

The Silver Elemental Discovery

Physical Science Presentation



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What is Silver?

An introduction to Silver





The History of Silver

Silver is one of the first five metals and elements discovered (though we don't know who discovered) and used by humans with the oldest known use of this element way back before 4000 BC and around 200 BC. It's even been used in prehistoric times as well.

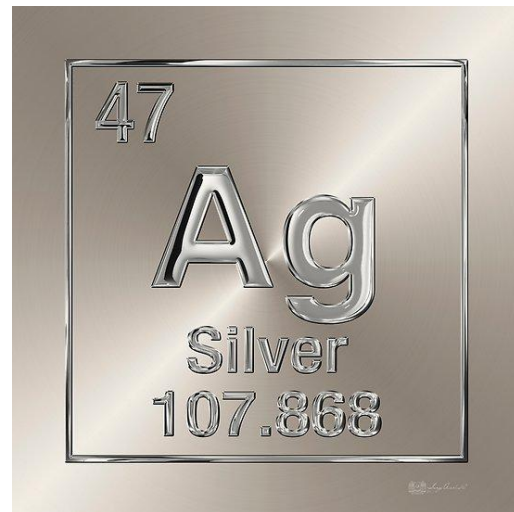


Oldest silver coin ever found (211 BC, Roman)



Silver as an Element (Periodic Table)

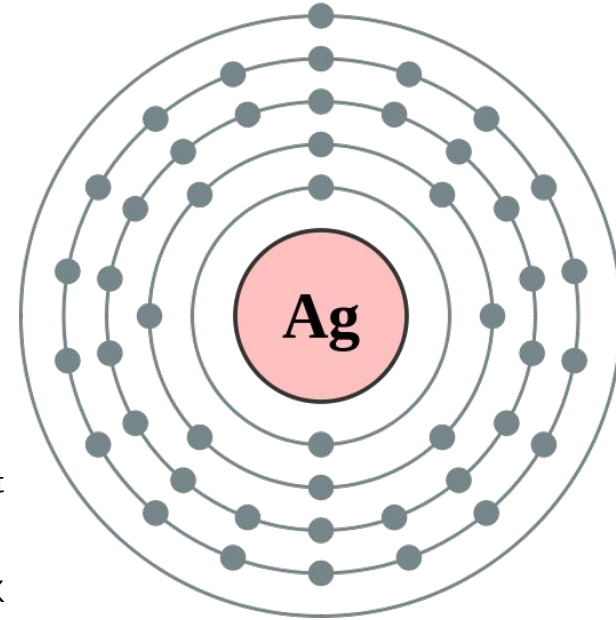
- **Symbol-** Ag
- **Atomic Number-** 47
- **Atomic Mass-** 107.868
- **Series-** Transition Metal
- **Melting Point-** 1763.2°F / 961.78°C / 1234.93°K
- **Boiling Point-** 3924°F / 2162°C / 2435°K
- **Electronegativity (influence on reactivity)-** 1.93
- **Electron Configuration-** [Kr] 4d¹⁰5s¹
- **Number of Valence Electrons-** 1





Silver as an Element (Periodic Table) [Continued...]

- **Neutrons-** 61
- **Electrons-** 47
- **Protons-** 47
- **Energy Levels-** 5
- **Elemental/Atomic Radius-** 0.144 nm
- **Density (g cm^{-3})-** 10.5
- **Conductivity (electrical conductive qualities)-** Silver is the most conductive element
- **Specific Heat (at 20°C)-** 0.233 (in J/gm K) / 0.0558 (in cal/gm K or Btu/lb F) / 24.9 (in Molar C J/mol K)
- **Universal Abundance-** Silver has a universal abundance of $6 \times 10^{-8}\%$ being the 68th most abundant element in the Earth's crust and 65th in cosmic



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About Silver

Silver Facts and more information





The Uses of Silver

Silver is a soft, ductile, malleable, lustrous metal with the highest electrical and thermal conductivity of all metal along with the ability to be stable in oxygen and water.

Because of this, silver is used for a variety of purposes such as coins, jewelry, machines, silverware, medical supplies, food additive/coloring, electrical contacts, silver-cadmium/zinc batteries, mirror production, .

About 30% of silver produced is used in the photographic industry. mostly as silver nitrate.





The Rarity of Silver

Nuggets and segments of natural silver metal can be found in minerals, mines, and sometimes in rivers, but but they are pretty rare.





Does it present any danger?

Silver is considered to be non-toxic. However, most silver salts are poisonous and some can possibly be carcinogenic.





Interesting, Important, and Unusual Facts

- Silver and Lead are often found in nature together
- The name of element is derived from the ancient German name for silver, 'seolfor'
- Silver's chemical symbol, Ag, is an abbreviation of the Latin word for silver, 'Argentum.'
- It tarnishes when exposed to sulfur compounds in air or water that cause it to form a black sulfide layer
- Silver is the best known reflector of visible light
- Silver compounds were used successfully to prevent infection in World War I
- Silver costs \$120 per 100g



The Producers of Silver





Demand of Silver For:

- Batteries
- EO
- Anti-bacterial purposes
- Bearings

The High Demand of Silver





Website Sources

- <https://www.chemicool.com/elements/silver.html>
- www.rsc.org/periodic-table/element/47/silver
- www.webelements.com/silver/electronegativity.html
- www.reference.com/science/many-valence-electrons-silver-149a06696f745020
- www.princeton.edu/~maelabs/mae324/glos324/silver.htm
- www.thoughtco.com/the-most-conductive-element-606683
- <http://hyperphysics.phy-astr.gsu.edu/hbase/Tables/sphtt.html>
- <https://nature.berkeley.edu/classes/eps2/wisc/ag.html>
- <http://periodictable.com/Properties/A/UniverseAbundance.v.log.html>



Picture Sources

- ◉ <https://g.foolcdn.com/image/?url=https%3A%2F%2Fg.foolcdn.com%2Feditorial%2Fimages%2F504983%2Fsilver.jpg&w=700&op=resize>
- ◉ https://secure.i.telegraph.co.uk/multimedia/archive/01568/coin_1568660c.jpg
- ◉ <https://ih1.redbubble.net/image.290964538.8693/flat,550x550,075,f.u5.jpg>
- ◉ https://upload.wikimedia.org/wikipedia/commons/thumb/2/22/Electron_shell_047_Silver_-_no_label.svg/600px-Electron_shell_047_Silver_-_no_label.svg.png
- ◉ <http://3.bp.blogspot.com/-hKaFluD3Mks/Tqrt9xbFuWI/AAAAAAAAABM/GnvkFiGbs-M/s1600/SilverUSGOV.gif>
- ◉ http://www.lbma.org.uk/assets/blog/article_images/Alch71Newman.jpg
- ◉ https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQKCCS-zuw1gX9DAW9FkBKH08W7X0ym7_y_Ne9uRh8QXK7T1C8N
- ◉ https://cdn-images-1.medium.com/max/1600/0*_1vAOCm|xu3gT2SO.gif
- ◉ https://vignette.wikia.nocookie.net/sonic/images/1/10/Sonic_with_silver_.png/revision/latest?cb=20090611205154
- ◉ <https://commodity.com/wp-content/uploads/2017/12/biggest-silver-producers.png>
- ◉ https://www.kitco.com/news/2014-12-11/20141211_SI-map.JPG