Question 24 (4 marks)

In the margarine industry, alkenes are often hydrogenated to convert unsaturated oils into solid fats that have a greater proportion of saturated molecules.

(a) Using ethene as an example, write an equation for this reaction and state the type of reaction this represents.

\[
\text{C}_2\text{H}_4(g) + \text{H}_2(g) \rightarrow \text{C}_2\text{H}_6(g)
\]

(b) Describe a test that could be used to confirm that all the ethene has been converted.

To confirm that all the ethene has converted, the solution is mixed with bromine. If bromine has a brown colour on its own, but when reacted with ethene it turns colourless. If the solution is brown when bromine is added, then all the ethene has reacted.

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