

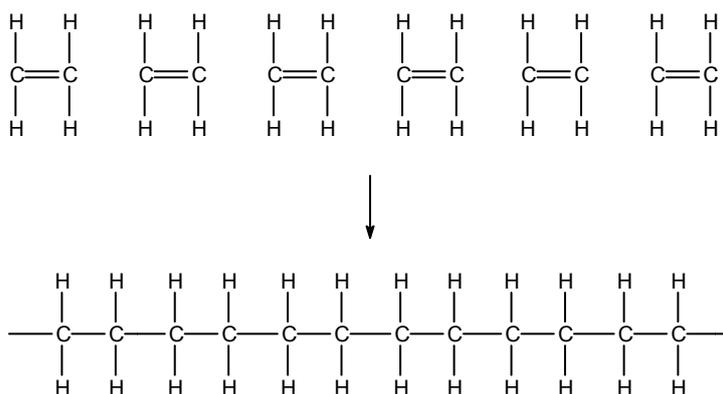


ADDITION POLYMERS 1

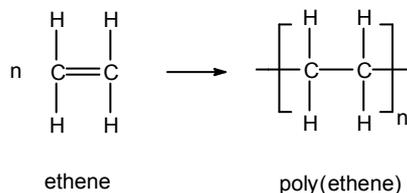
Polymers (plastics) are used to make many things, including bags, bottles, CDs and DVDs, and the casing of electrical items (such as computers, televisions and mobile phones).

Polymers are large molecules made from lots of small molecules called **monomers** joined together. The process in which monomers join together is called **polymerisation**. There are two types of polymers: addition (no other products formed) and condensation (a small molecule such as water is lost).

Alkenes and other molecules containing C=C double bonds can react with each other and join together to form polymers through their C=C double bonds. Many common polymers, such as polythene, are made from alkenes.



This can be written as an equation (n is a big number, often several hundred or thousand):



Polymer =

.....

.....

Monomer =

.....

.....

Addition polymerisation =

.....

.....

TASK – (a) Complete the table overleaf and (b) write a balanced equation for each polymerisation

monomer	monomer name	structure		repeating unit	polymer name	everyday name	uses
$\begin{array}{c} \text{H} & \text{H} \\ & \\ \text{C} & = & \text{C} \\ & \\ \text{H} & \text{H} \end{array}$		$\left(\begin{array}{c} \text{H} & \text{H} \\ & \\ \text{---C} & \text{---C---} \\ & \\ \text{H} & \text{H} \end{array} \right)_n$	$\text{---} \begin{array}{cccccccc} \text{H} & \text{H} \\ & & & & & & & \\ \text{C} & \text{---} & \text{C} \\ & & & & & & & \\ \text{H} & \text{H} \end{array} \text{---}$			polythene	
$\begin{array}{c} \text{H} & \text{CH}_3 \\ & \\ \text{C} & = & \text{C} \\ & \\ \text{H} & \text{H} \end{array}$			$\text{---} \begin{array}{cccccccc} \text{H} & \text{CH}_3 & \text{H} & \text{CH}_3 & \text{H} & \text{CH}_3 & \text{H} & \text{CH}_3 \\ & & & & & & & \\ \text{C} & \text{---} & \text{C} \\ & & & & & & & \\ \text{H} & \text{H} \end{array} \text{---}$			polypropylene	
$\begin{array}{c} \text{H} & \text{C}_6\text{H}_5 \\ & \\ \text{C} & = & \text{C} \\ & \\ \text{H} & \text{H} \end{array}$	phenylethene (old name = styrene)					polystyrene	
$\begin{array}{c} \text{H} & \text{Cl} \\ & \\ \text{C} & = & \text{C} \\ & \\ \text{H} & \text{H} \end{array}$	chloroethene (old name = vinyl chloride)					PVC	
$\begin{array}{c} \text{F} & \text{F} \\ & \\ \text{C} & = & \text{C} \\ & \\ \text{F} & \text{F} \end{array}$	tetrafluoroethene					PTFE / Teflon	
	methyl 2-cyanopropenoate	$\left(\begin{array}{c} \text{H} & \text{COOCH}_3 \\ & \\ \text{---C} & \text{---C---} \\ & \\ \text{H} & \text{CN} \end{array} \right)_n$				Super glue	
$\begin{array}{c} \text{H} & \text{COOCH}_3 \\ & \\ \text{C} & = & \text{C} \\ & \\ \text{H} & \text{CH}_3 \end{array}$	methyl 2-methyl propenoate					PMMA, Perspex	