

## Reaction

**REACTANTS:** Alkene and H<sub>2</sub>SO<sub>4</sub> (*Concentrated Sulfuric Acid*) **CONDITIONS:** Concentrated H<sub>2</sub>SO<sub>4</sub> **PRODUCT:** Alkyl Hydrogensulfate **REACTION TYPE:** Electrophilic Addition



## Mechanism

 $H_2SO_4$  acts as an electrophile because its hydrogen atoms have a large partial positive charge, so one of them accepts an electron pair from the carbon-carbon double bond. During the reaction the carbon-carbon double bond breaks, forming a postively charged carbon (carbocation). The negatively charged hydrogensulfate ion bonds with the carbocation. H and HSO<sub>4</sub> is 'added' across the carbon-carbon double bond. *Addition reaction.* 



## **Notes:**

- If a primary or secondary carbocation can be formed during the reaction, the secondary carbocation will form more readily than the primary carbocation - creating 'major' and 'minor' products\*.
- The secondary carbocation is more stable due to increased positive inductive effect from neighbouring alkyl chains.
- Oxygen atoms in the sulfuric acid have lone pairs of electrons (not shown in the mechanism above).
- \*The product mixture will contain more of the major product than the minor product.

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