

Displacement reactions of metals – student sheet

In this experiment, you will be looking at the reactions between various metals and metal salt solutions.

Instructions

1. Cover the table on your worksheet* with a clear plastic sheet.
2. Place a copper turning in each box in the copper row.
3. Place one small piece of magnesium ribbon in each box in the magnesium row.
4. Place a few zinc granules in each box in the zinc row.
5. Place an iron nail in each box in the iron row.

When all the pieces of metal are in place:

6. Add two drops of copper(II) sulfate solution to each metal in the first column. Observe and record your observations.
7. Add two drops of magnesium nitrate solution to each metal in the second column. Observe and record your observations.
8. Add two drops of zinc chloride solution to each metal in the third column. Observe and record your observations.
9. Finally, add two drops of iron(III) nitrate solution to each metal in the fourth column. Observe and record your observations.

*See next page for table.

Health, safety and technical notes

- Wear eye protection throughout (splash-resistant goggles to BS EN166 3).
- Copper(II) sulfate solution, CuSO_4 (aq), 0.2 mol dm^{-3} causes eye damage and is TOXIC to aquatic life.
- Zinc chloride 0.2 mol dm^{-3} is of low hazard.
- Iron(III) nitrate, $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$ (aq), 0.2 mol dm^{-3} is of low hazard.
- Magnesium nitrate, $\text{MgNO}_3 \cdot 6\text{H}_2\text{O}$ (aq), 0.2 mol dm^{-3} is of low hazard.
- Iron filings or small nails are of low hazard.
- Copper turnings are of low hazard.
- Magnesium ribbon is FLAMMABLE and gives off highly flammable gases in contact with acids.
- Zinc powder, $\text{Zn}(\text{s})$, is FLAMMABLE and hazardous to the aquatic environment.

	Copper(II) sulfate solution	Magnesium nitrate solution	Zinc chloride solution	Iron(III) nitrate solution
Copper				
Magnesium				
Zinc				
Iron				