

## PESTICIDE FORMULATION &amp; RESIDUE ANALYTICAL CENTRE, PMD, NIPHM, HYDERABAD

Sr. No. in Scope

NABL / NON NABL

**Flow chart for analysis of Chlorpyrifos content in formulation sample**

Date of Analysis

Sl. No.	Step	Execution		Executed By
1.	Sample No.			
2.	Name of Sample			
3.	<b>Procedure</b>	<b>R<sub>1</sub></b>	<b>R<sub>2</sub></b>	
<b>3.1</b>	<b>Preparation of Internal Standard Solution:</b>			
3.1.1	Weigh 0.5 g of Di-octyl Phthalate (DOP) in a 250 ml Volumetric flask	g	g	
3.1.2	<i>Note down the S.No. of balance log book.</i>			
3.1.3	Dissolve and dilute up to the mark with Ethyl Acetate.			
<b>3.2</b>	<b>Preparation of Standard Solution:</b>			
3.2.1	Purity of standard.	%	%	
3.2.2	Weigh 0.15 g a.i. of Chlorpyrifos in a 50 ml Volumetric flask.	g	g	
3.2.3	<i>Note down the S.No. of balance log book.</i>			
3.2.4	Add 25 mL of internal standard solution (3.1.3).	mL	mL	
3.2.5	Dilute up to the mark with Ethyl Acetate			
<b>3.3</b>	<b>Preparation of Sample Solution:</b>			
3.3.1	Note down the percent active ingredient content declared on the sample.	%	%	
3.3.2	Weigh 0.15 g a.i. of sample in a 50 ml Volumetric flask.	g	g	
3.3.3	<i>Note down the S.No. of balance log book.</i>			
3.3.4	Add 25 mL of internal standard solution (3.1.3).	mL	mL	
3.3.5	Dilute up to the mark with Ethyl Acetate			
<b>4.</b>	<b>GC Parameters</b>			
<b>4.1</b>	<b>Column</b>			
4.1.1	Stainless steel, Packed with 3 % OV-101 on gaschrom Q (80 - 100) mesh			
4.1.2	Length: 100 cm			
4.1.3	I.D: 2 mm			
<b>4.2</b>	<b>Gas</b>			
4.2.1	Nitrogen: 30 ml/min			
4.2.2	Hydrogen : 45 ml/min			
4.2.3	Air : 450 ml/min			

Name of the Laboratory : **Pesticide Formulation & Residue Analytical Centre, PMD, NIPHM, Hyderabad**

Document No.	:	FC-PF-209	Document Name	:	Flow Chart for Analysis of Chlorpyrifos content, % by mass
Revision No.	:	02	Issue Date	:	01/06/2011
Revision Date	:	26/03/2014	Next Revision Date	:	26/03/2016
Prepared By		Checked By		Approved & Issued By	
Mrs. T. Sridevi (Deputy Technical Manager)		Mr. C.V. Rao (Technical Manager)		Dr. Abhay Ekbote (Director PM & Quality Manager)	

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<b>4.3</b>	<b>Temperatures</b>			
4.3.1	Oven : 170°C hold for 4 min, @ 20°C/min, 240°C hold for 2.5 min			
4.3.2	Injector : 250°C			
4.3.3	Detector : 270°C			
<b>4.4</b>	<b>Injection volume: 2 µl</b>			
<b>5.</b>	<b>Result</b>			
5.1.	Sample chromatogram no.			
5.2.	Standard chromatogram no.			

**6. CALCULATION:**

$$\text{Chlorpyrifos content, \% by mass} = \frac{A_1 \times A'IS'_2 \times M_1}{A'IS'_1 \times A_2 \times M_2} \times P$$

**Where,**

- $A_1$  = Peak area of chlorpyrifos in the sample solution  
 $A'IS'_1$  = Peak area of internal standard in the sample solution  
 $A'IS'_2$  = Peak area of internal standard in the standard solution  
 $A_2$  = Peak area of chlorpyrifos in the standard solution  
 $M_1$  = Mass in 'g' of standard chlorpyrifos in the standard solution  
 $M_2$  = Mass in 'g' of chlorpyrifos sample taken for test  
 $P$  = Percent purity of chlorpyrifos standard

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## Result:

SI. No.	Name of Test	Result	Unit	Method of Analysis
1	Active ingredient		%	IS 8963:2006 (Reaffirmed 2010)
Remark / Reference :				

Analyzed by	Name	
	Dated Signature	
Checked by	Name	
	Dated Signature	

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