

## DETERMINATION OF pH VALUES

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### APPARATUS REQUIRED

Lovibond 2000 Comparator or Nessleriser 2150

Daylight 2000 Lighting Unit

Discs as follows:

Standard Nessleriser Disc	Standard Comparator Disc	pH Range	Indicator
	2/1Y	0.2 – 1.8	Cresol Red*
	2/1W	1.0 – 2.6	<i>m</i> -Cresol Purple*
NLM	2/1A	1.2 – 2.8	Thymol Blue*
NLN	2/1B	2.8 – 4.4	Bromophenol Blue*
	2/1ZG	2.8 – 4.4	Methyl Orange
NLR	2/1V	3.0 – 4.6	BDH3046
NLA	2/1C	3.6 – 5.2	Bromocresol Green*
NLO	2/1D	4.4 – 6.0	BDH4460
NLL	2/1E	4.4 – 6.0	Methyl Red
	2/1F	4.8 – 6.4	Chlorophenol Red
NLB	2/1G	5.2 – 6.8	Bromocresol Purple*
NLC	2/1H	6.0 – 7.6	Bromothymol Blue*
NLD	2/1J	6.8 – 8.4	Phenol Red*
NLE	2/1K	7.2 – 8.8	Cresol Red*
NLK	2/1Z	7.6 – 9.2	<i>m</i> -Cresol Purple*
NLF	2/1L	8.0 – 9.6	Thymol Blue*
	2/1U	8.6 – 10.0	BDH 8610
	2/1ZF	8.6—10.2	Phenolphthalein
NLU	2/1ZE	1.0 – 13.0	BDH Full Range
NLT	2/CC	4.0 – 8.0	BDH 4080
NLH	2/1P	4.0 – 11.0	BDH Universal
NLG	2/1M	9.0 – 11.0	BDH 9011

\* These indicators are also supplied in tablet form

### GLASSWARE

All Comparator discs are used with 13.5mm./10ml. Moulded Cells DB424.

All Nessleriser discs are used with 50ml. Nessler cylinders AF306.

Indicators supplied by The Tintometer Ltd are specially prepared to conform to the colours on the Lovibond discs.

### METHOD

#### **Comparator (Except Discs 2/1P and 2/1ZE)**

1. Fill two 13.5mm./10ml. moulded cells up to the 10ml.mark with the solution to be tested and place one cell in the left-hand compartment of the Comparator.
2. To the other cell add one tablet or 0.5ml. of the appropriate indicator. (Do not immerse the tip of the pipette beneath the surface of the liquid being tested).
3. Carefully mix the indicator and liquid by replacing the cap on the cell and inverting it a few times or if using a tablet, crush, using a clean stirring rod, and mix well.

4. Place the cell in the right-hand compartment of the Comparator. Hold the instrument against a source of white light such as the Lovibond Daylight 2000 Unit (not fluorescent lighting) or, failing this, North Daylight and rotate the disc until the nearest colour match is obtained. The pH value of the solution is displayed in the bottom right-hand corner of the Comparator.

### **For Disc 2/1P**

When using BDH Universal Indicator only 0.1ml. of indicator is taken for the test and should the subsequent result indicate an acid solution the test is repeated using 0.2ml to match the disc.

### **For Disc 2/1ZE**

When using BDH Full Range Indicator, 0.2ml. of indicator is taken for the test.

### **Nessleriser (Except Disc NLH)**

1. Fill two Nessler cylinders to the 50ml. mark with the solution to be tested and place one cylinder in the left-hand compartment of the Nessleriser 2150.
2. To the other cylinder add 0.2ml. of the appropriate indicator and mix thoroughly.
3. Place the Nessler cylinder in the right-hand compartment of the Nessleriser and match the colour against the disc either by using the Lovibond Daylight 2000 unit or by standing the instrument facing North Daylight (not fluorescent lighting).

### **For Disc NLH**

The colours in the BDH Universal disc have been standardised on 25ml. quantities of solution containing 0.1ml. of indicator in acid solutions and 0.05ml. in alkaline solutions. When 0.05ml. cannot be measured conveniently, take 0.1ml. in 50ml. of solution and measure out 25ml. of this mixture for the test. With this disc the quantity of sample in the cylinder in the left-hand side of the instrument is also 25ml.

### **Notes**

1. In tests on water which has been chlorinated, residual chlorine may have an effect on the indicator being used in the test. This can be avoided, without interfering with the pH measurement, by adding a small crystal of 'hypo' (sodium thiosulphate) to the water sample and mixing before adding the indicator.
2. Where tableted indicators are being used these may already contain dechlorinating agents.
3. The reason for using blank sample in the left-hand compartment of the instrument is to give compensation for any inherent colour or turbidity in the sample.

### **REVISION HISTORY**

<b>Date</b>	<b>Change Note</b>	<b>Issue</b>
18/06/02	36/460	2
11/04/05	CA243	3
24/10/06	JC107	4