

modified Limit test for Sulphate:

Principle:

modified Limit test is performed if the limit test for the sample (coloured compound) cannot be done by normal method.

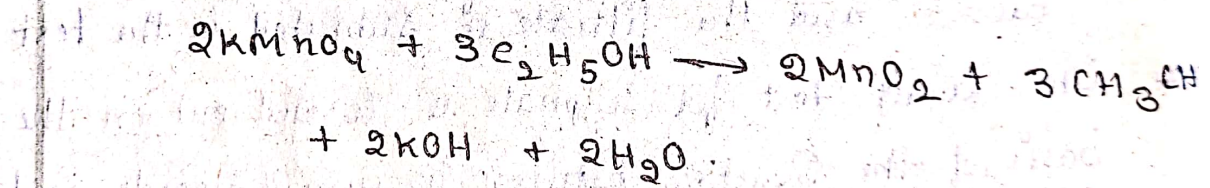
Eg:- potassium permanganate is decolourised by boiling with ethanol filtered to remove precipitated manganese dioxide and the filtrate is subjected to the test.

The limit test for sulphate is carried out on the basis of the reaction between barium chloride and soluble sulphates in the presence of acetic acid.

Then the comparison of the turbidity produced by a given amount of the substance is done with a standard turbidity obtained from a known amount of sulphate.

The Barium Chloride has been replaced by barium sulphate reagent which is having barium chloride, sulphate free alcohol and a solution of potassium sulphate.

- * potassium Sulphate has been added to increase the Sensitivity of the test. The ionic Concentrations in the Reagent has been so adjusted that the Solubility product of barium Sulphate gets Exceeded and the Very small amount of barium sulphate present in the Reagent act as Seeding agent for precipitation of barium Sulphate.
- * if Sulphate be present in the Substance under test. Alcohol helps to prevent Super Saturation and thus produces a more uniform turbidity.
- * acetic acid helps to make solution acidic and barium



* procedure:

Preparation of test Solution (KMnO₄):

→ dissolve 1.5 gm in 50 ml of distilled water, heat on a water bath and add gradually 6 ml of Ethanol (95%) cool, dilute to 60 ml with distilled water and filter

* Take two 50 ml nessler Cylinder label one as Test and other as Standard

Test	Standard
* Take 10 ml of the above test solution in nessler cylinder	* Mix 15 ml of Sulphate Standard Solution and 15 ml of distilled water in a nessler cylinder
* Add 0.15 ml of 5 M acetic acid	* Add 15 ml of 5.0 M acetic acid
* Add 2.5 ml of barium Sulphate Reagent	* Add 2.5 ml of barium Sulphate Reagent
* Add sufficient distilled water to produce 50 ml	* Add sufficient distilled water to produce 50 ml
* Stir immediately with glass Rod and allow to stand for 5 minutes protected from light	

→ Observation:

The opalescence produce in Sample ~~Solution~~ Solution should not be greater than Standard, Solution. If opalescence produce in Sample Solution is less than the Standard Solution, the Sample will pass the limit test for Sulphate and Vice-versa.