

PESTICIDE FORMULATION & RESIDUE ANALYTICAL CENTRE, PMD, NIPHM, HYDERABAD

Sr. No. in Scope

NABL / NON NABL

Flow Chart of Alkalinity test for Emulsifiable Concentrate (EC) formulation

Date of Analysis

Sr. No.	Step	Execution	Executed By
1.	Sample No.		
2.	Name of Sample		
2.1	Sample Description		
3.	Procedure		
3.1	Sample Titration		
3.1.1	Weigh 10 g of sample in a 250 ml beaker.	g	
3.1.2	Note the serial number of balance logbook.		
3.1.3	Add 100 ml distilled water		
3.1.4	Add indicator Methyl red / Bromocresol purple		
3.1.5	Titrate with 0.05 N HCl and note the burette reading	mL	
3.2	Blank titration		
3.2.1	Take 100 ml distilled water in 250 ml conical flask		
3.2.2	Add indicator Bromocresol purple / Methyl Red		
3.2.3	Neutralise with 0.05 N NaOH (if blank sample is acidic)/ 0.05 N HCl (if blank sample is alkaline)		
3.2.4	Note the burette reading	mL	
3.3	Normality of Sodium hydroxide		
3.3.1	Weigh 0.3- 0.4 g of GR grade Potassium hydrogen phthalate (KHP) in conical flask.	g	
3.3.2	Note the serial number of balance logbook.		
3.3.3	Add 75 ml distilled water and 2-3 drops of phenolphthalein indicator and titrate with 0.05 N NaOH taken in the burette.		
3.3.4	Note the burette reading	mL	
3.4	Normality of Hydrochloric acid		
3.4.1	Weigh 0.1 g of GR grade Sodium carbonate (Na ₂ CO ₃) in 250 ml conical flask.		
3.4.2	Note the serial number of balance logbook.		
3.4.3	Add 25-30 ml distilled water and 2-3 drops of methyl orange indicator and titrate with 0.05 N HCl taken in the burette.		
3.4.4.	Note the burette reading	mL	

4. Calculation:

Wt. of KHP x 1000

i) **Normality of NaOH** = ----- =

Burette Reading x 204.22

204.22 = Equivalent Weight of KHP

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Revised Date	:	11/11/2013	Next Revision Date	:	11/11/2015
Prepared By		Checked By		Approved & Issued By	
Mrs. C. Vijaya Lakshmi (Asst. Plant Protection Officer)		Mr. C.V. Rao (Technical Manager)		Dr. Abhay U. Ekbote (Director PM & Quality Manager)	

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$$\text{ii) Normality of HCl} = \frac{\text{Wt. of Na}_2\text{CO}_3 \times 1000}{\text{Burette Reading} \times 53} =$$

53 = Equivalent Weight of Na_2CO_3 **In case blank is Alkaline**

iii) Alkalinity (as NaOH) % by mass = $\frac{4.0 (V - B) \times N_1}{M}$	Where, B = Volume of HCl required for Blank. V = Volume of HCl required for the test sample N_1 = Normality of standard HCl solution M = Mass in 'g' of the sample taken for test
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In case blank is Acidic

iv) Alkalinity (as NaOH) % by mass $= \frac{4.0 (VN_1 + vN_2)}{M}$	Where, V = Volume of HCl required for the test sample v = Volume of NaOH required for blank titration N_1 = Normality of standard HCl solution N_2 = Normality of standard NaOH solution M = Mass in 'g' of the sample taken for test
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Sr. No.	Name of test	Result	Unit	Method of Analysis
1.	Alkalinity		%	IS : 6940 - 1982

Remark / Reference :

Analyzed by	Name	
	Dated signature	
Checked by	Name	
	Dated signature	

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