

**A Level Chemistry
Answer sheet**

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| **Chemical element** | **Symbol** | **Metal/Non-Metal?** | **What it does in fireworks** |
| Lithium | Li | Metal | Colour agent **-** between red and purple |
| Sodium | Na | Metal | Colour agent - gold and yellow |
| Potassium | K | Metal | Fuel and orange - red sparks; colouring agent - lilac |
| Magnesium | Mg | Metal | Fuel and bright white flames |
| Calcium | Ca | Metal | Colour enhancer - helps make colours deeper; colouring agent – brick red |
| Strontium | Sr | Metal | Colouring agent - red (crimson) |
| Barium | Ba | Metal | Colouring agent - green |
| Titanium | Ti | Metal | Fuel and produces silver-white sparks |
| Iron | Fe | Metal | Produces gold coloured sparks |
| Copper | Cu | Metal | Colouring agent - green/blue-green |
| Zinc | Zn | Metal | Fuel and smoke agent |
| Aluminium | Al | Metal | Fuel and makes yellow-white sparks eg in sparklers |
| Carbon | C | Non-metal | Fuel, component of black powder |
| Antimony | Sb | Metal or metalloid | Fuel, glitter effects |
| Sulfur | S | Non-metal | Fuel, component of black powder |

a.   Barium + copper

b.  Copper + lithium

c.   Sodium and magnesium

1. Write down the formulae of the chemicals in the experiment.

Potassium/sodium chlorate KCIO3 or NaCIO3

Sugar C11 H22 O11

Sulfuric acid H2SO4

1. Which chemical is acting as the fuel?

The sugar is acting as the fuel

1. Which chemical supplies oxygen?

The potassium or sodium chlorate supplies oxygen

1. Complete the word equations for these two reactions:
carbon + oxygen 🡺carbon dioxide
sulfur + oxygen 🡺sulfur dioxide

Are the products of these two reactions solids, liquids or gases at room temperature?

Room temperature

1. Why does the explosion happen?

The explosion happens because large volumes of gases are produced in a small space, together with a lot of energy being released. This makes the gases move fast and creates a flame. This is what happens in a firework.