Titration Procedure B/OX

Burette Titration Control - B/OX Solutions

B/OX working solutions are gradually depleted as the solutions are used, but may be replenished indefinitely with periodic additions of the B/OX concentrate. The amount of concentrate to be added to the bath is determined by titrating the solution with Sodium Thiosulfate.

Equipment Required
250 ml Erlenmeyer Flask
25 ml Graduated Cylinder 10 ml. Pipette
50 ml Burette
Burette Clamp
Ring Stand

Chemicals Required
6N (1 :1) Hydrochloric Acid
Potassium Iodide - 15% solution (by weight)
0.1 N Sodium Thiosulfate
0.2% Soluble Starch Solution

SOLUTION CONTROL PROCEDURE

A sample of a freshly prepared production bath should always be taken as a control solution prior to running any parts through the bath. If a sample was not taken, a laboratory prepared solution at the same concentration may be used as the control solution. Titration of this "new" solution will provide the figure for V_1.

1. Pipette a 10 ml sample of the production bath into the 250 ml Erlenmeyer flask.
2. Dilute with water to the 100 ml mark.
3. Add 10 ml 6N (1: 1) Hydrochloric Acid to the flask.
4. Add 20 ml of the 15% by weight Potassium Iodide solution.
5. Swirl the solution once, stopper and store in the dark for 10 minutes.
Note: Only glass or aluminum foil covered stoppers should be used.
6. Add 10 ml of starch solution. The solution will become a dark blue-green to almost black color. Titrate with the 0.1 N Sodium Thiosulfate solution until the dark black color changes to a light brown.
Note: Upon standing, the light brown color will turn dark again, but additional Sodium Thiosulfate solution should not be added. The first end point is correct.

7. Calculate the amount of concentrate to be added as follows:

$$C_2 = \frac{V_1 - V_2}{V_1} (C_1)$$

C_2 = B/OX concentrate in gallons to be added to bath
V_1 = MI of Sodium Thiosulfate used to titrate the **new** production bath
V_2 = MI of Sodium Thiosulfate used to titrate the **used** production bath
C_1 = Volume of **B/OX** concentrate in gallons used to make up the original "new" bath.

EXAMPLE

A "new" solution, 4 to 1 dilution V_1 = 11.1

A 100 gallon bath made up at 20% by volume of concentrate (i.e. 20 gallons of concentrate in 80 gallons of water) is titrated and the additions to the bath calculated as follows:

V_1 = 11.1
V_2 = 10.2
C_1 = 20 gallons

$$C_2 = \frac{11.1 - 10.2}{11.1} (20)$$

$$C_2 = \frac{0.9 (20)}{11.1} \text{ or } \frac{18.0}{11.1}$$

C2 = 1.62 gallons concentrate to be added to production bath.

Note: The volumes used in above equation may be metric or English (liters or gallons).

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