

# Tungsten (Вольфрам)

Tungsten is an metal alloy that is used in many ways.



Tungsten Lead

21 <b>Sc</b> 44.956	22 <b>Ti</b> 47.867	23 <b>V</b> 50.942	24 <b>Cr</b> 51.996	25 <b>Mn</b> 54.938	26 <b>Fe</b> 55.845	27 <b>Co</b> 58.933	28 <b>Ni</b> 58.693	29 <b>Cu</b> 63.546	30 <b>Zn</b> 65.38	31 <b>Ga</b> 69.723	32 <b>Ge</b> 72.63
39 <b>Y</b> 88.906	40 <b>Zr</b> 91.224	41 <b>Nb</b> 92.906	42 <b>Mo</b> 95.96	43 <b>Tc</b> [97.91]	44 <b>Ru</b> 101.07	45 <b>Rh</b> 102.91	46 <b>Pd</b> 106.42	47 <b>Ag</b> 107.87	48 <b>Cd</b> 112.41	49 <b>In</b> 114.82	50 <b>Sn</b> 118.71
71 <b>Lu</b> 174.97	72 <b>Hf</b> 178.49	73 <b>Ta</b> 180.95	74 <b>W</b> 183.84	75 <b>Re</b> 186.21	76 <b>Os</b> 190.23	77 <b>Ir</b> 192.22	78 <b>Pt</b> 195.08	79 <b>Au</b> 196.97	80 <b>Hg</b> 200.59	81 <b>Tl</b> 204.38	82 <b>Pb</b> 207.2
103 <b>Lr</b> [262.11]	104 <b>Rf</b> [265.12]	105 <b>Db</b> [268.13]	106 <b>Sg</b> [271.13]	107 <b>Bh</b> [270]	108 <b>Hs</b> [277.15]	109 <b>Mt</b> [276.15]	110 <b>Ds</b> [281.16]	111 <b>Rg</b> [280.16]	112 <b>Cn</b> [285.17]	113 <b>Uut</b> [284.18]	114 <b>Ff</b> [289.19]

# Color

Tungsten is usually silver it can range from;

- ◉ Gray
- ◉ Dark Gray
- ◉ Silver
- ◉ Platinum (Color)



# History

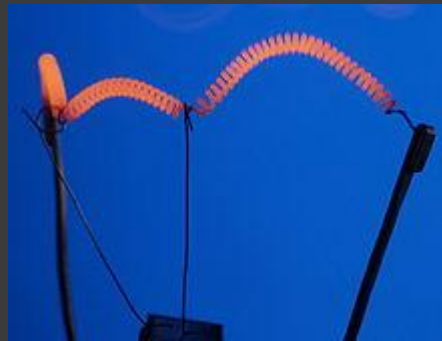
- In 1781/1782, the Spanish nobleman(дворянин), Juan José de D´Elhuyar studied metallurgical chemistry with Prof Bergman and gathered information about the work on the mineral tungsten.



*Juan José de Elhuyar  
Discoverer of Tungsten*

# Luster (блеск)

Tungsten has a shiny (блестящий) metallic luster.



# Hardness (Твердость)

Tungsten is a 7.5-8 on the Moh's Hardness Scale.

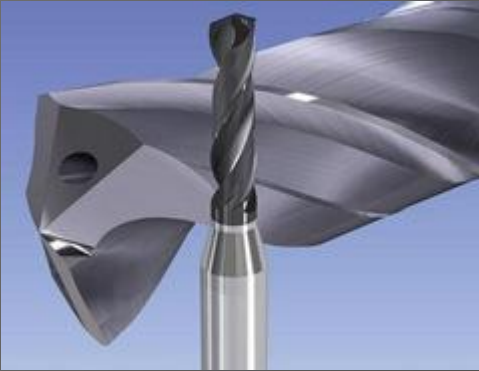
Harder;(тверже)  
Corundum(

Softer;(мягче)  
Apatite  
(апатит)



# APPLICATION

## Cemented carbide



## Alloys



## Electronics & electrical industries



## Chemical applications

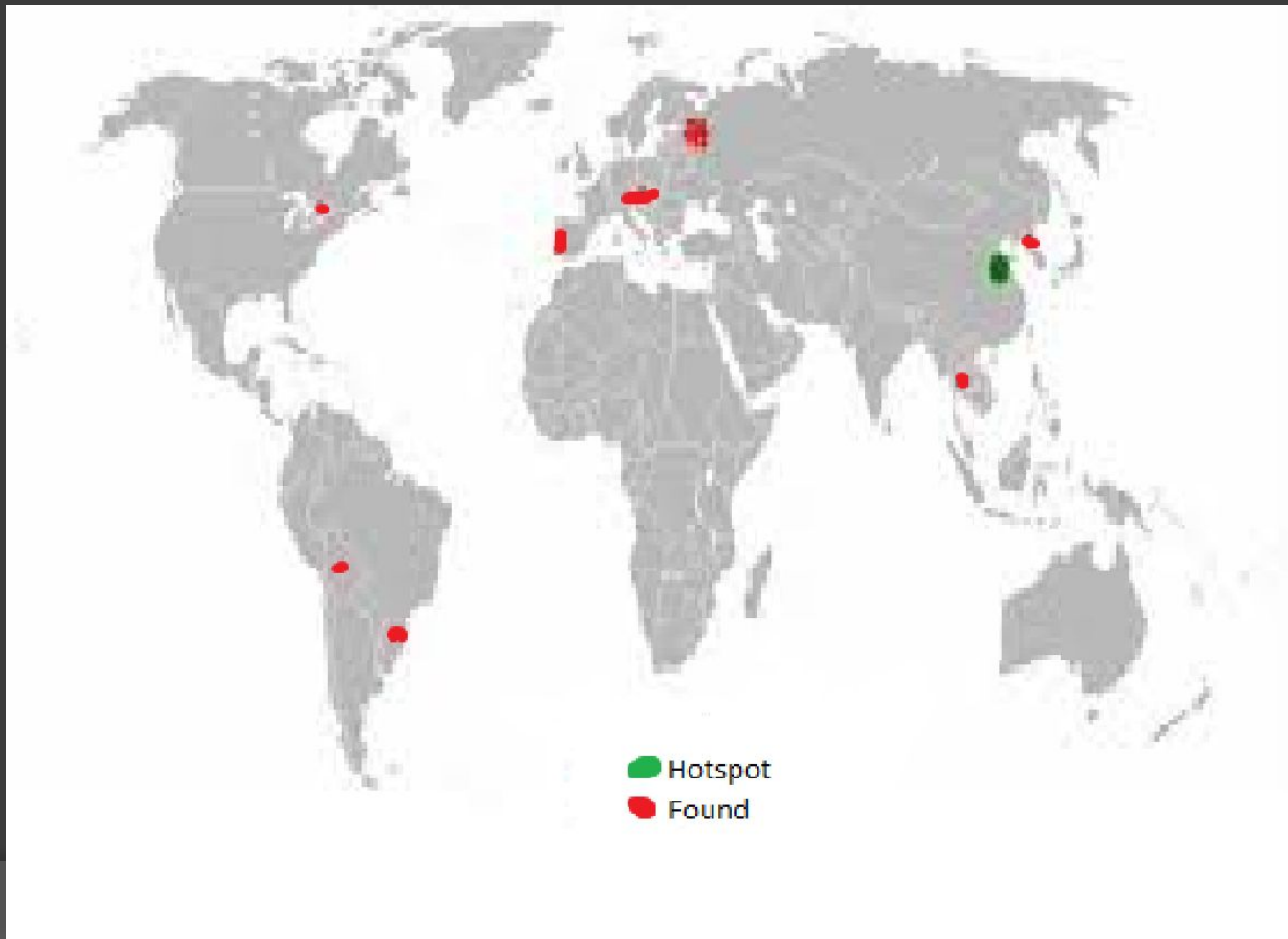


# Crystal Shape

Tungsten does not have a crystal shape. it is a metal not a crystal.

# Where Tungsten is found

47% of  
Tungsten is  
found in China





# Uses

- Tank armor
- Jewelry
- Anti-tank weapons
- High speed tools
- Car parts



Thank you for attention

