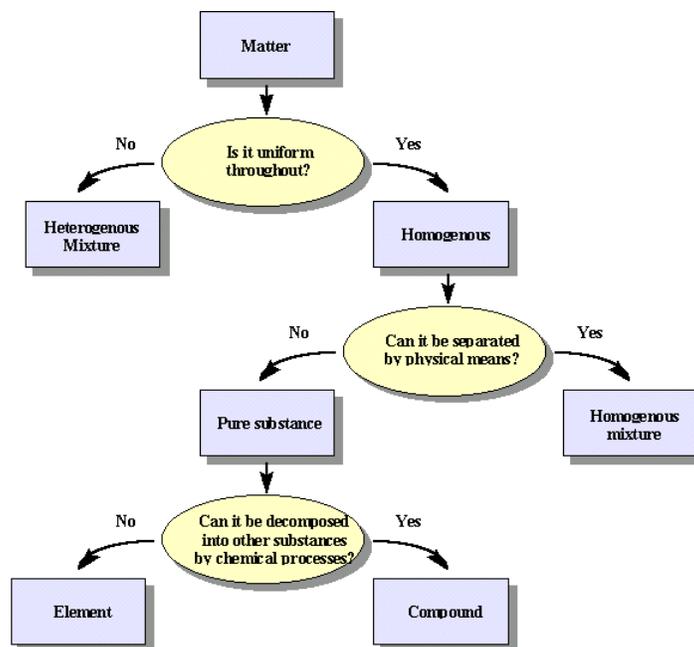


1.4: A Description of Matter

Pure substances have an invariable composition and are composed of either **elements** or **compounds**.

- **Elements:** "Substances which cannot be decomposed into simpler substances by chemical means".
- **Compounds:** *Can* be decomposed into two or more elements.



Elements

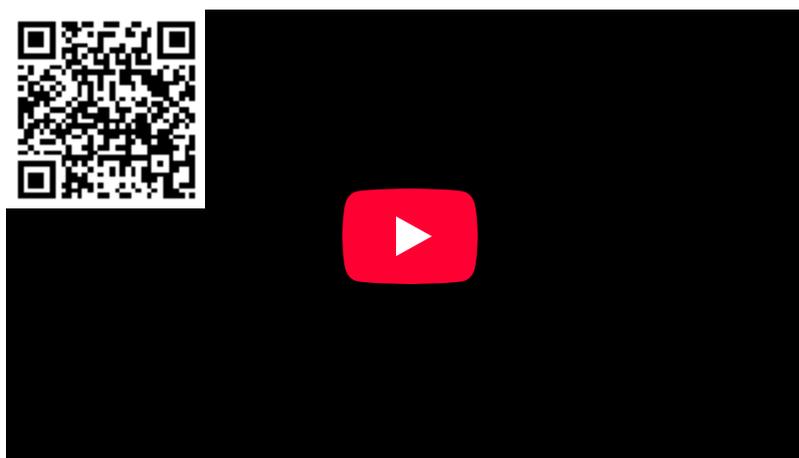
Elements are the basic substances out of which all matter is composed.

- Everything in the world is made up from only **109** different elements.
- 90% of the human body is composed of only three elements: Oxygen, Carbon and Hydrogen

Elements are known by common names as well as by their **abbreviations**. These consisting of one or two letters, with the first one capitalized. These abbreviations are derived from English or foreign words (e.g. Latin, German).

Element	Abbreviation
Carbon	C
Fluorine	F
Hydrogen	H
Iodine	I
Nitrogen	N
Oxygen	O
Phosphorus	P
Sulfur	S
Aluminum	Al
Barium	Ba
Calcium	Ca
Chlorine	Cl

Helium	He
Magnesium	Mg
Platinum	Pt
Silicon	Si
Copper	Cu (from cuprum)
Iron	Fe (from ferrum)
Lead	Pb (from plumbum)
Mercury	Hg (from hydrargyrum)
Potassium	K (from kalium)
Silver	Ag (from argentum)
Sodium	Na (from natrium)
Tin	Sn (from stannum)



Different Definitions of Matter: https://youtu.be/qi_qLHc8wLk

Compounds

Compounds are substances of two or more elements **united chemically in definite proportions by mass**. For example, pure water is composed of the elements hydrogen (H) and oxygen (O) at the **defined ratio** of 11 % hydrogen and 89 % oxygen by **mass**.

The observation that the elemental composition of a pure compound is always the same is known as the **law of constant composition** (or **the law of definite proportions**). It is credited to the French chemist Joseph Louis Proust (1754-1826).

Contributors and Attributions

Mike Blaber (Florida State University)

This page titled [1.4: A Description of Matter](#) is shared under a [CC BY-NC-SA 3.0](#) license and was authored, remixed, and/or curated by [Anonymous](#).