

Preparation of an Alloy or “An Alchemist’s Dream”

Alloy: *a solution consisting of two or more metals.*

- a substance which has metallic properties and which contains more than one element.
- made because it has desirable properties, e.g. steel -corrosion resistant

In this experiment, copper and zinc will be combined to produce an *alloy* known as **brass**. Brass has the desired property of being corrosion resistant and is used in many applications such as bathroom / household fixtures, hardware, and marine fittings.

Apparatus:

- 2 250 mL beakers
- watch glass
- crucible tongs
- beaker tongs
- glass stirring rod
- retort stand
- ring clamp
- wire mesh
- Bunsen burner
- paper towels
- safety goggles/glasses

Reagents:

- 50 mL 3 M sodium hydroxide solution
- 1 g zinc powder
- Shiny copper penny (Canadian ones work better)
- water for cooling and rinsing

Procedure:

1. Pour 50 mL 3 M NaOH solution into a 250 mL beaker.
2. Add 1 g zinc powder and stir.
3. Cover with watch glass and heat until boiling (be careful of the NaOH vapours).
4. Turn off burner or keep on very low heat.
5. Add copper wire/penny and allow to sit for 6 minutes.
6. Using the crucible tongs, remove the copper wire/penny and wash with water (make sure all traces of the zinc powder is removed).
7. Dry by blotting with a paper towel.
8. Set aside a beaker filled with cold water.
9. Using the crucible tongs, hold the wire/penny over a medium hot flame.
10. When the wire/penny changes to yellow, heat for an additional 2 or 3 seconds.
11. Remove and place in the beaker of water for cooling.
12. Blot dry with paper towel.

Discussion:

1. Why was the wire/penny *silver* in colour after 6 minutes in the solution?
2. Why was the wire/penny *blotted dry*, instead of being rubbed vigorously?
3. What was the *bright yellow* substance formed, after the wire/penny was heated?
4. How was this substance formed?
5. Is this an example of a physical change or chemical change?
6. Is the substance formed a mixture or a compound? Explain.
7. If the wire/penny were cut in half, what would you expect to see? Explain.
8. Name three other alloys stating their compositions and uses.