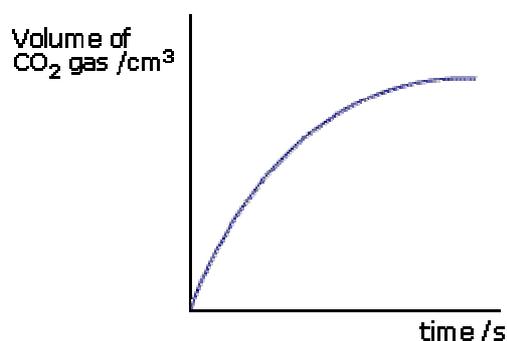


Exercise 5.33 – Factors affecting the reaction rate

Q533-01 Which statement explains why the speed of some chemical reactions is increased when the surface area of the reactant is increased?

- A. This change increases the density of the reactant particles.
- B. This change increases the concentration of the reactant.
- C. This change exposes more reactant particles to a possible collision.
- D. This change alters the electrical conductivity of the reactant particles.

Q533-02 The reaction between calcium carbonate and excess hydrochloric acid can be followed by measuring the volume of carbon dioxide gas evolved over time. The results of one such reaction are plotted on the graph below. How does the rate of reaction change with time and what is the main reason?



- A. The rate increases with time because the calcium carbonate particles get smaller.
- B. The rate increases with time because the acid becomes more dilute.
- C. The rate decreases with time because the calcium carbonate particles get smaller.
- D. The rate decreases with time because the acid becomes more dilute.

Q533-03 Which factors will influence the rate of the reaction shown below?



- I - The number of collisions per second
 - II - The energy of the collisions
 - III - The geometry with which the molecules collide
- A. I only
 - B. II only
 - C. I and II only
 - D. I, II and III

Q533-04 Some collisions between reactant molecules do not form products. This is most likely because...

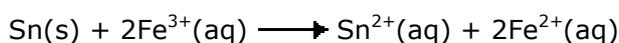
- A. The molecules do not collide in the proper ratio
- B. The molecules do not have enough energy
- C. The concentration is too low
- D. The reaction is at equilibrium

Exercise 5.33 – Factors affecting the reaction rate

Q533-05 The reaction between nitrogen and oxygen in the atmosphere under normal conditions is extremely slow. Which statement best explains this?

- A. The concentration of oxygen is much lower than that of nitrogen
 - B. The molar mass of nitrogen is less than that of oxygen
 - C. The frequency of collisions between nitrogen and oxygen molecules is lower than that between nitrogen molecules themselves
 - D. Very few nitrogen and oxygen molecules have sufficient energy to react
-

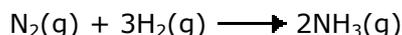
Q533-06 Tin metal reacts with aqueous Fe^{3+} ions according to the equation below. Which of the following factors will increase the rate of this reaction:



- I - Increasing the Fe^{3+} ion concentration
- II - Decreasing the size of the tin pieces

- A. I only
 - B. II only
 - C. Both I and II
 - D. Neither I nor II
-

Q533-07 Which statement about the following reaction at 100°C is/ are correct?



- I - Every collision between N_2 and H_2 molecules is expected to produce NH_3
- II - The reaction must involve a collision between one N_2 and three H_2 molecules

- A. I only
 - B. II only
 - C. Both I and II
 - D. Neither I nor II
-

Q533-08 Which change will increase the rate of the reaction when 50cm^3 of 1.0 mol dm^{-3} HCl is added to 1.0g of CaCO_3 ?



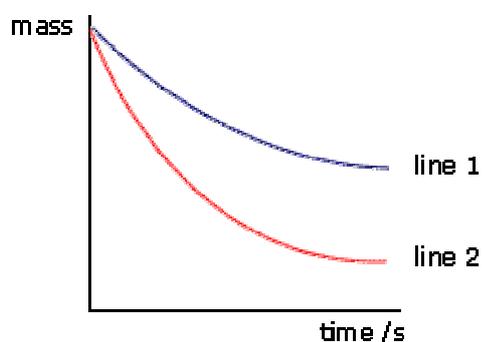
- A. The volume of HCl is increased
 - B. The concentration of HCl is increased
 - C. The size of the CaCO_3 solid particles is increased
 - D. The pressure of the CO_2 is increased.
-

Exercise 5.33 – Factors affecting the reaction rate

Q533-09 Which of the following are important in determining whether a reaction occurs?

- I - Energy of the molecules
 - II - Orientation of the molecules
- A. I only
B. II only
C. Both I and II
D. Neither I nor II
-

Q533-10 Excess magnesium was added to a beaker of aqueous hydrochloric acid on a balance. A graph of the mass of the beaker and contents was plotted against time (line 1)



What change in the experiment could give line 2?

- I - The same mass of magnesium but cut into smaller pieces
 - II - The same volume of a more concentrated solution of hydrochloric acid
 - III - A lower temperature
- A. I only
B. II only
C. III only
D. None of the above
-
-