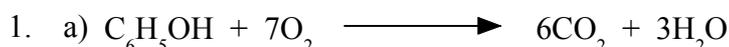


## Chemguide – answers

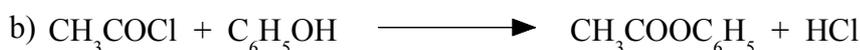
### PHENOL: OTHER REACTIONS



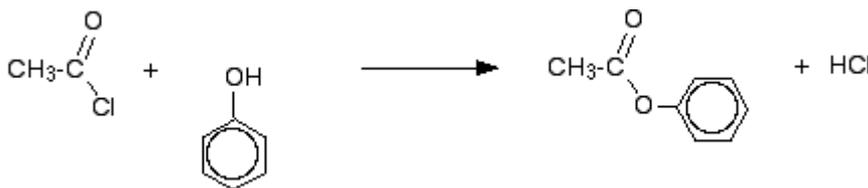
(You can draw the benzene ring if you want to, but if you are just asked for an equation, you can equally well use the form above.)

b) You need quite a lot of oxygen for the complete combustion of phenol. The hydrogen always takes the available oxygen first, and if there isn't enough, you get left with carbon monoxide or carbon (soot).

2. a) The reaction is too slow.



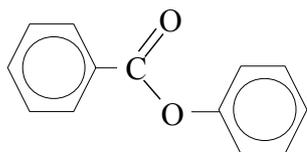
If you have shown the full structures, your equation will look like this (taken from the Chemguide page):



c) React the phenol with sodium hydroxide solution to give sodium phenoxide,  $\text{C}_6\text{H}_5\text{O}^- \text{Na}^+$ .



d)



e) Reactions of acid anhydrides are always slower than those of acyl chlorides, and the modification of the phenol helps to speed things up.

3. You first have to make the iron(III) chloride solution neutral by adding drops of ammonia solution until you get a faint precipitate, and then just enough of the original iron(III) chloride to remove the precipitate again. Then add a crystal of the substance you are testing. An intense purple-violet colour shows that you have phenol.