

# DETERMINATION OF ACEPHATE IN PALM OIL USING GEL PERMEATION CHROMATOGRAPHY CLEAN UP AND CAPILLARY GAS CHROMATOGRAPHY

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## SCOPE

The test method prescribes the requirements for the determination of acephate residue in oil matrix.

## DEFINITION

Acephate is the common name for O,S-dimethyl acetylphosphoramidothioate. It is a colourless solid with melting point of 82°C-89°C, vapour pressure of 0.226 mPa at 24°C, density of 1.3 g litre<sup>-1</sup> and with a solubility in water at room temperature is 650 g litre<sup>-1</sup>. The chemical structure is in Figure 1.

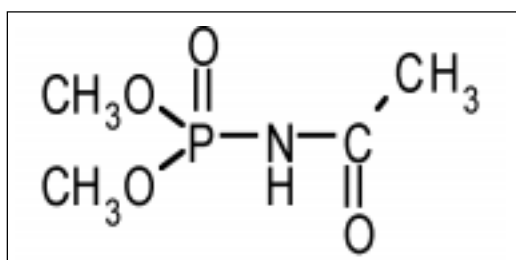


Figure 1. Chemical structure of acephate.

## PRINCIPLE

The pesticide residues are extracted from oil matrix and the extracted sample is separated from the co-extractives using gel permeation chromatography (GPC) (Figure 2). Fraction containing the analyte was collected, solvent evaporated and injected into a gas chromatograph fitted with a flame photometric detector (Figure 3).



Figure 2. GPC set-up.

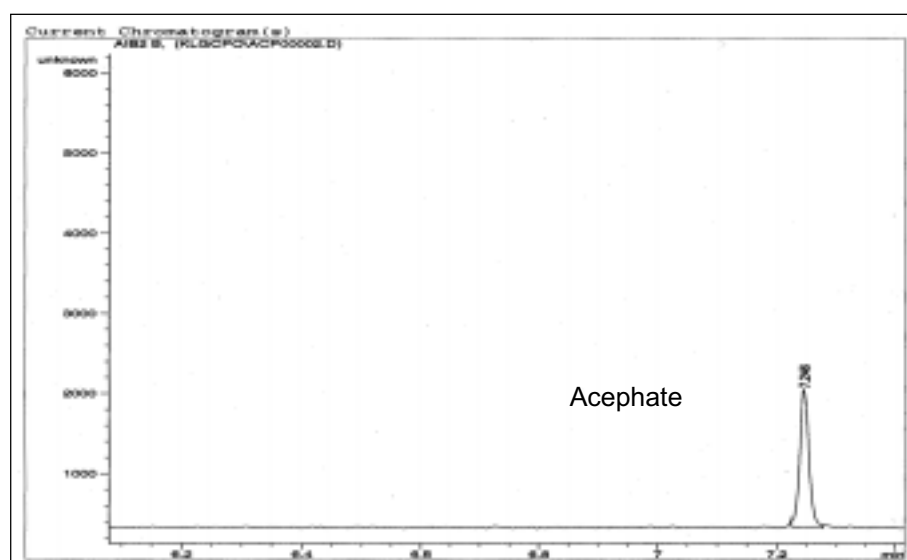


Figure 3. Chromatogram of standard acephate.

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## RECOVERY

Recoveries of acephate at the range of 0.04-0.80  $\mu\text{g g}^{-1}$  were 93%-105%.

Coefficient of variations were <10% for high concentrations and <25% for low concentrations.

Limit of detection was 5.0  $\mu\text{g kg}^{-1}$ .

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