

Materials and Their Uses

Learning objectives

By the end of this chapter you should be able to:

- Recognise and know the value of common hazard symbols on containers, i.e. flammable, toxic, corrosive, explosive and harmful/irritant
- Relate your knowledge of the properties of the different classes of man-made materials to everyday use. Such materials include metals, ceramics, glass, fibres and plastics (thermosoftening and thermosetting)
- Relate the properties of thermosoftening plastics, thermosetting plastics and fibres to simple models of their structure
- Understand that a composite material is one that combines the properties of more than one material to produce a more useful material for particular purposes
- Evaluate the relative advantages and disadvantages of composite materials e.g. glass fibre (boats and car bodies), reinforced glass (windows), reinforced concrete (beams) and bone (skeleton)

Note: Chapter 4 is only relevant to double award foundation students and double award higher students.

Scientists use the term 'material' to describe the different types of matter that are used to make things. For example glass or plastic can be used to make bottles, copper is used to make pipes, while paper is used in the production of bags. In everyday life there are a wide range of materials available and these materials can be used for many different purposes.

Because there is a continuous demand for new materials with specialised properties, it is important for scientists to design new products to meet these needs. An example of this is the special ceramic coatings which have been designed for the outside of space shuttles to protect them from burning up on

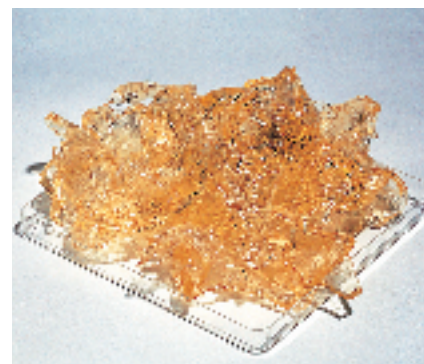
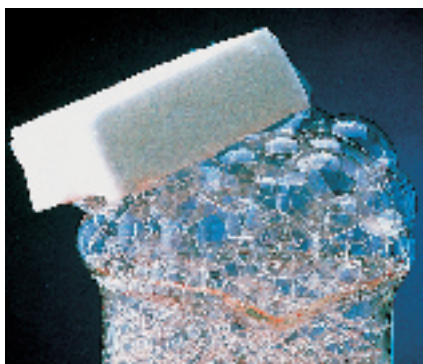
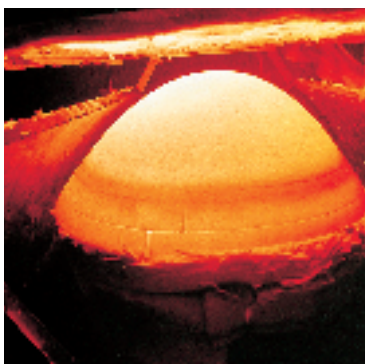


Figure 1 Some new materials and their uses