www.americanelements.com/ho.html>
- [6] <https://www.stanfordmaterials.com/blog/holmium-properties-and-applications.html>
- [7] <https://study.com/learn/lesson/holmium-element-in-periodic-table-symbol-facts-uses.html>
- [8] <https://byjus.com/chemistry/holmium/>
- [9] <https://engineering.purdue.edu/REE/rare-earth-elements/holmium>
- [10] <https://www.livescience.com/38360-facts-about-holmium.html>
- [11] <https://pubchem.ncbi.nlm.nih.gov/compound/Holmium>
- [12] <https://www.lenntech.com/periodic/elements/ho.htm>
- [13] <https://thechemicalelements.com/holmium/>
- [14] <https://www.advancingnuclearmedicine.com/products/holmium-166>
- [15] <https://www.samaterials.com/blog/holmium-element-properties-and-uses.html>
- [16] <https://edu.rsc.org/elements/holmium/2000022.article>
- [-] <https://edu.rsc.org/elements/holmium/2000022.article>

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