16 Alcohols – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	**Write it 3 times** (English)		
potassium dichromate(VI)			
aldehyde			
carboxylic acid			
ketone			
distillation			
reflux			

Recall

From Part 1 you know the three classes of alcohol. Here we **oxidise** them – and the product tells you which class you have.

- The class decides what oxidation gives.
- The apparatus (distillation or reflux) controls how far it goes.

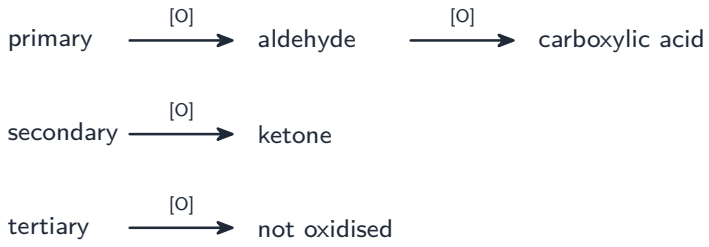
New ideas

Read these first, then do the Practice.

1 Oxidation by class

Oxidise with acidified **potassium dichromate(VI)** ($K_2Cr_2O_7$):

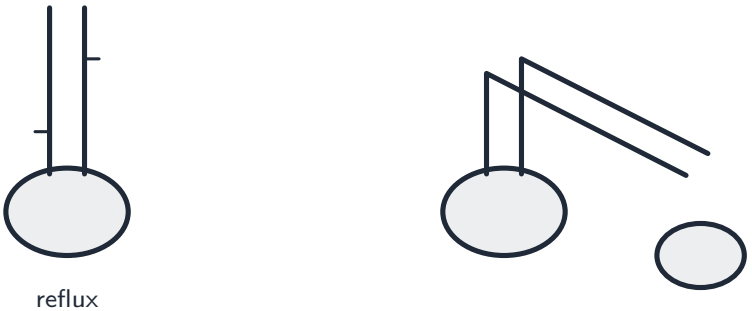
Class	Product
primary	an **aldehyde** (by distillation), then a **carboxylic acid** (by reflux)
secondary	a **ketone**
tertiary	**not oxidised**



A quick test: acidified dichromate turns **orange to green** with a primary or secondary alcohol, but **stays orange** with a tertiary alcohol.

2 Distillation vs reflux

- **distillation** removes the aldehyde **as it forms**, before it can be oxidised further → stops at the aldehyde.
- **reflux** keeps boiling and returning the vapour, so the alcohol is **fully** oxidised → the carboxylic acid.



Watch out: distillation *stops* at the aldehyde (it is removed as it forms); reflux goes *all the way* to the carboxylic acid. A tertiary alcohol is not oxidised at all, so the dichromate stays orange.

Practice

Try these in order.

16.1 Name the reagent used to oxidise an alcohol. [1]

16.2 State the oxidation product of (a) a secondary alcohol, (b) a tertiary alcohol. [2]

16.3 A primary alcohol can be oxidised to two different products. Name them and the method for each. [2]

16.4 What colour change does acidified dichromate show with a primary alcohol? [1]

16.5 Explain why distillation stops the oxidation at the aldehyde. [2]

16.6 Challenge. An unknown alcohol is warmed with acidified dichromate, and the orange colour does *not* change. Identify the class of the alcohol and explain. [2]