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Buffer solutions	
Examples: Acidic Buffer (pH < 7) made from a weak acid + its sodium or potassium salt (conjugate base) ie. ethanoic acid / sodium ethanoate	Examples: Alkaline Buffer (pH > 7) made from a weak base + its chloride (conjugate acid) ie. ammonia / ammonium chloride
Uses Standardising pH meters Buffering biological systems (eg in blood) Maintaining the pH of stampoo	

Influence of adding 2 drops of acid to water and 2 drops of acid to the special solution.



The addition of 2 drops of acid to each solution changes the pH of water to acidic, but does not change the pH of the "special" solution.

7192014 Preparation of Buffer Solutions - Pharmaceutical Guidelines

Preparation of Buffer Solutions

Learn how to prepare different types of buffer solutions used in chemical analysis of Pharmaceutical ingredients.

Standard Buffer Solutions

Standard Buffer Solutions are solutions of standard pH. They are used for reference purposes in pH measurements and for carrying out many pharmaceutical tests which require adjustments to or maintenance of a specified pH. They may be prepared by the methods described below. The preparation of special buffer solutions is described in the sections to which their use is specified in the monographs of substances or in the individual monographs when the use of such solutions is indicated.

The reagents required for the preparation of standard buffer solutions are described in Appendix 4.2. All the crystalline reagents must be dried at 115° to 120° for 1 hour before use. Carbon dioxide free water should be used for preparing buffer solutions and whenever water is mentioned for preparation of such solutions the use of carbon dioxide free water is implied. The prepared solutions should be stored in chemically resistant, glass stoppered bottles of suitable size and used within 3 months of preparation. Any solution which has become cloudy or shows any other evidence of deterioration should be discarded.

Standard buffer solutions for various ranges of pH values 1.2 to 10.0 may be prepared by appropriate combinations of 0.2 M hydrochloric acid and 0.2 M sodium hydroxide and of solutions described below, used in the proportions shown in the accompanying tables. The standard pH values given in the tables and elsewhere in this Appendix are considered to be reproducible within ± 0.02 units at 25°.

1. **Barbituric Acid and Potassium Chloride, 0.2 M:** Dissolve 12.365 g of barbituric acid and 14.911 g of potassium chloride in water and dilute with water to 1000 ml.
2. **Dibutylamine and Hydrochloric Acid, 0.2 M:** Dissolve 71.630 g of dibutylamine hydrochloride in water and dilute with water to 1000 ml.
3. **Potassium Chloride, 0.2 M:** Dissolve 14.911 g of potassium chloride in water and dilute with water to 1000 ml.
4. **Potassium Dihydrogen Phosphate, 0.2 M:** Dissolve 27.216 g of potassium dihydrogen phosphate in water and dilute with water to 1000 ml.
5. **Potassium Hydrogen Phthalate, 0.2 M:** Dissolve 60.845 g of potassium hydrogen phthalate in water and dilute with water to 1000 ml.
6. **Sodium Hydroxide, 0.2 M:** Dissolve sodium hydroxide in water to produce a 40 to 60 per cent w/v solution and dilute to standard. Taking precautions to avoid absorption of carbon dioxide, siphon off the clear supernatant liquid and dilute with carbon dioxide free water, a suitable volume of the liquid to contain 6.0 g of NaOH in 1000 ml.

NOTE: 0.2 M Sodium hydroxide must not be used later than one month after preparation.

Composition of Standard Buffer Solutions

Table 1	
pH	0.2 M Hydrochloric acid
4.2	60.0
4.4	47.2
4.6	34.4
4.8	21.6
5.0	9.0
5.2	0.0

Acid Phthalate Buffer: Place 50.0 ml of 0.2 M potassium hydrogen phthalate in a 200 ml volumetric flask, add the specified volume of 0.2 M hydrochloric acid (see Table 1) and then add water to volume.

Table 2	
pH	0.2 M Sodium hydroxide
4.2	0.0
4.4	12.8
4.6	25.6
4.8	38.4
5.0	51.2
5.2	64.0

Neutralized Phthalate Buffer: Phthalate Buffer: Place 10.0 ml of 0.2 M potassium hydrogen phthalate in a 200 ml volumetric flask, add the specified volume of 0.2 M sodium hydroxide (see Table 2) and then add water to volume.

Table 3	
pH	0.2 M Sodium hydroxide
6.0	0.0
6.2	16.0
6.4	32.0
6.6	48.0
6.8	64.0
7.0	80.0
7.2	96.0
7.4	112.0
7.6	128.0
7.8	144.0
8.0	160.0

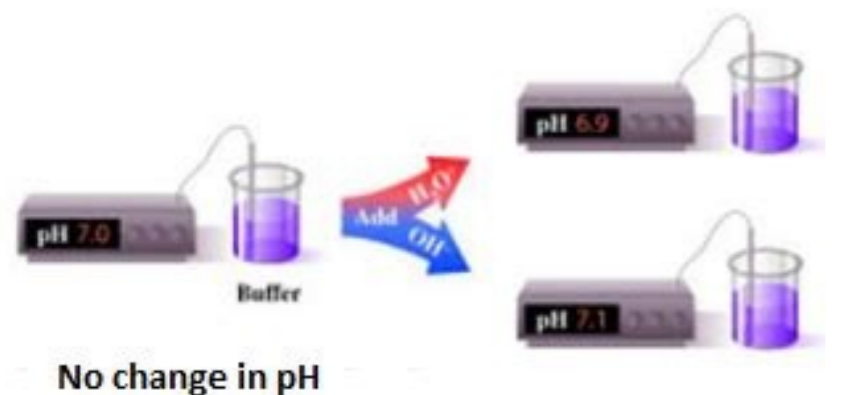
Phosphate Buffer: Place 10.0 ml of 0.2 M potassium dihydrogen phosphate in a 200 ml volumetric flask, add the specified volume of 0.2 M sodium hydroxide (see Table 3) and then add water to volume.

Table 4	
pH	0.2 M Barbituric acid
7.2	0.0
7.4	16.0
7.6	32.0
7.8	48.0
8.0	64.0
8.2	80.0
8.4	96.0
8.6	112.0
8.8	128.0
9.0	144.0
9.2	160.0

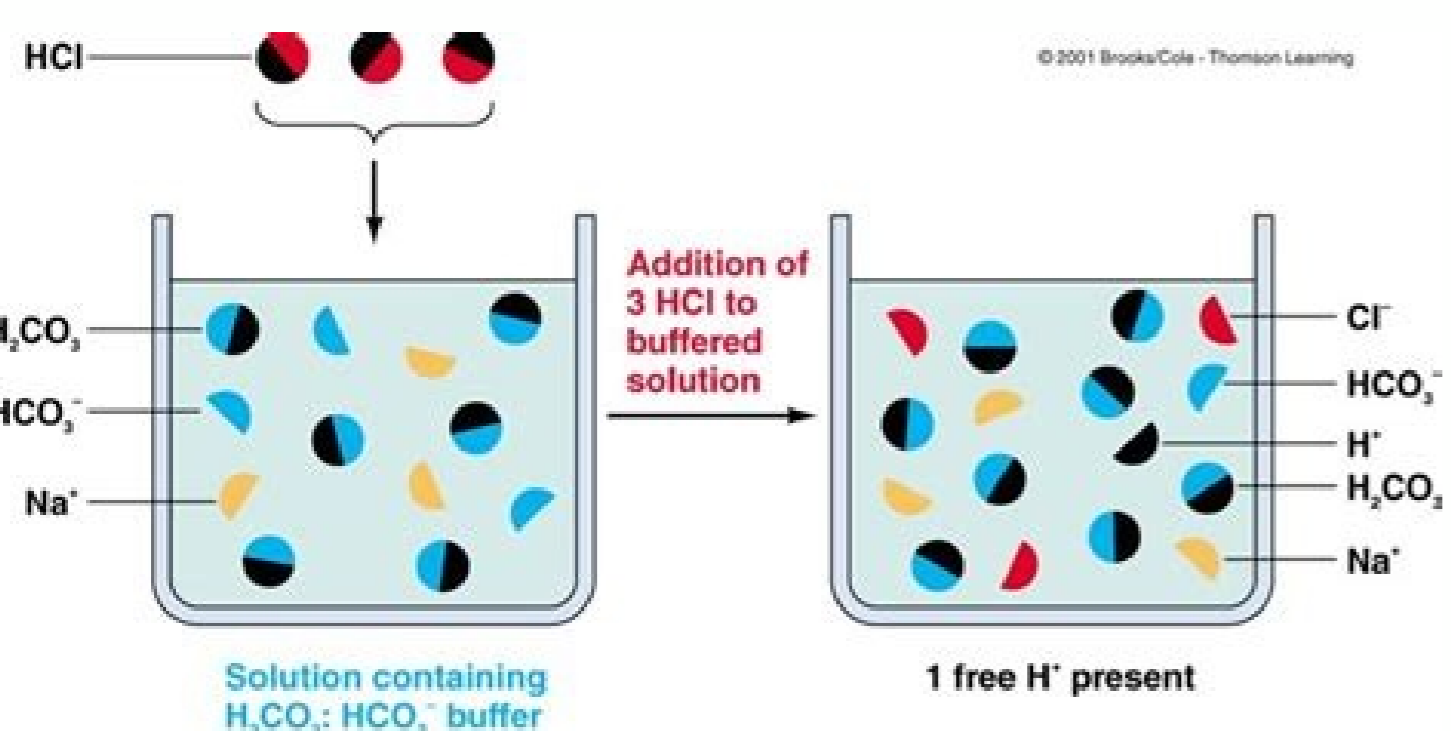
Alkaline Borate Buffer: Place 10.0 ml of 0.2 M barbituric acid and potassium chloride in a 200 ml volumetric flask, add the specified volume of 0.2 M sodium hydroxide (see Table 4) and then add water to volume.

Other Buffer solutions

<http://www.pharmaguideline.com/2010/09/preparation-of-buffer-solutions.html>



No change in pH



A level chemistry buffer solutions. Buffer solutions organic chemistry tutor. Explain buffer solution chemistry. Ib chemistry buffer solutions. Buffer solutions chemistry lab. Example of buffer solutions in chemistry. What does buffer solution mean in chemistry. Chemistry buffer solution.

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