

Name: Key  
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Chemistry 12  
**REACTION KINETICS**  
Lesson #3 Factors Affecting Reaction Rates

**Demo of Alka Seltzer™ Tablets:**

1. Alka Seltzer in cold vs hot water:

fast rxn rate = hot ; slow = cold

2. Alka Seltzer in form of whole tablet vs crushed powder:

fast rxn rate = powder ; slow = whole

**FACTORS THAT AFFECT REACTION RATE:**

1. Temperature:

↑ temp, ↑ rxn rate (∴ ↓ time)

↓ temp, ↓ rxn rate (∴ ↑ time)

2. Concentration:

↑ [ ], ↑ rxn rate

↓ [ ], ↓ rxn rate

3. Pressure (another way to express concentration) of gases!

↑ pressure, ↑ [ ] ∴ ↑ rxn rate

↓ pressure, ↓ [ ] ∴ ↓ rxn rate

4. Nature of the REACTANTS (chemical properties NOT PHASES!!!)

\* Classifying rxn rates based on the # of bonds that must be BROKEN / FORMED (see pgr 7 of Hebden)

5. Ability of REACTANTS to MEET (SURFACE AREA and PHASES)

**HOMOGENEOUS REACTION:** all reactants in same phase

**HETEROGENEOUS REACTION:** reactants in different phases

\* surface area is only a factor in heterogeneous rxns!

a. Surface area

For heterogeneous rxns,  $\uparrow$  surface area,  $\uparrow$  rxn rate

b. Phase considerations

Fastest  $\xrightarrow{\text{Rxn rate}}$  slowest  
aqueous IONS > (gases or liquids) > SOLIDS.

6. Catalysts and Inhibitors:

**CATALYST:** a chemical added to a reaction

ex. enzymes to INCREASE the rate of the rxn.

\* catalyst is NOT CONSUMED during the rxn \*

**INHIBITOR:** a chemical which REDUCES a rxn rate by combining w a CATALYST or one of the reactants to prevent a rxn from occurring  
ex. POISONS / ANTIBIOTICS.

Seatwork/Homework: Exercises 10-17 in Hebden pgs 7-10

PLO's: A5- A7