Aim: Limit test for chlorides

Apparatus Required Nessler cylinders Glass rod Stand

Chemicals Required: Dilute Nitric acid (10%), Silver nitrate (5%), Sodium chloride

Principle It is based upon the chemical reaction between silver nitrate and soluble chlorides in the presence of dilute nitric acid to give opalescence of silver chloride. Suppose the Opalescence produced is compared with the standard solution. If the opalescence in the sample is less than the standard, it passes the test. If it is more than the standard, it fails the test.

$$Cl^- + AgNO_3 \xrightarrow{\text{dil } HNO_3} AgCl\downarrow + No_3$$

Procedure: Take two 50 ml Nessler Cylinders. Label one as "Test" and the other as 'Standard'.

TEST SAMPLE	STANDARD COMPOUND
The specific weight of the compound is dissolved in water, or the solution is prepared as directed in the pharmacopeia and transferred in the Nessler cylinder.	Take 1 ml of 0.05845 % W/V sodium chloride solution in a Nessler cylinder.
Add 1 ml of nitric acid.	Add 1 ml of nitric acid.
Dilute to 50ml in Nessler cylinder.	Dilute to 50ml in Nessler cylinder.
Add 1ml of AgNO3 solution	Add 1ml of AgNO3 solution
Keep aside for 5 min.	Keep aside for 5 min.
Observe the Opalescence/Turbidity	Observe the Opalescence/Turbidity

Observation: The opalescence produced in the sample solution should not exceed the standard solution. If the opalescence produced in the sample solution is less than the standard solution, the sample will pass the limit test of chloride and visa versa.

Reasons: Nitric acid is added in the limit chloride test to make the solution acidic and helps silver chloride precipitate to make the solution turbid at the end of the process.