

9Fa TYPES OF EXPLOSION

1 Tick (✓) one correct statement for each of the following.

a When a physical change occurs:

- A no new substances are made and there is no change in mass.
- B new substances are made and there is a change in mass.
- C no new substances are made but there is a change in mass.
- D new substances are made and there is no change in mass.

b When a chemical change occurs:

- A no new substances are made and there is no change in mass.
- B new substances are made and there is a change in mass.
- C no new substances are made but there is a change in mass.
- D new substances are made and there is no change in mass.

2 Describe what happens to bonds in a chemical reaction.

SB

3 Write word and symbol equations for the combustion of one atom of carbon.

4 A student drops a mint sweet into a bottle of diet cola. Foamy liquid shoots out of the bottle. This is the change that occurs: $\text{CO}_2(\text{aq}) \rightarrow \text{CO}_2(\text{g})$

a What does the state symbol (g) mean? _____

b Explain whether this is a physical change or chemical reaction.



c Use the particle model to explain the pressure in the bottle just after the sweet is dropped in. To answer this, tick (✓) one box for each of parts i and ii below.

i The pressure inside the bottle:

- A sucks air into the bottle.
- B stays the same.

- C decreases.
- D increases.

ii This is because:

- A there are more gas molecules to hit the walls of the bottle.
- B there are more gas molecules to hit one another.
- C the walls of the bottle hit the molecules with an equal and opposite reaction.
- D a vacuum is created, which must be filled.

5 In your group, look at your answer to question 3 on page 51. Discuss your ideas again to find out if they have changed. If you can, write a better answer in the lower box on that page.

9F D REACTIVITY

1 What is the 'reactivity series'?

2a Use the table to help identify the metals below.

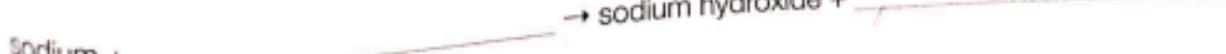
Metal X can catch fire in air, reacts with cold water and reacts quickly with dilute acid. Metal X is likely to be

Metal Y reacts quickly with dilute acid and the oxygen in air but reacts very slowly with water. Metal Y is likely to be

Metal Z catches fire in air, is explosive with dilute acid and reacts very quickly with water. Metal Z is likely to be

b Describe the trend in reactivity of the metals in group 1 of the periodic table as you go down the group. Use the periodic table on page 113 to help you.

3 Complete the following equations.



Metal	Reaction with oxygen in air	Reaction with cold water	Reaction with dilute acid
potassium	flammable	flammable	explosive
sodium	flammable	reacts very quickly	explosive
lithium	flammable	reacts quickly	reacts very quickly
calcium	flammable	reacts quickly	reacts very quickly
magnesium	flammable	reacts	reacts quickly
aluminium	reacts quickly	slow or partial reaction	reacts quickly
zinc	reacts quickly	slow or partial reaction	reacts quickly
iron	reacts quickly	slow or partial reaction	reacts
tin	reacts	slow or partial reaction	reacts
lead	reacts	slow or partial reaction	reacts
copper	reacts	no reaction	no reaction
mercury	slow or partial reaction	no reaction	no reaction

Increasing reactivity

Key

explosive	flammable	reacts very quickly
reacts quickly	reacts	slow or partial reaction
no reaction		