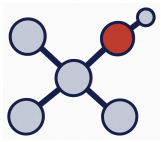
Alcohols Summary Map

Edexcel International A Level Chemistry · Unit 2 · Topic 10C Alcohols

1 Names and classes

10.15–10.16

- **-ol** suffix; diols keep the e
- Count C on the C–OH carbon
- **1°**: 2 H, **2°**: 1 H, **3°**: 0 H
- $C_nH_{2n+1}OH$



2 Combustion

10.17 i

- Complete: $CO_2 + H_2O$
- $C_2H_5OH + 3O_2 \rightarrow 2CO_2 + 3H_2O$
- Count the alcohol's own O
- Limited air: CO or soot

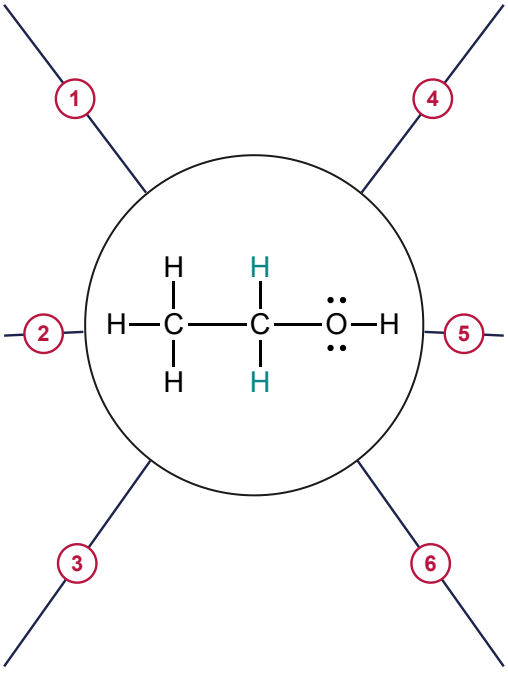


3 To halogenoalkanes

10.17 ii

- **PCl_5**: RCl, steamy HCl fumes
- Test for **–OH** (dry)
- **KBr + 50% H_2SO_4**: RBr
- **Red P + I_2**: RI





4 To alkenes

10.17 iii

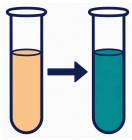
- **Conc. H_3PO_4**, heat
- Water eliminated: C=C
- Cyclohexanol → cyclohexene
- Check every alkene and E/Z



5 Oxidation

10.18, 10.20

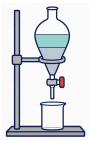
- Acidified $K_2Cr_2O_7$: orange → green
- 1° + distil: **aldehyde**
- 1° + reflux: **carboxylic acid**
- 2°: **ketone**; 3°: no reaction



6 Purifying a liquid

10.14, 10.19

- **Reflux**: vapour returns
- **Separate**, wash with $NaHCO_3$
- **Dry**: anhydrous salt until clear
- **Distil**: sharp bp = pure



Which alcohol, which product?

acidified potassium dichromate(VI); tests on the product

Alcohol	Conditions	Product	Test on the product
propan-1-ol (1°)	distil as it forms	propanal	Benedict's: brick-red
propan-1-ol (1°)	excess, reflux	propanoic acid	$NaHCO_3$: fizzes
propan-2-ol (2°)	reflux	propanone	Benedict's: stays blue
2-methylpropan-2-ol (3°)	reflux	no reaction	stays orange

Worked examples

Name and class

- $CH_3CH(OH)CH_2CH_3$
- butan-2-ol
- C–OH carbon has 2 C: **secondary**

Core Practical 6

- $(CH_3)_3COH + HCl$
- room temperature, shake
- **$(CH_3)_3CCl$**, upper layer

Percentage yield

- 7.4 g alcohol (Mr 74): 0.100 mol
- expect 9.25 g of RCl
- 5.6 g made: **61%**

Alcohols link halogenoalkanes and alkenes to carbonyl compounds and carboxylic acids (Unit 4, Topic 15); their products are identified in Topic 10D.

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