**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**1.5 Everyday Chemical Changes – p. 20 –21**

Corrosion is the **slow** chemical reaction of a **metal** with **oxygen** from the air.

Rusting involves the corrosion of **iron**.  When iron reacts with oxygen from the air and water, rust or **iron oxide** is produced.

Rust is particularly damaging because rust is **porous**.  Rust absorbs **water**, and flakes off, exposing fresh metal underneath to **oxygen**.  Rust eats its way right through metal.

When aluminum corrodes (when it reacts with oxygen), it forms **aluminum** oxide.

How is aluminum oxide different from iron oxide?

**aluminum oxide is strong and is unaffected by water → oxide layer protects it from further corrosion**

When silver corrodes in the air, it produces a black surface coating called **tarnish**.

**Preventing Corrosion**

To prevent corrosion, the metal surface must be protected from **oxygen**.

List two ways that metal can be covered to prevent oxygen from corroding it:

1) **paint**

2) **spray with oil**

Why are plastics being used for car bumpers instead of metal?

**because even when they are scratched, they never corrode**

**Answer questions 1 – 5 on p. 21 below.**

1. What is corrosion?
2. How is iron oxide formed?
3. Describe 3 ways to protect metal from corrosion.
4. a) which parts of the car corrode the most and why?

b) How can car owners help reduce the effects of corrosions

5. List a few objects in your home that could corrode.

**Answers**

1. What is corrosion?  **A slow chemical reaction of metal with oxygen**

2. How is iron oxide formed? **iron + oxygen  → iron oxide**

3. Describe 3 ways to protect metal from corrosion.  **spray with oil, paint, electronic rust protection**

4. a) Which parts of the car corrode the most and why?  **bumpers,wheel wells, under**

b) How can car owners help reduce the effects of corrosions **cover car, store your car in the garage, paint scratches, oil etc.**

5. List a few objects in your home that could corrode.  **vents, coins, tools, snowblower, sinks**

**1.6 – “Xtreme” Chemical Changes – p. 22 - 23**

It’s CHEMISTRY that gives us the special effects that make fireworks fun!

Look at Table 1.

What material causes a white flame? **magnesium**

What materials will cause gold sparks? **iron filings and charcoal**

What material will cause white smoke? **potassium nitrate and sulfur**

**Chemistry and Fireworks**

A typical firework contains:

- **a fuel**

- **a source of oxygen (oxidizer)**

- **a fuse (a source of heat to start the reaction)**

- **a colour producer**

The first and most dangerous step is **mixing the ingredients**.

The **oxidizer** is the main component.

When the oxidizer reacts with sulfur or aluminum, it creates lots of **heat**, a **bang**, and flashes of **light**.

Each mixture also contains **binders**, which act as a **fuel** and hold the mixture together.

Metallic **salts** are added to produce colours.

Each mixture is wrapped up in cardboard and the packages are linked with **fuses**.

Read the debate on p. 24.  What do you think? Should fireworks be banned?  Write a paragraph below describing your point of view.  You should include at least 4 points to back up your opinion.  Use full sentences and write your ideas in your own words (don’t copy the points word for word from the textbook!)

|  |  |
| --- | --- |
| **Metal Salt** | **Colour** |
| copper (Cu) | green |
| sodium (Na) | orange |
| barium (Ba) | yellow |
| lithium (Li) | red |
| potassium (K) | lilac |
| calcium (Ca) | orange/red |