

How can we distinguish between the halide ions - Cl^- (aq), Br^- (aq) and I^- (aq)?

In this practical we are going to find ways of distinguishing between the halide ions, Cl^- , Br^- and I^- using silver nitrate solution and ammonia solution. Using a **separate micropipettes** add your solutions as directed in the table below: -

Well number	1st addition	2nd addition	3rd addition
A1	2 drops of NaCl and 1 drop HNO_3	1 drop of silver nitrate solution	Add dilute ammonia until no further change
A2	2 drops of NaCl and 1 drop HNO_3	1 drop of silver nitrate solution	Add conc. ammonia until no further change
B1	2 drops of NaBr and 1 drop HNO_3	1 drop of silver nitrate solution	Add dilute ammonia until no further change
B2	2 drops of NaBr and 1 drop HNO_3	1 drop of silver nitrate solution	Add conc. ammonia until no further change
C1	2 drops of NaI and 1 drop HNO_3	1 drop of silver nitrate solution	Add dilute ammonia until no further change
C2	2 drops of NaI and 1 drop HNO_3	1 drop of silver nitrate solution	Add conc. ammonia until no further change

Well number	Observations after SECOND addition	Observations after THIRD addition
A1		
A2		
B1		
B2		
C1		
C2		

Conclusions to tests on halide ions

For each of the following sets of ions give **TWO** ways by which they can be distinguished.

a) Chloride (Cl^-) and bromide (Br^-)

1st way _____

2nd way _____

Explain why dilute ammonia is used along with silver nitrate to distinguish between Cl^- and Br^- ions.

b) Bromide (Br^-) and iodide (I^-)

1st way _____

2nd way _____

Explain why concentrated ammonia is used along with silver nitrate to distinguish between these Br^- and I^- ions.

In the table below summarise the ways these ions can be distinguished from each other.

Chloride (Cl^-)	Bromide (Br^-)	Iodide (I^-)

Complete the **ionic** equations for the reactions of the ions with silver (Ag^+) ions

1) Cl^- ions _____

2) Br^- ions _____

3) I^- ions _____