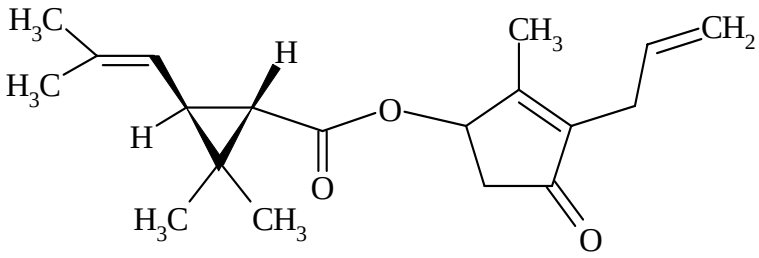
BIOALLETHRIN 203



ISO common name	Bioallethrin
Synonym	*d*-trans-Allethrin
Chemical name	(±)3-Allyl-2-methyl-4-oxocyclopent-2-enyl (±)*trans*-chrysanthemate (IUPAC); 2-methyl-4-oxo-3-(2-propenyl)-2-cyclopenten-1-yl 2,2-dimethyl-3-(2-methyl-1-propenyl)cyclopropane-carboxylate (CA; *584-79-2*)
Empirical formula	$C_{19}H_{26}O_3$
RMM	302.4
sp. gr.	0.997
Specific rotation $[a]^{20}_{D}$	47.5°
Solubility	In water: sparingly soluble; soluble in most organic solvents, and miscible with petroleum oils
Description	Amber coloured viscous liquid
Stability	Rapidly hydrolysed under alkaline conditions
Formulations	Solutions and emulsifiable concentrates and in mixtures with synergists

BIOALLETHRIN TECHNICAL
[*]**203**/TC/M/-

1 Sampling. Take at least 100 g.

2 Identity tests

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3 Bioallethrin

OUTLINE OF METHOD Bioallethrin is dissolved in acetone containing dibutyl phthalate as internal standard and determined by gas chromatography using flame ionisation detection.

REAGENTS

Bioallethrin standard of known purity
Acetone
Dibutyl phthalate internal standard
Internal standard solution. Weigh into a volumetric flask (500 ml) dibutyl phthalate (2 g), add acetone to dissolve and fill to the mark with acetone.
Calibration solution. Weigh (to the nearest 0.1 mg) 1.0 g (*s* mg) of bioallethrin standard into a volumetric flask (50 ml). Dissolve in and dilute to volume with acetone. Transfer by pipette 20.0 ml of this solution to a volumetric flask (100 ml), add by pipette internal standard solution (50.0 ml) and dilute to volume with acetone.

APPARATUS

Gas chromatograph fitted with a flame ionisation detector and an integrator or data system
Column glass, 120 m × 4 mm (i.d.) packed with 5 % OV-1 on Chromosorb W-HP, 80-100 mesh

PROCEDURE

[*] AOAC-CIPAC method 1978.

(a) Operating conditions (typical):

Oven temperature	160°C	
Injection temperature	230°C.	
Detector temperature	230°C	
Injection volume	3 µl	
Flow rate carrier gas	nitrogen, 125 ml/min	
Flow rates other gases	as described in the user's manual	
Retention times	bioallethrin:	about 7 min
	dibutyl phthalate:	about 4 min

(b) Preparation of sample. Weigh (to the nearest 0.1 mg) sufficient sample to contain about 1.0 g (*w* mg) of bioallethrin into a volumetric flask (50 ml). Dissolve in, and dilute to volume. with acetone. Transfer by pipette 20.0 ml of this solution to a volumetric flask (100 ml), add by pipette internal standard solution (50.0 ml) and dilute to volume with acetone.

(*c*) *Determination.* Inject into the gas chromatograph 3 µl portions of the calibration solution until the ratio of the bioallethrin to internal standard peak height varies by less than 1 % for successive injections. Repeat with the sample solution followed by duplicate injections of the calibration solution. If the peak heights differ by more than 1 % from the previous calibration solution injections repeat the series of injections.
Calculate the peak height ratios for duplicate calibration solution injections before and after the sample solution injections and average the four values. Calculate and average the peak height ratios for the sample solution injections.

(d) Calculation

$$\text{Bioallethrin} = \frac{R \times s \times P}{R' \times w} \text{ g/kg}$$

where:

R = bioallethrin to dibutyl phthalate peak height ratio for the sample solution
R' = bioallethrin to dibutyl phthalate peak height ratio for the calibration solution
s = mass of bioallethrin in the calibration solution (mg)
w = mass of bioallethrin in the sample solution (mg)
P = purity of the bioallethrin standard (g/kg)

BIOALLETHRIN + PIPERONYL BUTOXIDE SOLUTIONS
*203 + 33/SL/-

1 Sampling. Take at least 500 ml.

2 Identity tests

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3 Bioallethrin

REGENTS AND APPARATUS As for **203**/TC/M/3 except substitute:

Calibration solution for the following:

Weigh (to the nearest 0.1 mg) 1.0 g (*s* mg) of bioallethrin standard into a volumetric flask (50 ml). Dissolve in, and dilute to volume with, acetone. Transfer by pipette 20.0 ml of this solution to a volumetric flask (100 ml), add by pipette internal standard solution (50.0 ml) and dilute to volume with acetone. Transfer by pipette 25.0 ml of this solution to a volumetric flask (100 ml) and dilute to volume with acetone.

PROCEDURE As for **203**/TC/M/3 except:

(b) Preparation of sample. Weigh (to the nearest 0.1 mg) enough sample to contain about 200 mg (*w* mg) of bioallethrin into a volumetric flask (50 ml). Dissolve in and dilute to volume with acetone. Add by pipette internal standard solution (25.0 ml) and dilute to volume with acetone. Transfer by pipette 25.0 ml of this solution to a volumetric flask (100 ml) and dilute to volume with acetone.

(d) Calculation

$$\text{Bioallethrin content} = \frac{R \times s \times P}{R' \times w \times 2} \text{ g/kg}$$

* AOAC-CIPAC method 1978.

BIOALLETHRIN + PIPERONYL BUTOXIDE EMULSIFIABLE CONCENTRATES

*__203 + 33__/EC/M/-

1 Sampling. Take at least 1 l.

2 Identity tests

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3 Bioallethrin. As for bioallethrin + piperonyl butoxide solutions **203 + 33**/SL/3.

*AOAC-CIPAC method 1978.