

S3 Chemistry

Unit 2.1c Alkenes

11	Alkenes are a homologous series of unsaturated hydrocarbons (unsaturated = at least one double bond)						
	- are used to make polymers and alcohols - are insoluble in water - contain the C=C double bond functional group - can be represented by the general formula C_nH_{2n}						
12a 13a	Straight-chain alkenes can be drawn. The position of the double bond must be indicated in the name for alkenes with four or more carbons in the main chain.						
	Alkene	Molecular Formula	Shortened Formula	Structural Formula			
	Ethene	C_2H_4	$CH_2=CH_2$	$\begin{array}{c} H & & C & = & C & - & H \\ & & & & & & \\ & & H & & H & & \end{array}$			
	Propene	C_3H_6	$CH_3CH=CH_2$	$\begin{array}{c} & H & & & & \\ & & & & & \\ H & - & C & - & C & = & C & - & H \\ & & & & & & & \\ & H & & H & & H & & \end{array}$			
	But-1-ene	C_4H_8	$CH_3CH_2CH=CH_2$	$\begin{array}{c} & H & & H & & & & \\ & & & & & & & \\ H & - & C & - & C & - & C & = & C & - & H \\ & & & & & & & & & \\ & H & & H & & H & & H & & \end{array}$			
	But-2-ene	C_4H_8	$CH_3CH=CHCH_3$	$\begin{array}{c} & H & & H & & H & & H & & \\ & & & & & & & & & \\ H & - & C & - & C & = & C & - & C & - & H \\ & & & & & & & & & \\ & H & & H & & H & & H & & \end{array}$			
	Pent-1-ene	C_5H_{10}	$CH_3CH_2CH_2CH=CH_2$	$\begin{array}{c} & H & & H & & H & & & & \\ & & & & & & & & & \\ H & - & C & - & C & - & C & - & C & = & C & - & H \\ & & & & & & & & & & & \\ & H & & H & & H & & H & & H & & \end{array}$			
	Pent-2-ene	C_5H_{10}	$CH_2CH=CHCH_2CH_3$	$\begin{array}{c} & H & & & & H & & H & & \\ & & & & & & & & & \\ H & - & C & - & C & = & C & - & C & - & H \\ & & & & & & & & & \\ & H & & H & & H & & H & & \end{array}$			
	Hex-1-ene	C_6H_{12}	$CH_3CH_2CH_2CH_2CH=CH_2$	$\begin{array}{c} & H & & H & & H & & H & & & \\ & & & & & & & & & & \\ H & - & C & - & C & - & C & - & C & - & C & = & C & - & H \\ & & & & & & & & & & & & & \\ & H & & H & & H & & H & & H & & H & & \end{array}$			
	Hex-2-ene	C_6H_{12}	$CH_3CH_2CH_2CH=CHCH_3$	$\begin{array}{c} & H & & H & & H & & H & & & \\ & & & & & & & & & & \\ H & - & C & - & C & - & C & - & C & = & C & - & H \\ & & & & & & & & & & & \\ & H & & H & & H & & H & & H & & \end{array}$			
Hex-3-ene	C_6H_{12}	$CH_3CH_2CH=CHCH_2CH_3$	$\begin{array}{c} & H & & H & & & & H & & H & & \\ & & & & & & & & & & & \\ H & - & C & - & C & - & C & = & C & - & C & - & H \\ & & & & & & & & & & & \\ & H & & H & & H & & H & & H & & \end{array}$				
Hept-1-ene	C_7H_{14}	$CH_3CH_2CH_2CH_2CH_2CH=CH_2$	$\begin{array}{c} & H & & H & & H & & H & & H & & & \\ & & & & & & & & & & & & \\ H & - & C & - & C & - & C & - & C & - & C & - & C & = & C & - & H \\ & & & & & & & & & & & & & & & \\ & H & & H & & H & & H & & H & & H & & H & & \end{array}$				
	Oct-1-ene	C_8H_{16}	$CH_3CH_2CH_2CH_2CH_2CH_2CH=CH_2$	$\begin{array}{c} & H & & H & & H & & H & & H & & H & & \\ & & & & & & & & & & & & & \\ H & - & C & - & C & - & C & - & C & - & C & - & C & = & C & - & H \\ & & & & & & & & & & & & & & & \\ & H & & H & & H & & H & & H & & H & & H & & \end{array}$			
12b 13b	Alkenes with branches can be drawn:						
	$\begin{array}{c} & H & & H & & H & & \\ & & & & & & & \\ H & - & C & - & C & = & C & - & H \\ & & & & & & & \\ & H & & H & & H & & \end{array}$	$\begin{array}{c} & H & & H & & \\ & & & & & \\ H & - & C & = & C & - & C & - & H \\ & & & & & & & & \\ & & & & H & & H & & \end{array}$	$\begin{array}{c} & & & H & & H & & \\ & & & & & & & \\ & & & H & - & C & = & C & - & C & - & H \\ & & & & & & & & & & & \\ & & & & & H & & H & & H & & \end{array}$				
	2-methylbut-2-ene	2-methylbut-1-ene	3-methylbut-1-ene				
	$\begin{array}{c} & H & & H & & H & & \\ & & & & & & & \\ H & - & C & - & C & = & C & - & H \\ & & & & & & & \\ & H & & H & & H & & \end{array}$	$\begin{array}{c} & H & & H & & \\ & & & & & \\ H & - & C & = & C & - & C & - & H \\ & & & & & & & & \\ & & & & H & & H & & \end{array}$	$\begin{array}{c} & & & H & & H & & \\ & & & & & & & \\ & & & H & - & C & = & C & - & C & - & H \\ & & & & & & & & & & & \\ & & & & & H & & H & & H & & \end{array}$				
	2,3-dimethylbut-2-ene	3,3-dimethylbut-1-ene	methylpropene				