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The Haloform Reaction: Iodoform Test

1. What it detects

Iodine and NaOH act on compounds with a **CH_3CO group**, or those that can form one by oxidation.

2. What happens

1. The 3 H atoms of the methyl group are replaced one by one by iodine, giving a **CI_3 group**.
2. The **C–C bond breaks**.
3. Products: **iodoform, CHI_3**, a yellow precipitate with a characteristic smell, and a **carboxylate with 1 carbon fewer**.



3. Who passes

Positive	Negative
Ethanal	Methanol
Methyl ketones, such as propanone	Propanal
Ethanol, propan-2-ol	Pentan-3-one

Solved example

Q. How would you distinguish pentan-2-one from pentan-3-one?
A. Warm with iodine and NaOH. Pentan-2-one has a CH_3CO group and gives yellow iodoform; pentan-3-one gives no change.

Practice questions

1. (MCQ) Which gives the iodoform test? (a) methanol (b) propanal (c) ethanol (d) pentan-3-one
2. (Very short) Write the formula of iodoform.
3. (Very short) What colour is iodoform?
4. (Short) Why does ethanol pass the test?
5. (Short) Which is the only aldehyde that gives the test?
6. (Short) Distinguish ethanol from methanol.

Answer key

1. (c).
2. CHI_3.
3. Yellow.

4. It is oxidised to ethanal, which has a CH_3CO group.
5. Ethanal.
6. Iodine and NaOH: ethanol gives yellow iodoform, methanol gives no change.

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