

Knowledge check

Subject area: Organic chemistry

Level: 14–16 years (Foundation)

Topic: Crude oil

Source: rsc.li/311PrTF

1. Below are five steps involved in the formation of crude oil within the Earth, however, the steps are not in order.

Place them into the correct order, the oldest process happening first.

Write your answer below using the letters A–E.

A Crude oil becomes trapped by non-porous rock

B Crude oil is collected by drilling through layers of rock

C Plankton die and fall to the bottom of the sea

D Crude oil rises up through porous rock

E Sediments build up on the plankton over millions of years, heat and pressure turn the plankton into oil

Answer: C, E, D, A, B.

2. The diagram shows a fractionating tower used to separate crude oil.

The names of each fraction are missing from the diagram.

Place the correct fraction into the correct box.

Bitumen

Lubricating oil

Naphtha

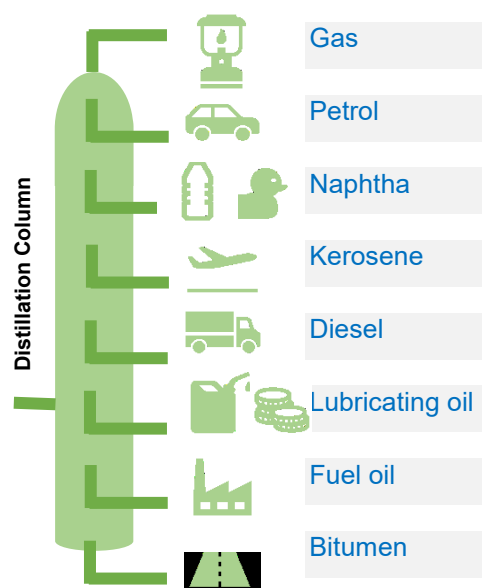
Petrol

Gas

Kerosene

Diesel

Fuel oil



Source: International bunch / adapted from Shutterstock

3. There are gradual trends seen in the properties of each fraction moving up the fractionating column.

Place into the blank spaces in the table the words **increase** or **decrease** to show how each of the following changes:

Property	Increase or decrease?
Boiling point	<i>Answer: Decrease.</i>
Volatility	<i>Answer: Increase.</i>
Viscosity	<i>Answer: Decrease.</i>
Flammability	<i>Answer: Increase.</i>



4. The following passage describes how crude oil is separated into useful products.

However, there are gaps in the sentences that need completing.

Use the words in the box to complete the sentences.

Some words may be left over!

increases	decreases	top	bottom	finite	boiling point
condenses	heated	evaporates	melting point	cooled	

- Crude oil is *heated* and fed into the bottom of the fractionating tower.
- Because the crude oil is very hot, the hot liquid *evaporates* to form a vapour.
- The fractionating column is hotter at the *bottom* than at the *top* so the temperature decreases on moving up the column.
- The vapour moves up through the column and as the temperature cools, the vapour *condenses*.
- The liquid that is formed is then removed.
- The temperature at which a vapour condenses is the same as its *boiling point*.
- As we go **up** the fractionating column:
 - the boiling point *decreases*.
 - the size of each molecule in the fraction *decreases*.
- Crude oil is called a *finite* resource as one day it will run out.