

**CHAPTER 3
MATTER**

3

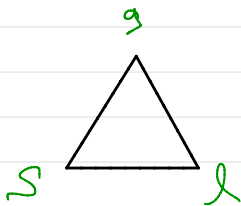
CHAPTER 3 MATTER

Matter

↳ has mass

↳ occupies space

3 States of Matter



	Constant Shape?	Constant Volume?	Compressible?
G	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
L	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
S	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Properties: Chemical and Physical

CHEMICAL CHANGE — a change in the chemical identity of a substance
(i.e., a “reaction” occurs to change the substance from one thing into another)

CHEMICAL PROPERTY — an aspect of a substance only observable when there is a chemical change (“reaction”)

PHYSICAL CHANGE — a change in a substance in which the chemical identity does NOT change.

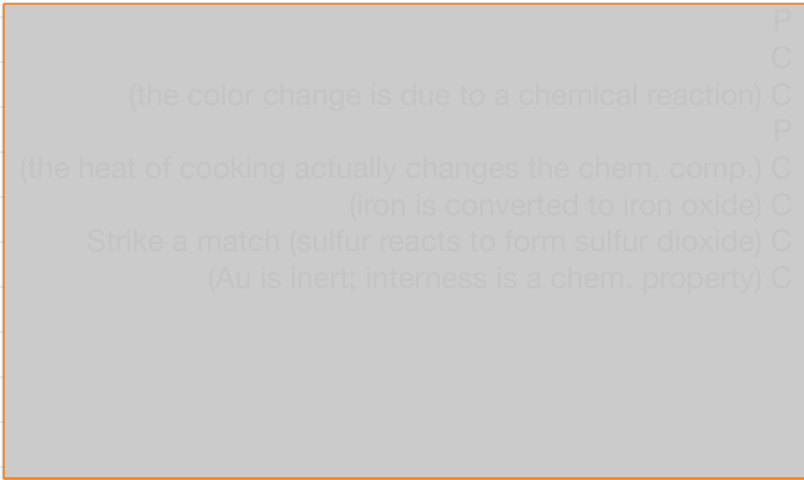
PHYSICAL PROPERTY — an aspect of a substance that can be observed without changing the chemical identity of a substance.

General Rule of Change:

If you (chemically) end up with what you started with, then it's a Physical Change

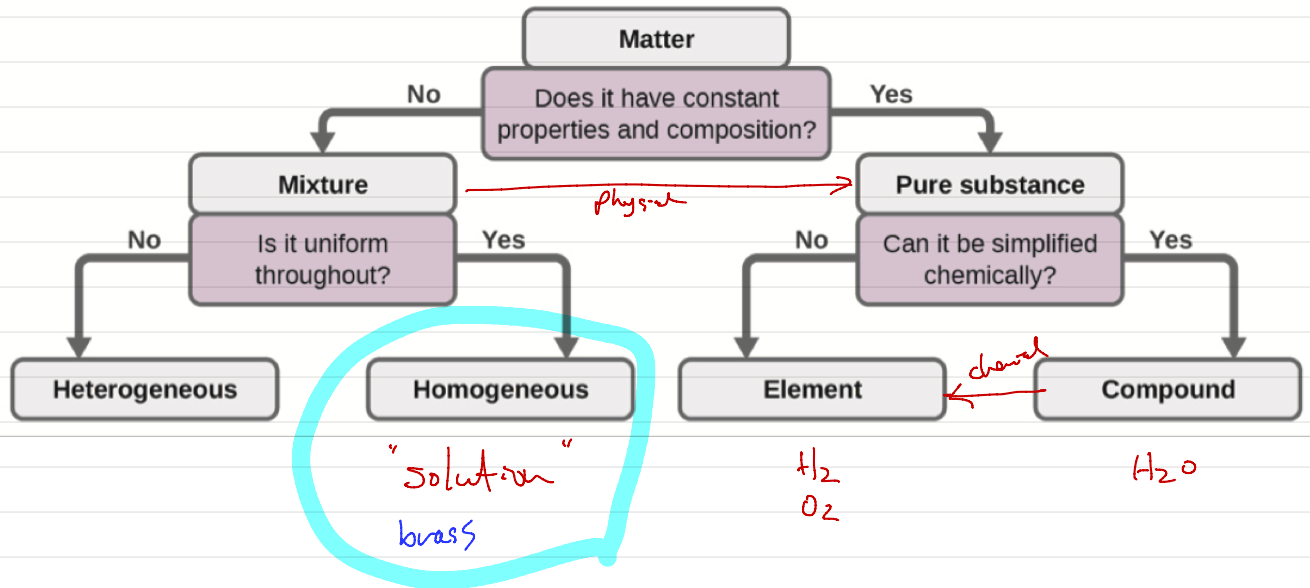
* only exception is the property of “inertness”, which is considered a Chemical property.

(EX) ¿ID Type of Property? Physical only, Chemical only, or Both?



- P • Ice melts at °C
- C • Propane burns to $\text{CO}_2 + \text{H}_2\text{O}$
- P • Pb is a dense metal
- C • Milk turns sour
- C • Leaves turn color in Fall
- P • Gallium melts in your hand
- C • Scramble an egg
- C • A nut rusts onto a bolt
- C • Strike a match
- C • Au is inert (is not very reactive)

4 Classes of Matter



(EX) ¿ID the class of matter?

homogeneous mix – solution

• Pure apple juice

NaCl – compound

• Table salt

heterogeneous mixture

• Chocolate chip cookie

Cu & Zn do not react; merely mixed – solution

• Brass (Cu + Zn)

complex blend of HC's – homogeneous mixture

• Gasoline

homogeneous mix – solution

• Maple syrup

two phases: oil & water – heterogeneous mixture

• Oil/vinegar dressing

Separation of Mixtures

- filtration — Δ size ✓
- distillation — Δ B.P. ✓
- centrifugation — Δ density

↳ filtration

↳ distillation

↳ centrifugation

