

Metals																	
Alkali metals																	
Alkaline-earth metals																	
Transition metals																	
Other metals																	
Nonmetals																	
Hydrogen																	
Semiconductors																	
Halogens																	
Noble gases																	
Other nonmetals																	
6 — Atomic number																	
C — Symbol																	
Name																	
Average atomic mass																	
Key:																	
Carbon 12.0107																	
Group 1																	
Group 2																	
Group 3																	
Group 4																	
Group 5																	
Group 6																	
Group 7																	
Group 8																	
Group 9																	
Group 10																	
Group 11																	
Group 12																	
Group 13																	
Group 14																	
Group 15																	
Group 16																	
Group 17																	
Group 18																	

† Estimated from currently available IUPAC data.

• The systematic names and symbols for elements greater than 109 will be used until the approval of trivial names by IUPAC.

A team at Lawrence Berkeley National reported the discovery of elements 116 and 118 in June 1999. The same team retracted the discovery in July 2001. The discovery of element 114 has been reported but not confirmed.

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The atomic masses listed in this table reflect the precision of current measurements. (Values listed in parentheses are those of the element's most stable or most common isotope.) In calculations throughout the text, however, atomic masses have been rounded to two places to the right of the decimal.

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Metals

- Alkali metals
- Alkaline-earth metals
- Transition metals
- Other metals

Nonmetals

- Hydrogen
- Semiconductors
- Halogens
- Noble gases
- Other nonmetals

6 — Atomic number
C — Symbol
Carbon — Name
12.0107 — Average atomic mass

Key:

1. Direct combination of two elements will produce a binary compound.
2. Metal oxides and carbon dioxide react to produce a metal carbonate ($-\text{CO}_3$).
3. Metal oxides and water react to produce a metal hydroxide ($-\text{OH}$).
4. Nonmetal oxides and water react to produce an acid

1. Binary compounds break down into their component elements
2. Metal carbonates ($-\text{CO}_3$) break down into a metal oxide and carbon dioxide.
3. Metal hydroxides ($-\text{OH}$) break down into a metal oxide and water
4. Acids break down into a nonmetal oxide and water

REACTIVITY SERIES OF METALS

Li (Most Reactive)
 K
 Ba
 Ca
 Na
 Mg
 Al
 Zn
 Fe
 Co
 Ni
 Sn
 Pb
 (H)*
 Cu
 Ag
 Hg
 Pt
 Au (Least Reactive)

*Metals from Li to Na will replace H from acids and water; from Mg to Pb they will replace H from acids only.

Solubility Rules:

- All nitrates and acetates are soluble.
- All chlorides, bromides, and iodides are soluble **except** those of Pb^{2+} , Ag^+ , and Hg_2^{2+} .
- All sulfates are soluble **except** those of Ba^{2+} , Sr^{2+} , and Pb^{2+} . CaSO_4 , Ag_2SO_4 , and Hg_2SO_4 are slightly soluble.
- All hydroxides are insoluble **except** those of group I in the periodic table, NH_4^+ , and Ba^{2+} .
- $\text{Ca}(\text{OH})_2$ and $\text{Sr}(\text{OH})_2$ are slightly soluble.
- All carbonates and phosphates are insoluble **except** those of group I and NH_4^+ . Many hydrogen phosphates (H_2PO_4^-) are soluble.
- All sulfides are insoluble **except** those of Group I and Group II in the periodic table and NH_4^+ .