

17 Aldehydes and ketones – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English**Write it 3 times** (English)

Fehling's reagent

Tollens' reagent

Recall

From Part 1 you know aldehydes and ketones both have a **C=O** group. Here we learn the **tests** that detect a carbonyl, and that tell an aldehyde from a ketone.

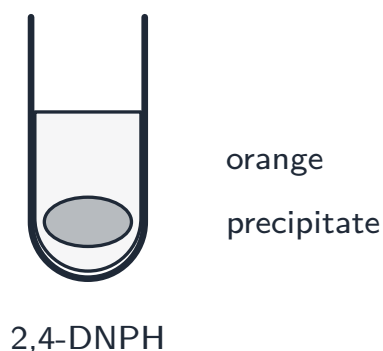
- One test detects **any** carbonyl.
- Two more use the fact that aldehydes are easily oxidised but ketones are not.

New ideas

Read these first, then do the Practice.

■ 1 Detecting any carbonyl

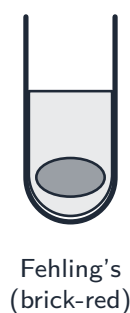
Add **2,4-DNPH** reagent (2,4-dinitrophenylhydrazine). An **orange precipitate** confirms an aldehyde **or** a ketone.



■ 2 Telling an aldehyde from a ketone

Aldehydes are easily **oxidised** to carboxylic acids; ketones are not. Two tests use this:

Test		Aldehyde	Ketone
Fehling's reagent	(blue)	brick-red precipitate	no change
Tollens' reagent	(colourless)	silver mirror	no change



So a positive Fehling's or Tollens' test means an **aldehyde**; no change means a **ketone**.

Watch out: 2,4-DNPH (orange precipitate) detects *any* carbonyl. Fehling's (brick-red) and Tollens' (silver mirror) are positive *only* for aldehydes – a ketone gives no change.

Practice

Try these in order.

17.1 Which reagent detects any aldehyde or ketone, and what is seen? [2]

17.2 Why can Fehling's and Tollens' tests tell an aldehyde from a ketone? [2]

17.3 State what is seen when an **aldehyde** is warmed with (a) Fehling's reagent, (b) Tollens' reagent. [2]

17.4 A compound gives an orange precipitate with 2,4-DNPH but no change with Tollens'. What type of compound is it? [1]

17.5 Name the product when an aldehyde is oxidised. [1]

17.6 Challenge. A liquid gives an orange precipitate with 2,4-DNPH and a silver mirror with Tollens' reagent. Identify the type of compound, and explain how each result leads to your answer. [2]