

Table of Acid/Base Indicators

The approximate pH of a solution can be determined by using indicators. If nothing is known about the pH of the solution, first add a couple of drops of Bromthymol Blue to a small portion of the solution. This will divide the pH range in half. A neutral solution with Bromthymol Blue will be green. If the solution is slightly acidic, yellow will be mixed in with the green. If the pH of the solution is 6, the solution color will be completely yellow. If the pH of the solution is less than 6 (more acidic), the color will also be yellow because pH's less than 6 are outside the "range of an indicator". On the other hand, if the solution is basic, the color will be bluish with Bromthymol Blue. At pH 8, the solution will be completely blue. At pH's greater than 8 the solution will also be completely blue because pH's greater than 8 are outside the range of the indicator. After observing the color of the solution with Bromthymol Blue, you can make a decision whether or not you need to perform further tests on the pH of the solution and, if you do need further tests, which indicator to try next.

<u>Indicator</u>	<u>Abbrev.</u>	<u>Approx. pH range for which there is a useful color change</u>
Methyl Violet	HMV/MV ⁻	0(YG) - 1(BG) - 2(V) - 3(RV)
Methyl Orange	HMO/MO ⁻	3(RO) - 4(O) - 5(Y)
Bromphenol Blue	HBpB/BpB ⁻	3(Y) - 4(G) - 5(B)
Bromcresol Green	HBcG/BcG ⁻	4(Y) - 5(G) - 6(B)
Methyl Red	HMR/MR ⁻	4(R) - 5(O) - 6(Y)
Bromcresol Purple	HBcP/BcP ⁻	5(Y) - 6(A) - 7(R)
Bromthymol Blue	HBtB/BtB ⁻	6(Y) - 7(G) - 8(B)
Thymol Blue	HTB/TB ⁻	8(Y) - 9(G) - 10(B)
Phenolphthalein	HPhthn/Phthn ⁻	8(C) - 9(P) - 10(R)
Alizarine Yellow R	HAY/AY ⁻	10(Y) - 11(O) - 12(R)
Indigo Carmine	HIC/IC ⁻	12(B) - 13(G) - 14(Y)

Color Codes:

R = red

O = orange

Y = yellow

G = green

B = blue

V = violet

P = pink

A = amber

C = colorless

Note: For a particular weak acid/weak base conjugate pair to be useful as an indicator the compound must react "colorimetrically" within the specified pH range, i.e., the acid and base forms must have different colors and the pK_a of the acid form must lie within the pH range under investigation.