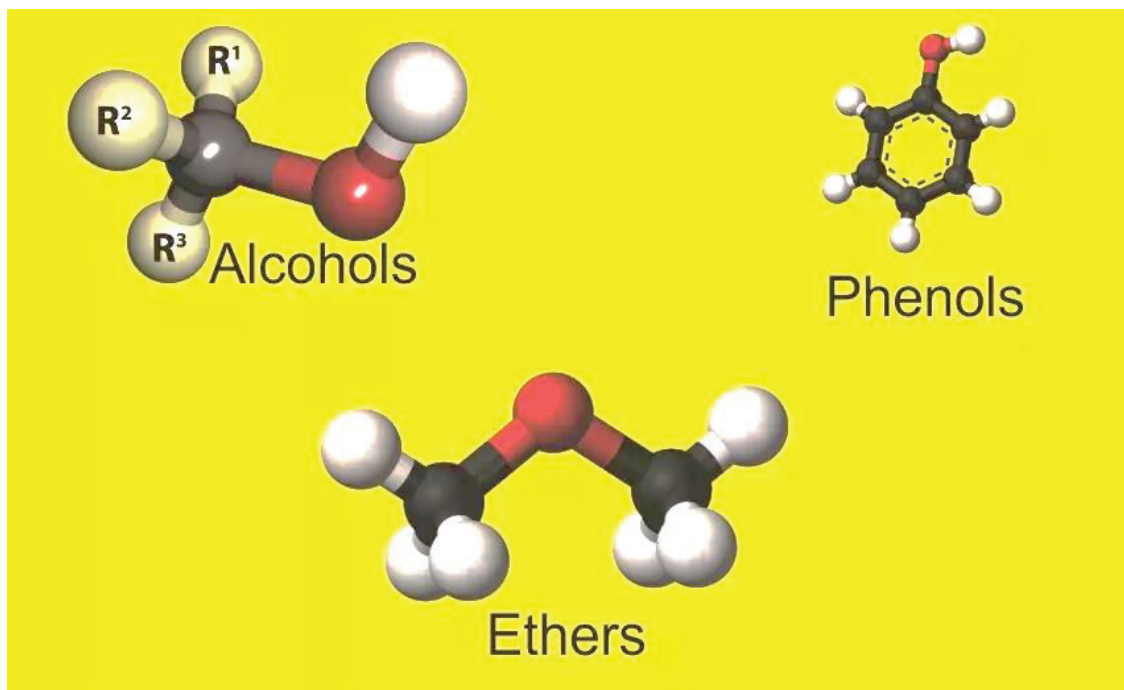


Alcohols, Phenols and Ethers



For Quick Revision and Smart Practice

NEET FAST FORWARD

An Innovation of NEET Experts with 30+ years of Blissful Teaching
Experience and Inspiration of Lakh+ successful MEDICO professionals



India's First e - Magazine with Live Testing

Alcohols, Phenols and Ethers

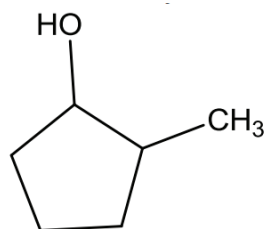
Introduction

- Alcohols and phenols are compounds formed when a hydrogen atom in a hydrocarbon is replaced by -OH group.
- An alcohol contains one or more hydroxyl (OH) group(s) directly attached to carbon atom(s) of aliphatic system.
- A phenol contains -OH group(s) directly attached to carbon atom(s) of an aromatic system ($\text{C}_6\text{H}_5\text{OH}$).
- The substitution of a hydrogen atom in a hydrocarbon by an alkoxy or aryloxy group (R-O/Ar-O) gives another class of compounds known as ethers.
For example: $\text{C}_2\text{H}_5\text{-O-C}_2\text{H}_5$ (Dimethyl ether)

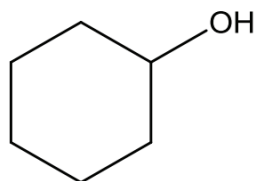
Nomenclature

Compound	Common name	IUPAC name
$\begin{array}{c} \text{H} \quad \text{H}_2 \\ \quad \\ \text{H}_3\text{C}-\text{C}-\text{C}-\text{CH}_3 \\ \\ \text{OH} \end{array}$	<i>sec</i> -Butyl alcohol	Butan-2-ol
$\begin{array}{c} \text{CH}_3 \\ \\ \text{H}_3\text{C}-\text{C}-\text{OH} \\ \\ \text{CH}_3 \end{array}$	<i>tert</i> -Butyl alcohol	2-Methylpropan-2-ol
$\begin{array}{c} \text{H} \\ \\ \text{H}_2\text{C}-\text{C}-\text{CH}_2 \\ \quad \quad \\ \text{OH} \quad \text{OH} \quad \text{OH} \end{array}$	Glycerol	Propane -1, 2, 3-triol
$\begin{array}{c} \text{H} \\ \\ \text{H}_3\text{C}-\text{C}-\text{CH}_3 \\ \\ \text{OH} \end{array}$	Isopropyl alcohol	Propan-2-ol
$\text{H}_3\text{C}-\text{C}-\text{C}-\text{OH} \\ \quad \\ \text{H}_2 \quad \text{H}_2$	<i>n</i> -Propyl alcohol	Propan-1-ol

In case of cyclic compounds, we use the prefix cyclo if the -OH group is attached to C-1.

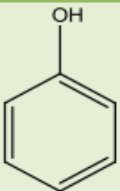
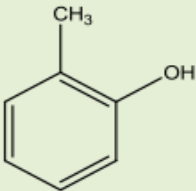
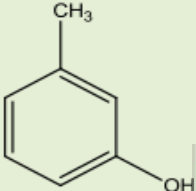
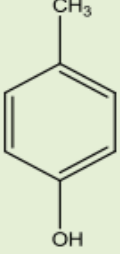
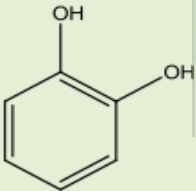
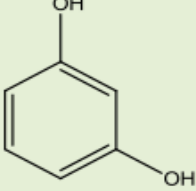
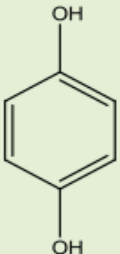


2-Methylcyclopentanol



Cyclohexanol

Phenols:

Compound	Common name	IUPAC name
	Phenol	Phenol
	<i>o</i> -Cresol	2-Methylphenol
	<i>m</i> -Cresol	3-Methylphenol
	<i>p</i> -Cresol	4-Methylphenol
	Catechol	Benzene-1,2-diol
	Resorcinol	Benzene-1,3-diol
	Hydroquinone or quinol	Benzene-1,4-diol

For Quick Revision and Smart Practice

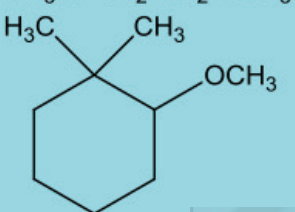
NEET
FAST FORWARD

An Innovation of NEET Experts with 30+ years of Blissful Teaching Experience and Inspiration of Lakh+ successful MEDICO professionals



India's First e - Magazine with Live Testing

Ethers

Compound	Common name	IUPAC name
CH_3OCH_3	Dimethyl ether	Methoxymethane
$\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$	Diethyl ether	Ethoxyethane
$\text{C}_6\text{H}_5\text{O}(\text{CH}_2)_6\text{-CH}_3$	Heptyl phenyl ether	1-Phenoxyheptane
	Phenyl isopentyl ether	3- Methylbutoxybenzene
$\text{C}_6\text{H}_5\text{-O-CH}_2\text{-CH}_2\text{-CH-CH}_3$ <div style="margin-left: 100px;"> CH₃</div>	---	1,2-Dimethoxyethane
$\text{CH}_3\text{-O-CH}_2\text{-CH}_2\text{-OCH}_3$	---	
		2-Ethoxy- -1,1-dimethylcyclohexane

For Quick Revision and Smart Practice

Structures of Functional Groups

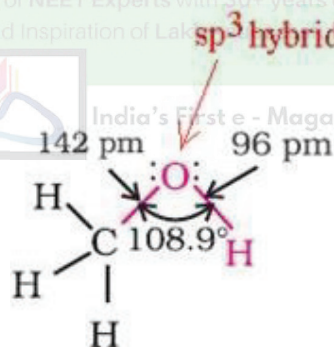
Alcohols

- For alcohols, the -OH group is linked to carbon by a sigma bond.
- The bond is formed by the overlap of sp^3 hybridised orbital of carbon with a sp^3 hybridised orbital of oxygen.

An Innovation of NEET Experts with 30+ years of Blissful Teaching Experience and Inspiration of Lakshya Education Professionals



India's First e - Magazine with Live Testing



Methanol

(Alcohol)

- In alcohols, the bond angle is slightly less than the tetrahedral angle ($109^\circ-28'$) due to the repulsion between the unshared electron pairs of oxygen.

Phenols

- In phenols, the -OH group is linked to carbon by sp^2 hybridisation.
- The C-O bond length (136 pm) in phenol is slightly less than that in methanol.



TO DOWNLOAD FULL FILE



[Download Android App](#)

Fast Forward a work of Adhipati Creations that provides the best app for NEET, JEE, BITSAT, CUET and CBSE exam preparation.