

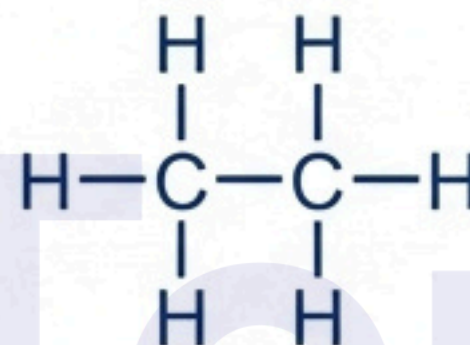
Alkynes

The Structure, Properties, and
Reactivity of Triple-Bonded
Hydrocarbons.

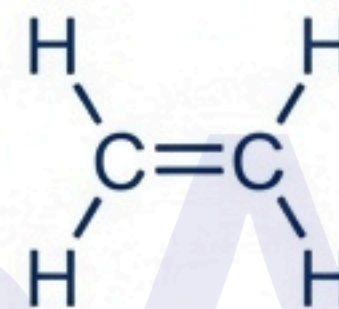
The Unsaturated Hydrocarbons

[Key Term: Unsaturated]

Alkynes are aliphatic, highly unsaturated hydrocarbons distinguished **by the presence of at least one carbon-carbon triple bond**.



Alkanes
(Saturated / Max
Hydrogens)



Alkenes
(Unsaturated)



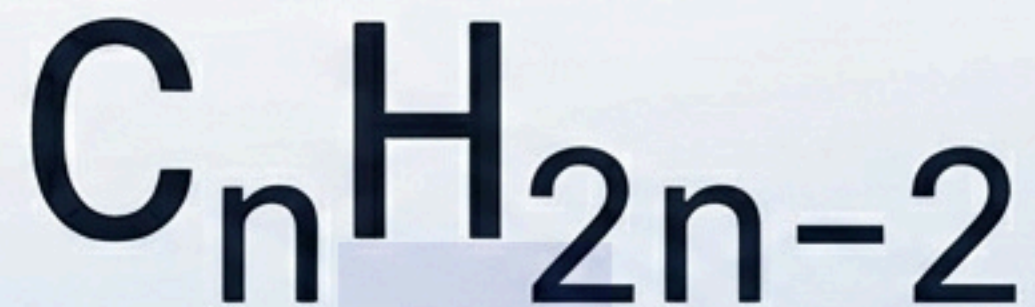
Alkynes
(Highly Unsaturated /
Least Hydrogens)

Exam Smart



The presence of the triple bond makes alkynes highly reactive sources of mobile electrons.

The Alkyne Formula



For every n carbon atoms, there are exactly $2n - 2$ hydrogen atoms.

This formula represents a deficit of exactly **4** hydrogen atoms compared to a fully saturated alkane ($\text{C}_n\text{H}_{2n+2}$).

If $n = 3 \rightarrow \text{C}_3\text{H}_{(2*3)-2} \rightarrow \text{C}_3\text{H}_4$ (Propyne)



You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



Turn theory into marks with **unlimited MCQs, smart analysis, and focused revision.**

Practice Now



At prep.topall.app

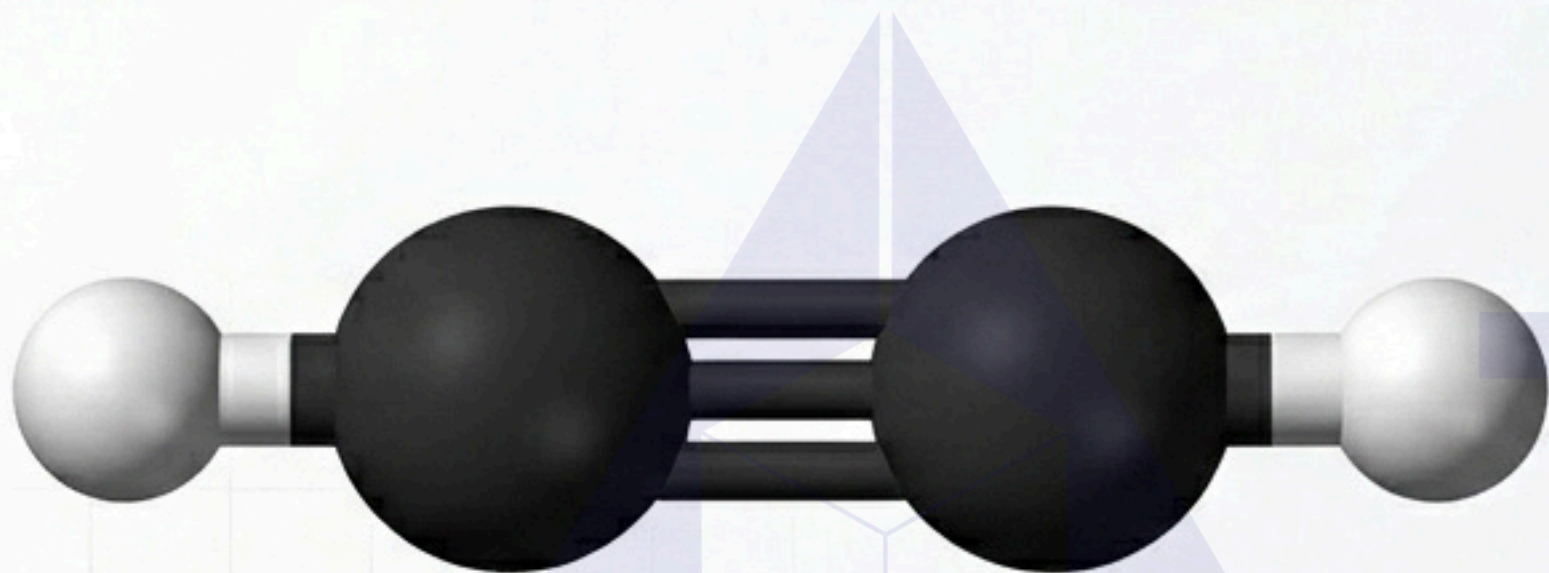
Key Highlights

- » Free Study Material, Videos & Infographics
- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter



THE FIRST STABLE MEMBER

Ethyne (Acetylene)



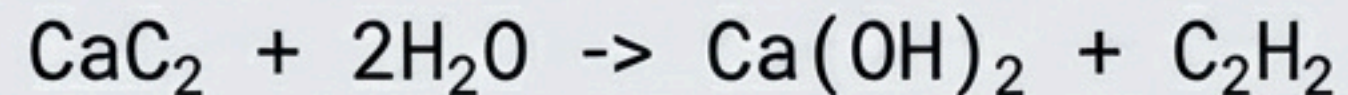
[IUPAC: Ethyne]

[Common: Acetylene]

[Geometry: Linear]

The Oxyacetylene Flame

Ethyne is heavily utilized in **arc welding** due to the extremely high temperatures produced when mixed with oxygen gas.



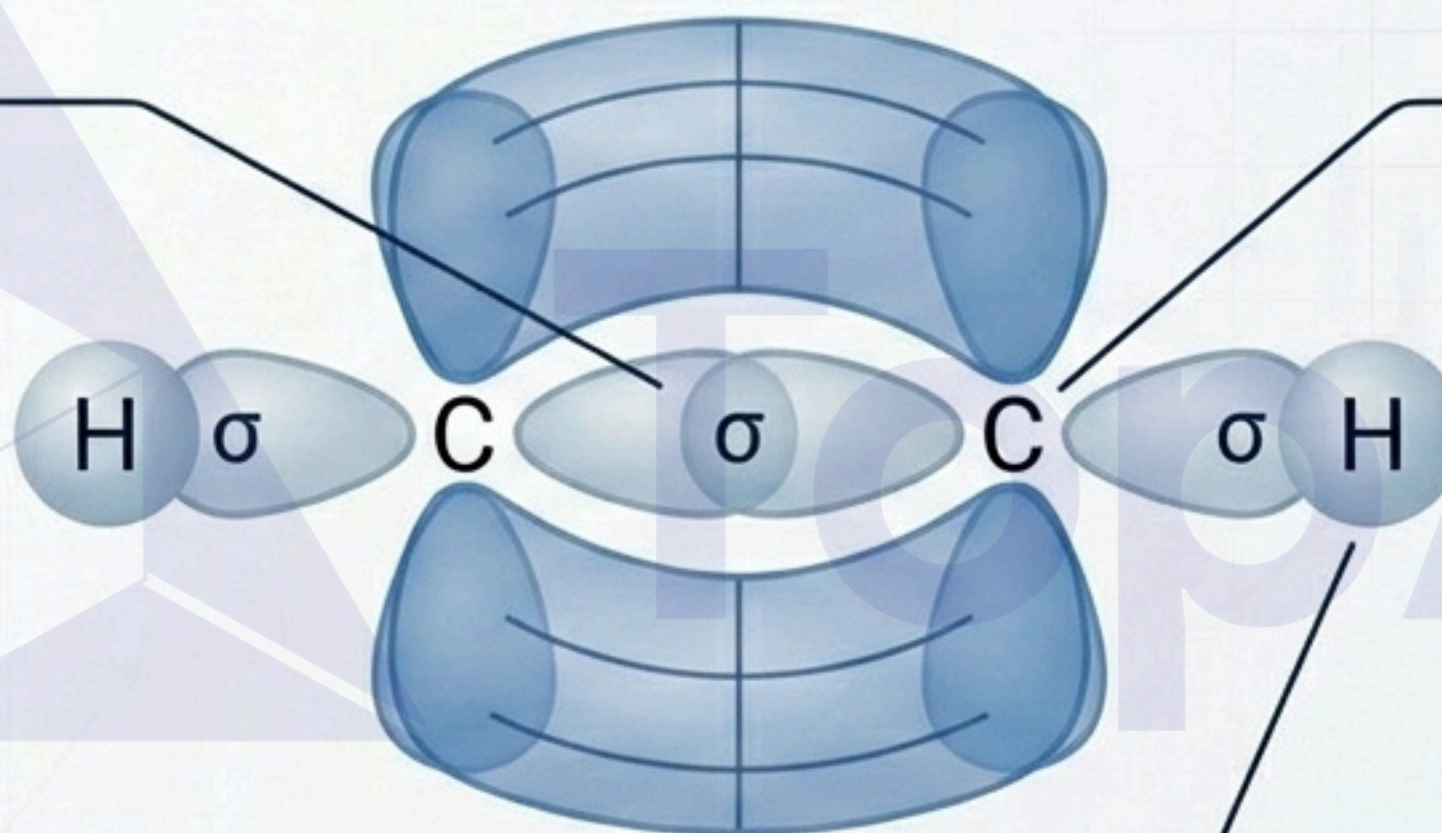
(Industrial preparation from calcium carbide)

Inside the Triple Bond

Highest bond enthalpy (823 kJ/mol). Shorter bond length (120 pm) than double (134 pm) or single bonds.

[1 Sigma Bond]

[2 Pi Bonds]



Carbon atoms are **sp Hybridized**. This creates a linear, 180° geometry.

A maximum 50% s-character makes the terminal hydrogen atoms uniquely acidic, allowing them to be easily liberated as protons (e.g., forming sodium acetylides).

The Triple Bond Family Overview

Formula C_nH_{2n-2}	Hybridization sp
Geometry Linear, 180°	Unsaturation Level Highest / Least Hydrogens

Key Takeaways

- Alkynes are highly reactive due to weakly held, mobile pi electrons.
- Terminal alkynes exhibit unique acidic behavior not seen in alkanes or alkenes.
- Ethyne (C_2H_2) serves as the foundational building block for many industrial organic compounds.



You've Learned the Theory.

Now Let's Test It.

Reading notes gets you knowledge.

Practicing MCQs gets you marks.

That's exactly what TopAll Pro is built for.

Try TopAll Pro Now

What TopAll Pro Does Differently

-  **Stuck? Snap it. Solve it. — Doubts AI**
Photo → step-by-step solution in seconds, 24/7
-  **Your AI Coach finds your blind spots**
Concept-level weakness detection — not just chapter-level
-  **4.5 Lakh+ questions. Never run out.**
13× more content than any other prep app in India
-  **Build your own test in 60 seconds**
Pick a chapter, set difficulty — AI does the rest instantly.
-  **AI Recommendation that helps you improve**
AI Recommendation Analysis your Tests and tell you where you need to improve.



Practice the moment you finish studying
Jump in while the concept is still fresh in your head

4.5L+
MCQs

1.5L+
Students

AI Powered
In-Depth Analysis