

# 2023 Ch H1 Q25

Section: Nature's Chemistry

Topic: Systematic Carbon Chemistry  
(Addition Reactions)

## Question Summary

Addition of hydrogen chloride, HCl, to 2-methylpent-2-ene can give two possible products. The major product is formed when the hydrogen atom from HCl attaches to the carbon in the double bond that already has the greater number of hydrogen atoms attached. This follows Markovnikov's rule.

## Worked Solution

In 2-methylpent-2-ene, the double bond is between the second and third carbons.

- Carbon-2 is bonded to one hydrogen and two carbons.
- Carbon-3 is bonded to two hydrogens and one carbon.

According to Markovnikov's rule, the hydrogen atom attaches to the carbon with

more hydrogens (carbon-3), and the chlorine attaches to the other carbon (carbon-2).

This produces the major product:  
2-chloro-2-methylpentane.

## **Final Answer**

**B — 2-chloro-2-methylpentane**

## **Revision Tips**

- Markovnikov's rule: 'the rich get richer' — the carbon with more hydrogens gets the additional hydrogen.
- Major products of electrophilic addition follow this rule.
- Always analyse the double bond carbons to see which has more hydrogens.