

StockOptions™ Malic Acid buffer kit is a preformulated, sterile filtered set of titrated buffer stocks. The StockOptions buffer stock reagents are supplied as 1.0 M stock solutions in 10 milliliter volumes. Each StockOptions Malic Acid buffer reagent is carefully titrated using Sodium hydroxide. StockOptions Malic Acid is comprised of 24 unique reagents covering the pH range of 3.7 to 6.0 in 0.1 pH unit increments.

Suggested Use

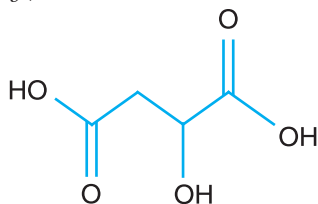
StockOptions Malic Acid is designed to help researchers improve the speed, accuracy, precision, and quality of the formulation of crystallization screen solutions and crystallization optimization solutions. Researchers can use the individual StockOptions reagents to conveniently formulate custom screen solutions or standard screen solutions from Hampton Research kits such as Slice pH™. StockOptions Malic Acid reagents can also be used to create solutions for the refinement and optimization of preliminary crystallization conditions. Finally, StockOptions Malic Acid reagents can be used to create accurate, precise, reproducible, high quality solutions for the production of single crystals. Utilizing the reagents in the StockOptions Malic Acid buffer kit it is possible to formulate and screen 24 unique pH levels.

During crystallization experiments the Malic Acid buffer system is typically utilized at a 0.1 M final concentration during the screening, optimization, and production of biological macromolecular crystals. It is therefore recommended that one dilute the StockOptions Malic Acid buffer solution 1:10 to achieve a final concentration of 0.1 M. For example, dilute 1 milliliter of StockOptions Malic Acid to a final volume of 10 milliliters to achieve a final concentration of 0.1 M DL-Malic acid.

Please note the final pH of the solution created using StockOptions may vary based upon what other reagents are added to the StockOptions Malic Acid buffer.

Specifications

Useful pH Range: 3.7 - 6.0



Buffer Reagent: DL-Malic acid

$C_4H_6O_5$	M_r 134.09	CAS No [6915-15-7]	EC No 230-022-8
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Titrated with: Sodium hydroxide

NaOH	M_r 40.00	CAS No [1310-73-2]	EC No 215-185-5
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Example

Make a custom 10 ml screen reagent of:

Solution Composition:

30% w/v Polyethylene glycol 8,000,
0.1 M DL-Malic acid pH 6.0

Suggested Stock Solutions:

50% w/v Polyethylene glycol 8,000 (HR2-535),
1.0 M DL-Malic acid pH 6.0 (StockOptions Malic Acid)

1. Pipet 3 ml of deionized, sterile filtered water into the tube.
2. Pipet 1 ml of 1.0 M DL-Malic acid pH 6.0 into the tube.
3. Pipet 6 ml of 50% w/v Polyethylene glycol 8,000 into a sterile screw top tube.
4. Seal the tube, and mix until the solution is homogeneous.

For Best Results

Use Hampton Research Optimize™ together with StockOptions reagents for best results.

Technical Support

Inquiries regarding StockOptions Malic Acid Buffer Kit reagent formulation, interpretation of screen results, optimization strategies and general inquiries regarding crystallization are welcome. Please e-mail, fax, or telephone your request to Hampton Research. Fax and e-mail Technical Support are available 24 hours a day. Telephone technical support is available 8:00 a.m. to 4:30 p.m. USA Pacific Standard Time.

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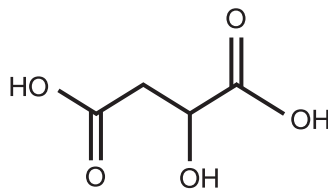
Technical Support e-mail: tech@hrmail.com

Website: www.hamptonresearch.com

Tube #	pH \diamond	Buffer	Titrant
1.	3.7	1.0 M DL-Malic acid	Sodium hydroxide
2.	3.8	1.0 M DL-Malic acid	Sodium hydroxide
3.	3.9	1.0 M DL-Malic acid	Sodium hydroxide
4.	4.0	1.0 M DL-Malic acid	Sodium hydroxide
5.	4.1	1.0 M DL-Malic acid	Sodium hydroxide
6.	4.2	1.0 M DL-Malic acid	Sodium hydroxide
7.	4.3	1.0 M DL-Malic acid	Sodium hydroxide
8.	4.4	1.0 M DL-Malic acid	Sodium hydroxide
9.	4.5	1.0 M DL-Malic acid	Sodium hydroxide
10.	4.6	1.0 M DL-Malic acid	Sodium hydroxide
11.	4.7	1.0 M DL-Malic acid	Sodium hydroxide
12.	4.8	1.0 M DL-Malic acid	Sodium hydroxide
13.	4.9	1.0 M DL-Malic acid	Sodium hydroxide
14.	5.0	1.0 M DL-Malic acid	Sodium hydroxide
15.	5.1	1.0 M DL-Malic acid	Sodium hydroxide
16.	5.2	1.0 M DL-Malic acid	Sodium hydroxide
17.	5.3	1.0 M DL-Malic acid	Sodium hydroxide
18.	5.4	1.0 M DL-Malic acid	Sodium hydroxide
19.	5.5	1.0 M DL-Malic acid	Sodium hydroxide
20.	5.6	1.0 M DL-Malic acid	Sodium hydroxide
21.	5.7	1.0 M DL-Malic acid	Sodium hydroxide
22.	5.8	1.0 M DL-Malic acid	Sodium hydroxide
23.	5.9	1.0 M DL-Malic acid	Sodium hydroxide
24.	6.0	1.0 M DL-Malic acid	Sodium hydroxide

\diamond pH is the measured pH at 25.0 degrees Celsius of the 1.0 M DL-Malic acid solution.
pH adjustment performed using Sodium hydroxide.

Buffer Reagent: DL-Malic acid



$C_4H_6O_5$ M_r 134.09 CAS No [6915-15-7] EC No 230-022-8 $pK_{a1} = 3.40$, $pK_{a2} = 5.10$

Titrated with: Sodium hydroxide

NaOH M_r 40.00 CAS No [1310-73-2] EC No 215-185-5