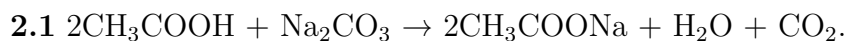


Solutions

Original marking guidance: M1 method, A1 accuracy, B1 explanation.



2.2 Methyl propanoate; heat with an acid catalyst.

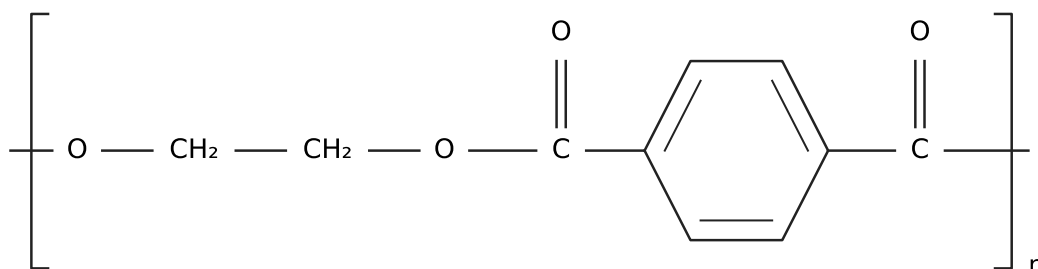


3.1 $\text{CH}_3\text{COCl} + 2\text{CH}_3\text{NH}_2 \rightarrow \text{CH}_3\text{CONHCH}_3 + \text{CH}_3\text{NH}_3\text{Cl}$. One amine forms the amide; the other accepts HCl.

3.2 Acid: propanoic acid and methanol, reversible. Alkali: propanoate salt and methanol; formation of carboxylate removes the free acid from the esterification equilibrium and drives the process.

3.3

Terylene: completed repeat unit with para benzene links



From ethane-1,2-diol and benzene-1,4-dicarboxylic acid; ester links form by condensation.

B1 diol skeleton; B1 para aromatic skeleton; B1 correct ester links/carbonyls; B1 brackets with open bonds and n.