

20 Addition polymerisation – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
alkene	烯烃	_____
repeat unit	重复单元	_____
monomer	单体	_____
polymer	聚合物	_____
addition polymerisation	加成聚合	_____

Recall

From the Alkenes sheet you know that many **alkene** 烯烃 molecules can join into one long chain. Here we look more closely at the **repeat unit** 重复单元 and how to read it.

- A small starting molecule is a **monomer** 单体.
- The long chain that forms is a **polymer** 聚合物.

Nothing here is harder than IGCSE — it just adds the repeat unit.

New ideas

Read these first, then do the Practice.

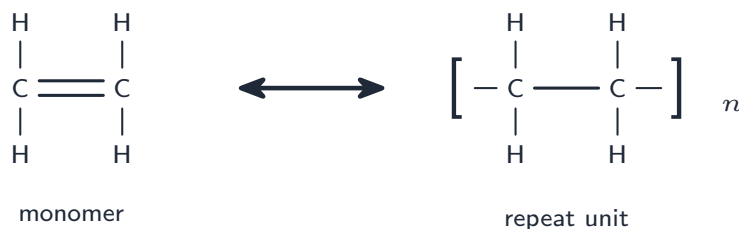
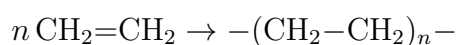
■ 1 Addition polymerisation

In **addition polymerisation** 加成聚合, many **monomers** (each with a **C=C** double bond) open their double bonds and join end to end into one long **polymer**, with **no other product**.



■ 2 The repeat unit

The **repeat unit** 重复单元 is the small part copied along the chain. To find it: take the monomer, change the C=C to a single C—C, and draw a bond going out at each end.



For **PVC**: $n \text{CH}_2=\text{CHCl} \rightarrow -(\text{CH}_2-\text{CHCl})_n-$.

■ 3 Finding the monomer

To go the other way, take one repeat unit and **put the C=C double bond back** — that gives you the monomer.

Watch out: for the repeat unit, change the C=C to C—C and draw a bond out at *each* end (inside brackets, with n). To get back to the monomer, put the C=C double bond back in.

Practice

Try these in order.

20.1 What is the difference between a *monomer* and a *polymer*? [2]

20.2 What feature must a monomer have for addition polymerisation? [1]

20.3 Draw the repeat unit of poly(ethene). [1]

20.4 In addition polymerisation, what other product is made besides the polymer? [1]

20.5 The repeat unit of a polymer is $-(\text{CH}_2-\text{CHCl})-$. Draw the monomer. [1]

20.6 Challenge. The monomer propene is $\text{CH}_2=\text{CHCH}_3$. Draw the repeat unit of poly(propene). [2]