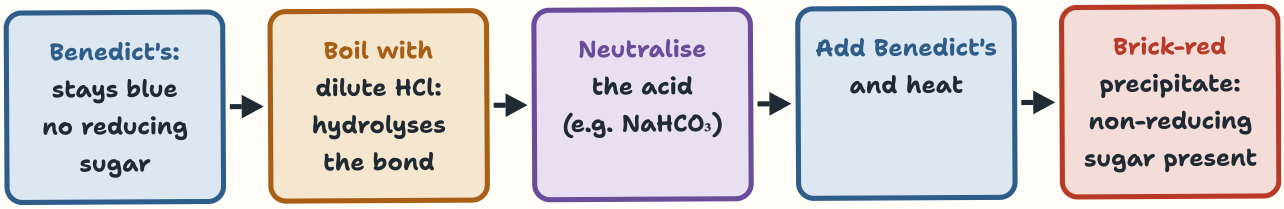
Benedict's and Iodine Tests Explained

Benedict's detects reducing sugars; non-reducing sugars need acid hydrolysis first. Iodine detects starch.

Non-reducing sugar test (e.g. sucrose)



Iodine test for starch

orange-brown → blue-black = starch present

Key terms

reducing sugar	reduces copper(II) ions (Cu^{2+}) to copper(I); all monosaccharides and some disaccharides (maltose, lactose).
non-reducing sugar	cannot reduce copper; sucrose. Gives no colour change with Benedict's on its own.
Benedict's test	heat in a water bath; blue → green → yellow → orange → brick-red precipitate (semi-quantitative).
acid hydrolysis	boil with dilute hydrochloric acid to break the glycosidic bond; sucrose becomes glucose + fructose.
neutralise	add sodium hydrogencarbonate, because Benedict's needs alkaline conditions.
iodine test	iodine in potassium iodide; orange-brown → blue-black if starch is present (no heating).

I can...

- [ ] Biochemical tests: Benedict's solution for reducing sugars and non-reducing sugars
- [ ] Iodine/potassium iodide for starch

EXAM TRAP

A blue Benedict's result means no reducing sugar, not "no sugar". For a non-reducing sugar: boil with acid, neutralise, then re-test. Write "blue to brick-red precipitate", not just "turns red".

4 marks: what earns them

1. The blue result shows there is no reducing sugar
   Not: no sugar present (no mention of reducing)
2. Heat / boil a sample (fresh or the same sample) with (dilute) hydrochloric acid, to hydrolyse the non-reducing sugar into reducing sugars (monosaccharides)
   Not: heat with acid with no purpose or hydrolysis; dissolves the sugar
3. Neutralise the acid, e.g. with sodium hydrogencarbonate (Benedict's needs alkaline conditions)
   Not: add water to dilute the acid; cool the mixture
4. Heat with Benedict's reagent; a brick-red precipitate shows a non-reducing sugar was present
   Not: turns red, with no precipitate or starting blue

Remember

Blue = no reducing sugar (not no sugar).
Acid, neutralise, Benedict's again.
Benedict's: blue to brick red. Iodine: orange-brown to blue-black.

Independent revision resource, not endorsed by AQA. Practice question is original.
© 2026 Medservatory, a project of ADMR Solutions Ltd. Free to print and share for personal study.