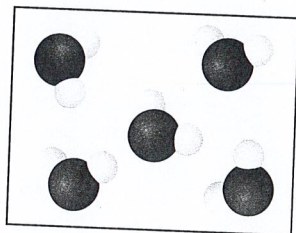
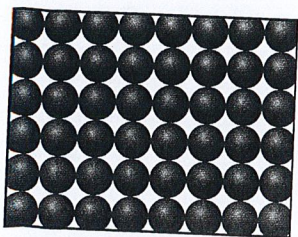


Properties and Changes

Key Ideas

Matter can be classified as pure substances or mixtures.

- Matter has mass and volume.
- Elements and compounds are pure substances.
- Elements have one kind of particle. Compounds have one kind of particle made up of particles of two or more different elements.
- Mixtures have particles from the substances they are made from. In heterogeneous mixtures, you can see the substances. In homogeneous mixtures, the particles are evenly distributed at the microscopic level so the different substances cannot be seen.



Pure substances can be identified by their physical and chemical properties.

- Different substances have different properties.
- Properties are what make substances useful.
- Physical properties of matter are those that you can observe with your senses, measure, or calculate.
- A chemical property describes the behaviour of a substance as it changes into a new substance.



Vocabulary

- matter, p. 152
- mass, p. 152
- volume, p. 152
- pure substance, p. 153
- mixture, p. 153
- element, p. 153
- compound, p. 153
- heterogeneous mixture, p. 154
- homogeneous mixture, p. 154
- physical property, p. 157
- state, p. 158
- melting point, p. 158
- boiling point, p. 158
- malleable, p. 159
- ductile, p. 159
- solubility, p. 160
- conductivity, p. 160
- density, p. 160
- chemical property, p. 161
- flammability, p. 162
- corrosion, p. 162
- physical change, p. 166
- chemical change, p. 168
- kinetic molecular theory, p. 172

A physical property

- A change in state
- Physical

A chemical property

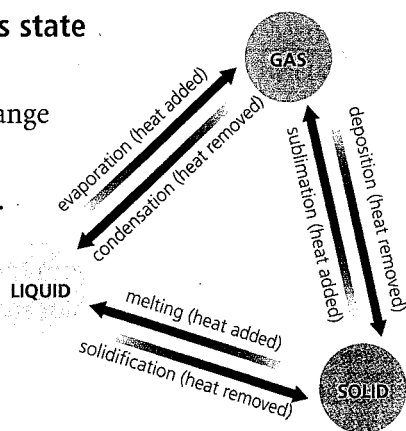
- A chemical
- Chemical

The kinds of matter

- All matter is unique
- An infinite number of forms
- The three states of matter and their changes

A physical change alters a substance's state or form, but not its composition.

- A change in state or form does not change one substance into another.
- Physical changes are usually reversible.



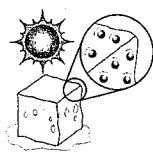
A chemical change alters a substance's composition to create new substances.

- A chemical change results in new substances with new properties.
- Chemical changes are sometimes reversible.

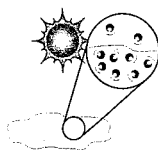


The kinetic molecular theory explains the nature and behaviour of matter.

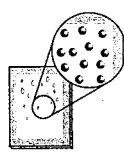
- All matter is made from particles, and each substance has its own unique particles.
- An increase in energy, such as heat, causes the particles to move faster and farther apart. A decrease in energy causes the reverse.
- The theory can explain physical changes, such as changes of state and dissolving.



ice being heated



water being heated



water vapour being cooled