

# Saitechinfo NEET-JEE Academy

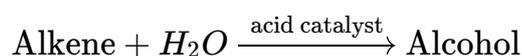


Here is a summary of important reactions related to the preparation and chemical properties of alcohols, phenols, and ethers.

## Alcohols

### Preparation Methods:

#### 1. Hydration of Alkenes:



Example: Ethene to ethanol using sulfuric acid as a catalyst.

#### 2. Reduction of Aldehydes and Ketones:

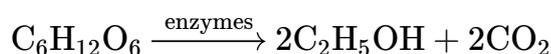


Example: Ethanal to ethanol, propanone to isopropanol.

#### 3. Hydrolysis of Alkyl Halides:



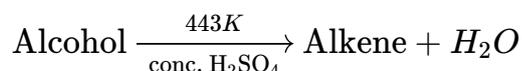
#### 4. Fermentation:



Fermentation of glucose to ethanol.

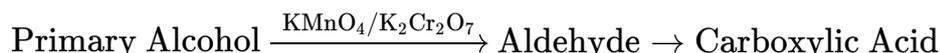
### Chemical Properties:

#### 1. Dehydration to form Alkenes:

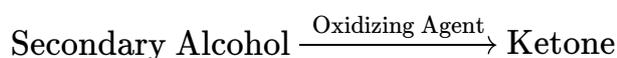


#### 2. Oxidation:

- **Primary alcohol** oxidizes to an **aldehyde** and then to a **carboxylic acid**:



- **Secondary alcohols** oxidize to **ketones**:



#### 3. Reaction with Sodium:



#### 4. Esterification:



## Phenols

### Preparation Methods:

#### 1. From Chlorobenzene (Dow's Process):



#### 2. From Cumene (Cumene Hydroperoxide Process):



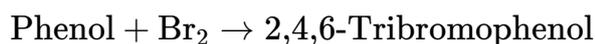
### Chemical Properties:

#### 1. Electrophilic Substitution Reactions:

##### ○ Nitration:



##### ○ Halogenation:



#### 2. Reaction with Sodium Hydroxide:



#### 3. Reimer-Tiemann Reaction:



#### 4. Kolbe's Reaction:



## Ethers

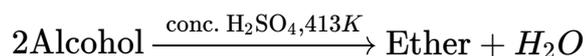
### Preparation Methods:

#### 1. Williamson Ether Synthesis:



Example: Synthesis of diethyl ether from sodium ethoxide and ethyl bromide.

#### 2. Dehydration of Alcohols:



## Chemical Properties:

### 1. Cleavage by Acids:



2. **Inert Nature:** Ethers are generally inert and do not react with bases, oxidizing agents, or reducing agents under normal conditions. However, they can undergo cleavage reactions with strong acids like HI or HBr.

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These reactions cover the key preparation methods and important chemical properties for alcohols, phenols, and ethers, which are essential for understanding their behavior in organic chemistry.