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# Wood, modified wood, ceramics, metals and alloys



### CONCEPT REVIEW 50

Complete this concept review handout and keep it as a record of what you have learned.

### Definitions

- Wood is a material obtained by harvesting and processing trees.
- Modified wood is treated wood or a material made from wood mixed with other substances.
- A ceramic is a solid material obtained by heating inorganic matter containing various compounds, usually oxides.
- A metal is a material extracted from a mineral ore. Metals are usually shiny in appearance and are good conductors of electricity and heat.
- An alloy is a mixture of a metal with one or more other substances, which may be metallic or nonmetallic.
- Steel heat treatments are methods of enhancing certain mechanical properties of steel through periods of heating.

### Wood and modified wood

### **Properties**

- Hardness
- Elasticity
- Resilience
- Toughness

- Low thermal and electrical conductivity
- Ease with which it can be shaped and assembled
- Colours and shades
- Lightness

# Degradation and protection

# Examples of causes of degradation:

Many fungi, microorganisms and insects can infest the wood, feed off it and cause it to rot.

# Examples of means of protection:

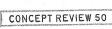
It can be varnished, painted or treated with protective coatings. It can be treated by dipping it in an alkaline solution containing copper or by heating it to a high temperature.











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### INTEGRATION QUESTIONS

Wood, modified wood, ceramics, metals and alloys

- You are thinking of building a wooden deck. You look at your neighbour's deck and see that it is discoloured and rotten in certain places.
  - a) How can you explain the state of your neighbour's deck?

Answers will vary. Examples.

Sun, water, time, fungi, microorganisms and insects have degraded the wood, which is a material of living origin. The neighbours did not treat the wood to protect it from this degradation.

- b) How could you prevent your deck from suffering the same fate?

  By using treated wood or protecting the wood with varnish, paint or a protective coating.
- c) Your renovation consultant recommends using green treated wood. What protection process has been used for this wood?

The greenish colour results from dipping it in an alkaline solution containing copper.

- 2. What am I? Associate each of the following statements with the appropriate material.
  - a) I have been produced from a mineral ore in the ground.
  - b) I am chosen for my good thermal and electrical conductivity, my ductility and my malleability.
  - I am fragile, but by carefully controlling the raw materials used and the baking method, I can even be used in an engine.
  - d) I can be used to make fences.
  - e) I am an alloy made primarily from iron and carbon.
  - f) Because of my low thermal conductivity, I often serve as a thermal insulator.
  - g) I am made, among other things, from wood residues.
  - h) I am a natural material found on the Earth's surface.

Metal.

Metal.

Ceramic.

Treated wood or an alloy.

Ferrous alloy or steel.

Ceramic.

Modified wood.

Wood.



- a) A ceramic bowl of ice cubes is placed on a very hot heating plate.
- b) A hammer is left out in the snow

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Thermal	shock

Snow accelerates the corrosion.