

Why do plastics have different properties?

Plastic sorting

Sort the samples of plastic into groups using the recycling symbols.

1. Which plastics are most common?
2. Why are these plastics more common than the others?
3. Compare the uses of the different plastics. Why do the uses differ?

Presentation

Prepare a presentation about one or more of the plastic types.

Research

Use the following points to organise your research.

Information to research about your plastic

- Monomer name and full structural formula
- Polymer systematic name and full structural formula of a representative section
- Glass transition temperature (T_g) and melting temperature (T_m) values
- Uses.

Information to work out about your plastic

- Are any dipoles present in the monomer / polymer? If so, where are these?
- What intermolecular bonding is present between the polymer molecules?
- Why is this type of intermolecular bonding present?
- What is the approximate bond enthalpy of an intermolecular bond in your plastic?

Concluding points

- Explain how the type of intermolecular bond present affects the T_g and T_m values of your plastic.
- Explain how the type of intermolecular bond present affects the uses of your plastic.

References

- List the reference materials you used for the research.

Assessing presentations

Agree criteria for assessing the presentations. You might consider the following points.

- How the research guidance, above, was met.
- Was the information presented clearly?
- Was the information complete?
- Do you understand the concluding points in each presentation?
- Did the group use a good range of references, or just stick to one?

Writing a summary

Write notes that show you understand the types of intermolecular bonding present in all the different types of plastic and how these affect their properties and uses.