

C1 : Water permanganate demand determination

1. Principle

PD is an indirect measure of the organic matters concentration in drinking waters : the potassium permanganate quantity necessary to oxidize organic matters in a tested drinking water volume is proportional to its organic pollution (humic acids, pesticides, cyclic aromatic and chlorine compounds...)

PD unit is mgO_2 / L : we express PD as oxygen quantity equivalent to the permanganate quantity necessary to oxidize pollution.

In drinking waters, PD must be inferior to $5 \text{ mg O}_2 / \text{L}$.

2. Procedure

Sample volume : 25 mL (transfer pipette, precisely), introduced in a 100 mL flask (Erlenmeyer) ; cover it

add some ebullition glass beads

add 5 mL of H_2SO_4 2 mol / L (graduated pipette, not precise)

Soft ebullition 10 min

add 5 mL of KMnO_4 2mmol/L (transfer pipette, precisely) : soft ebullition during 10 min: solution turns rose

add 5 ml sodium oxalate 5 mmol/L (transfer pipette, precisely) : turns colourless

Pour permanganate (burette) until solution turns rose : note V_1 mL

Test with distilled water : note V_0 mL

In this same flask, and after V_0 measure, add 5mL oxalate and pour permanganate : note V_2 mL

$$\text{PD (mgO}_2 / \text{L)} = 16 (\text{V}_1 - \text{V}_0) / \text{V}_2$$

3. Report

Indicate V_0 , V_1 and V_2 .

Calculate PD.

Is it a drinking water ?