

COVALENT BONDING

3.3



In this worksheet you will learn about covalent bonding.

Elements can join together by sharing electrons. Non-metals join together by using this type of bonding.

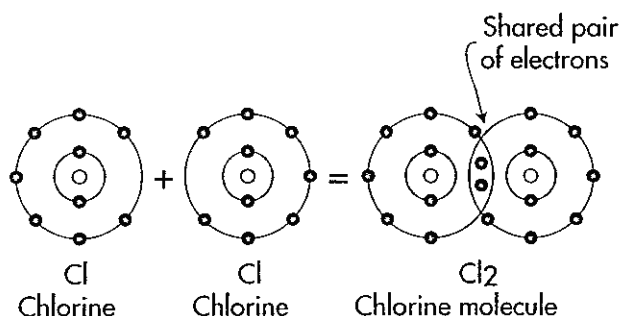
Check your periodic table to find the non-metals. They are on the right-hand side of the periodic table starting at carbon (C). You should have coloured this group in while you were doing worksheet 2.3.

Covalent bonding is sharing pairs of electrons. This is possible because the atoms are very close together and the electrons whiz around very fast. Each pair of electrons spends some time in the outermost shell of the two atoms.

Covalent bonding means that the outermost electron shells are full. Atoms that have their outermost electron shell full are very stable.

special words

covalent bonding
chlorine
molecule
hydrogen
oxygen



To do



- 1 Count the outermost electrons in the single chlorine atoms.
- 2 Now count the outermost electrons in both atoms of the chlorine molecule.
- 3 Write down what you found in your workbook.

Covalent substances are made up of molecules. A molecule is a group of two or more atoms chemically joined together.

Covalent bonds are very strong bonds. It takes a great deal of energy to break a molecule apart. But there are only weak forces between the molecules.

Water is an example of a covalent substance. It is very easy to get the water molecules to move apart. Heating water makes the molecules spread out and the liquid water turns into the gas steam.

But it is very hard to break the water molecule into hydrogen and oxygen atoms.

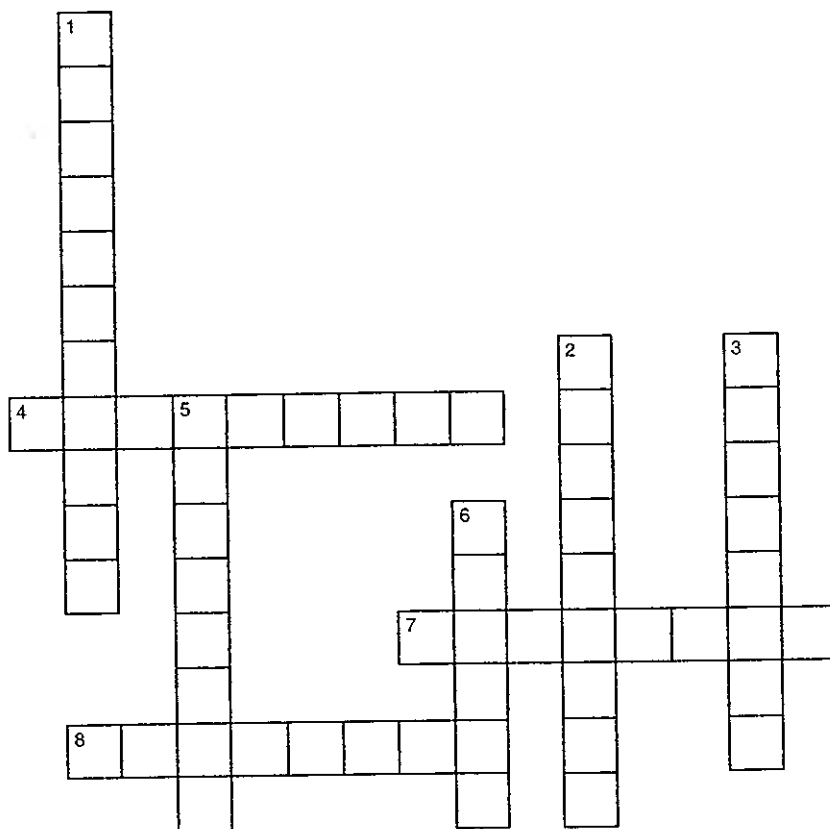
- So covalent bonds are very strong bonds.
- Covalent substances are made up of molecules.
- It is easy to make the molecules of covalent substances move apart.
- It is very difficult to make the atoms in a covalent molecule move apart.

3.3

To do



- 1 In your workbook, draw electron shell drawings that show the covalent bonds between two fluorine (F) atoms.
- 2 Two atoms of oxygen make up the oxygen molecule. Can you draw the electron shells for an oxygen molecule? Hint: the oxygen molecule has two pairs of shared electrons.
- 3 Now use the information on this worksheet to complete the crossword puzzle.



Across

- 4 The type of elements that form covalent bonds.
- 7 One of the elements that makes up the water molecule.
- 8 This substance is used in swimming pools to help keep the water clean.

Down

- 1 Covalent bonds are very _____.
- 2 These are shared in covalent bonds.
- 3 Sharing pairs of electrons is called _____ bonds.
- 5 Two or more atoms chemically bonded together.
- 6 One of the elements that makes up the water molecule.