

The scenario

Subject	Haloform reaction
Length	3,13 min.
Main objectives	Learning the haloform reaction
Detailed objectives	Observation of changes occurring during the reaction of acetone with iodine. Learning the method of detecting methyl ketones
Structure and description of experiments:	
Introduction	Description: The haloform reaction is a method for detecting ketones having a methyl group in the vicinity of a carbonyl group. In this reaction, methyl ketones in an alkaline environment are oxidized under the influence of halogen (iodine, chlorine, bromine) to carboxylic acids with the formation of a haloform. The haloform reaction of methyl ketones with iodine is also called the iodoform test because the product of the reaction is iodoform.
Main subject	Description: Learning the haloform reaction
Experiment	<p>Equipment: test tube, Pasteur pipettes.</p> <p>Reagents: iodine solution in potassium iodide, aqueous NaOH solution, acetone</p> <p>Precautions: work with gloves and protective glasses!</p> <p>Description: Add about 1 ml of the iodine solution in potassium iodide to the test tube. Then, using a Pasteur pipette, add the NaOH solution dropwise until the color disappears. Then add about 1 ml of acetone and mix well. Set the test tube aside for a few minutes. After completing the exercise, pour the solutions into the containers indicated by the teacher.</p> <p>Questions:</p> <ol style="list-style-type: none"> Note down the changes taking place in the test tube. What application can this reaction have? <p>Conclusions: The haloform reaction produces a haloform with the general formula CHX_3, where X is Br, Cl or I. The reaction of acetone with iodine in an alkaline medium produces a light yellow precipitate of iodoform.</p> $\text{CH}_3\text{COCH}_3 + 3\text{I}_2 + 4\text{NaOH} \rightarrow \text{CH}_3\text{COONa} + 3\text{NaI} + \text{CHI}_3\downarrow + 3\text{H}_2\text{O}$ <p>The haloform reaction is a method for detecting methyl ketones, i.e. having a carbonyl group at the 2nd carbon atom, acetaldehyde, ethanol, acetic acid and all alcohols containing a hydroxyl group at the carbon atom connected to the methyl group.</p> <p>Level: Secondary School</p>

