

IUPAC Naming of Organic Compound

<https://gemini.google.com/app/3bc9e48a7687abaf>

Response: The correct answer is **(2) 5-amino-2-ethylpent-1-en-3-ol**.

Step-by-Step Breakdown

1. **Identify Functional Group Priority:** According to IUPAC priority rules:

Alcohol ($-\text{OH}$) > Alkene ($\text{C} = \text{C}$) > Amine ($-\text{NH}_2$)

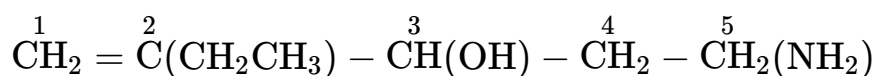
- **Principal functional group:** Alcohol ($-\text{ol}$ suffix).
- **Subordinate functional group:** Alkene ($-\text{en}-$ infix).
- **Substituent:** Amine ($-\text{NH}_2$) becomes a prefix (**amino-**).

2. **Select the Principal Carbon Chain:**

- The chain must contain the maximum number of principal functional groups ($-\text{OH}$) and double bonds ($\text{C} = \text{C}$).
- Starting from the double bond carbon ($\text{CH}_2 = \text{C}$) and moving across through the $-\text{OH}$ and $-\text{NH}_2$ groups gives a **5-carbon chain** (pent).
- The remaining $-\text{CH}_2 - \text{CH}_3$ group attached to **C2** is treated as an **ethyl** substituent.

3. **Number the Chain:**

- Number from the end that gives lower locants to the principal functional group ($-\text{OH}$) and unsaturation ($\text{C} = \text{C}$):



- Locants:
 - Double bond: **C1** (-1-en-)
 - Ethyl group: **C2** (2-ethyl)
 - Hydroxyl group: **C3** (-3-ol)
 - Amino group: **C5** (5-amino)

4. **Assemble the Name (Alphabetical Order of Prefixes):**

- **Prefixes:** 5-amino and 2-ethyl (alphabetical order: **amino** comes before **ethyl**).

- **Parent Name:** pent-1-en-3-ol
 - **Full Name:** 5-amino-2-ethylpent-1-en-3-ol
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