

Chemguide – questions

PHENYLAMINE: REACTION WITH BROMINE WATER

1. The NH_2 group in phenol is *activating* and *2,4-directing*.
 - a) Explain what is meant by an *activating group*, and (briefly) how the NH_2 group activates the ring.
 - b) What is meant by a *2,4-directing group*?
2. Bromine water can be used as a test for phenylamine.
 - a) State what you would observe if you shook bromine water with a few drops of phenylamine.
 - b) Draw the structure, and give the name, of the main organic product of the reaction between bromine water and phenylamine.
 - c) The reaction between bromine water and phenol looks the same as this one with phenylamine. Suggest a simple chemical test you could do to find out whether a substance was phenylamine or phenol.
 - d) Bromine water is also used as a test for carbon-carbon double bonds. What is the main difference in the result of a reaction between bromine water and an alkene as opposed to the reaction between bromine water and phenol or phenylamine?