POLYHYDROXY COMPOUNDS

14/06/2021 Lecture-6 Deg-I (Hons.)

Paper-II Group-B Chapter-3

Topic :- Chemical Properties Of Ethylene Glycol Continued...

Reaction with PX3

It reacts with phosphorus trichloride or phosphorus tribromide to form corresponding dihalides when both the $-OH$ groups are replaced by halogen atom.

$$3\ \begin{matrix}CH_2-OH\\ |\\ CH_2-OH\end{matrix} + 2PBr_3 \longrightarrow 3\ \begin{matrix}^{1}CH_2-Br\\ |\\ CH_2-Br\ ^{2}\end{matrix} + 2H_3PO_3$$

(1,2-dibromoethane)

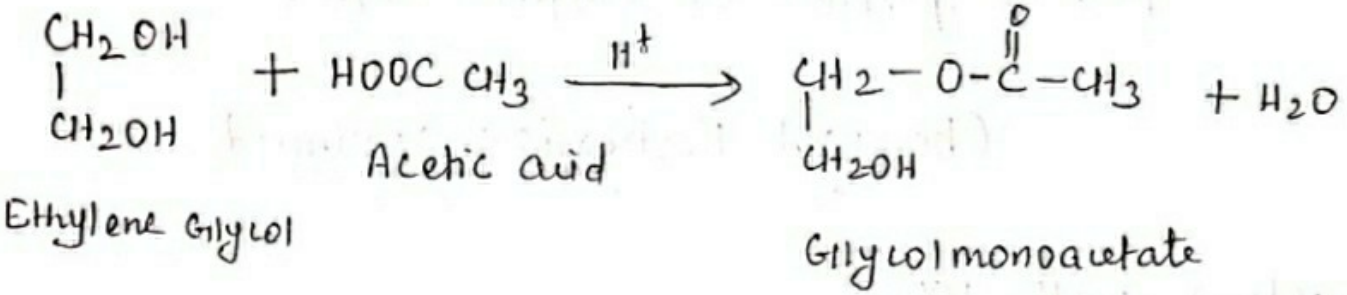
PI_3, however produces ethylene diiodide which being unstable at once yields iodine and ethylene.

$$\begin{matrix}CH_2-OH\\ |\\ CH_2-OH\end{matrix} + 2PI_3 \longrightarrow \begin{matrix}CH_2-I\\ |\\ CH_2-I\end{matrix} \longrightarrow \begin{matrix}CH_2\\ ||\\ CH_2\end{matrix} + I_2$$

1,2-Diiodoethane (unstable) — Ethylene

Reaction with Carboxylic acid

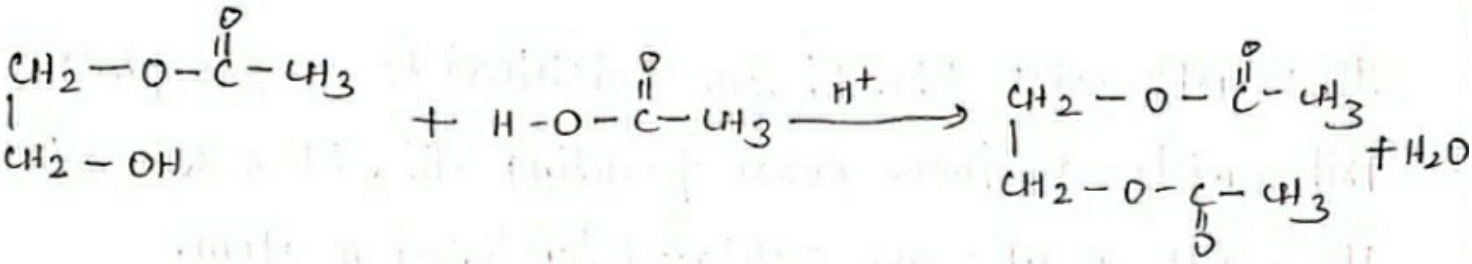
It reacts with carboxylic acid to give mono or diesters. Depending upon the relative amount of ethylene glycol and acid taken.



Ethylene Glycol

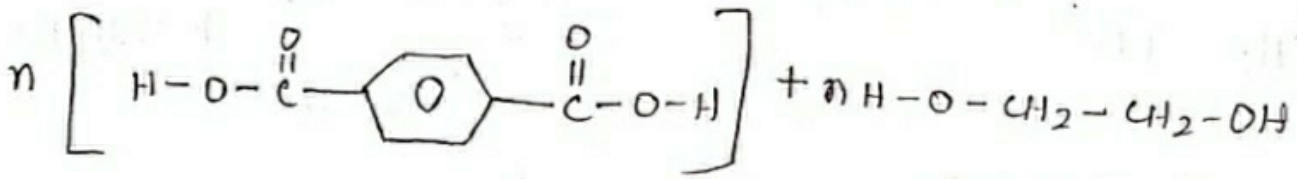
Acetic acid

Glycol monoacetate



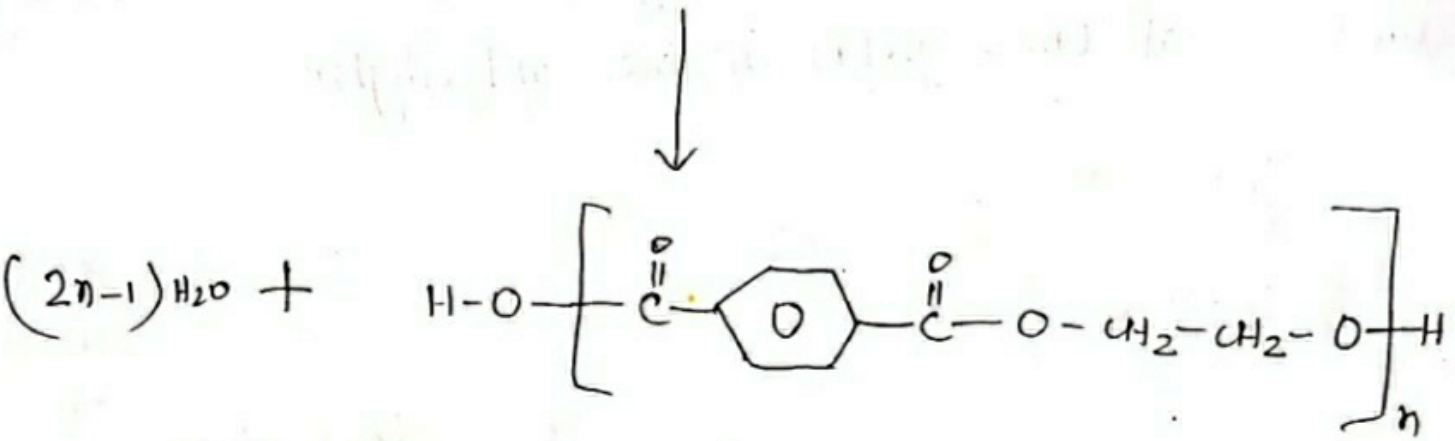
Glycol diacetate

When esterified with a dibasic acid, it forms polymers. eg;



Ethylene Glycol

Terephthalic acid



Terylene or Dacron

Contd..