

Rosenmund Reduction & Gatterman-Koch Reaction

Preparation of Aldehydes: Reagents, Catalysts, and Exam Traps

Rosenmund Reduction

Conversion of an acyl chloride specifically to an aldehyde via catalyzed hydrogenation.

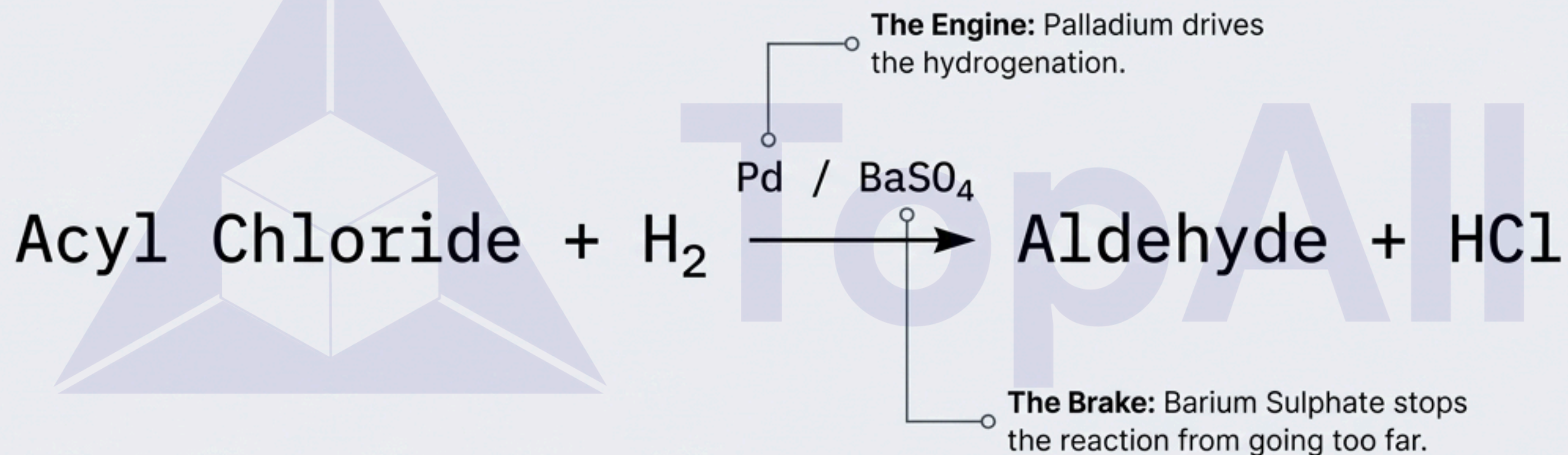
Gatterman-Koch Reaction

Direct formylation of a benzene ring to synthesize benzaldehyde.

Palladium on Barium Sulphate (Pd/BaSO₄)

The specialized, intentionally poisoned catalyst system required for the Rosenmund reduction.

Reaction Spotlight: Rosenmund Reduction



- This reaction is exclusively used for converting acid chlorides into aldehydes.



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$$E=mc^2$$



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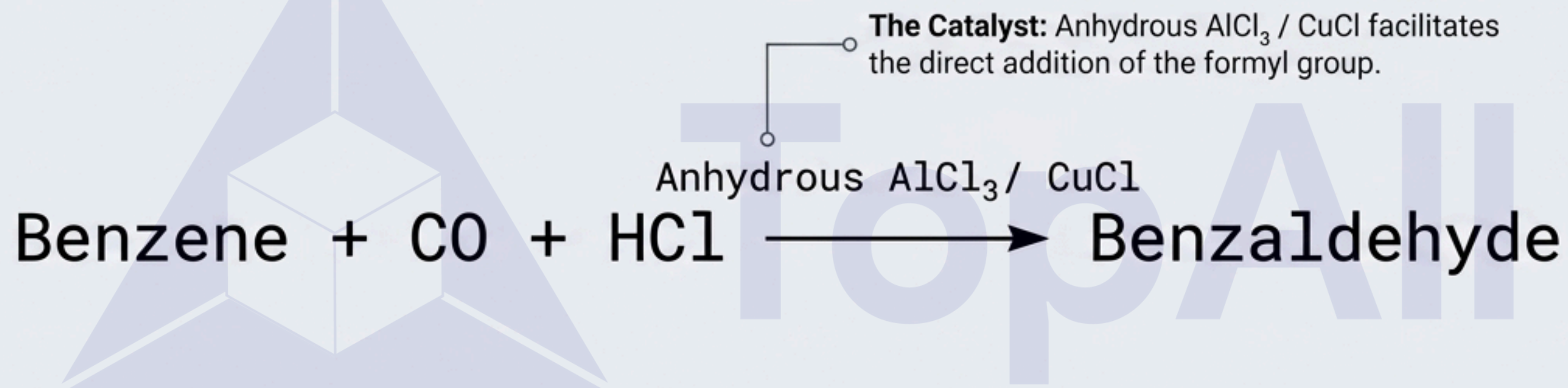
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Key Highlights

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Reaction Spotlight: Gatterman-Koch Reaction



- A commercial/industrial method to directly add a formyl group ($-\text{CHO}$) to a benzene ring or its derivatives.

Watch for this: The Over-Reduction Trap

Acyl
Chloride



Aldehyde



Primary
Alcohol

Why do we need BaSO_4 ? The Barium Sulphate acts as a catalytic poison. It deliberately deactivates the Palladium just enough to halt the reduction safely at the aldehyde stage. Without this 'brake pedal', the reaction would barrel straight through and over-reduce into a primary alcohol!

Key Takeaways

- **Rosenmund Reduction:** Uses H_2 and a poisoned catalyst (Pd/BaSO_4) to reduce acyl chlorides exclusively to aldehydes without over-reducing.
- **Gatterman-Koch Reaction:** Uses CO , HCl , and Anhydrous $\text{AlCl}_3/\text{CuCl}$ to directly synthesize benzaldehyde from benzene.



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