

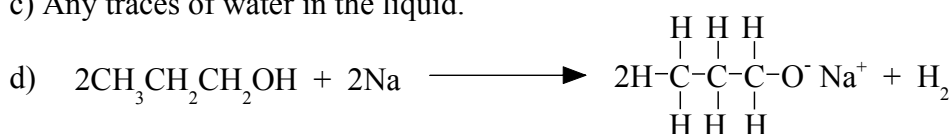
Chemguide – answers

ALCOHOLS: THE REACTION WITH SODIUM

1. a) Sodium reacts violently and dangerously with acids of all kinds. If the liquid wasn't neutral, it wouldn't be safe to add sodium to it.
- b) There would be fizzing and a colourless gas would be given off which pops if tested with a lighted splint.

(Note: You are probably too old and sophisticated to be told this, but an observation is what you see or detect by some other sense! You do not *observe* hydrogen being given off – that is a *deduction* from the fact that it pops with a lighted splint!)

- c) Any traces of water in the liquid.



(If you have drawn a line between the oxygen and the sodium in the product, it is wrong, even if you have included the charges! This is an *ionic* bond – a line shows a covalent bond. Make sure that you have got the equation balanced properly as well as having the correct structure.)

- e) Disposing of small amounts of sodium metal. The reaction between sodium and ethanol is gentle, and the product can be safely washed away down the sink. (You would use ethanol rather than any other alcohol because it is cheaper, although it would work with any.)
2. a) It reacts with water to produce ethanol and sodium hydroxide solution (or simply a solution containing hydroxide ions). This solution is strongly alkaline.
- b) (i) $\text{CH}_3\text{CH}_2\text{OH}$
- (ii) $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$
- (iii) An ether.