Name: Class:

Experiment worksheet

3.7 Metals form unique bonds

Pages 82–83 and 199

Challenge 3.7: Modelling alloys

Aim

To compare the properties of model alloys.

What you need

- 4 different colours of plasticine (35 g)
- Sand (12 g)
- Newspaper
- Balance
- Magnifying glass

What to do

1 Weigh 2 g of sand onto the newspaper.

2 Roll and work one of the plasticine colours until it is soft and malleable. Roll it out into a 0.5 cm layer.

3 Sprinkle the sand onto the plasticine and roll it over the sand until the sand it evenly spread through.

4 Repeat steps 2 and 3 with 4 g and 6 g of sand.

5 Work and shape the four pieces of plasticine until they are at room temperature.

6 Form each shape into a cylinder of the same size and length.

7 Hold the ends of a plasticine cylinder firmly and pull firmly apart.

8 Repeat the pull test for each plasticine cylinder.

9 Use the magnifying glass to examine the broken ends of the cylinder.

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Results

Record your observations in an appropriate table.

Discussion

1 Which 'alloy' was most malleable (able to be rolled out easily when cold)?

2 Which 'alloy' was most ductile (able to be drawn out into a wire easily)?

3 Which 'alloy' was most brittle (snapped quickly)?

4 Did the amount of sand in the 'alloy' affect the size of the largest fracture surface? Explain your observation.

Conclusion

How does the alloying of metal affect its properties?

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