**AI**

# XXX

*figure molecule*

*ISO common name* AI

*Chemical name* 2-chloro-4-…..

*CAS No.* xxxx-xx-x

*Molecular Formula* C81H4ClNO…..

*Molecular mass* xxx.x g/mol

*Melting point* xxx °C

*Vapor pressure* x.x x 10-7 Pa at 25 oC

*Solubility* water 2x.0 mg/l (20 °C); DMSO xx g/l (20 °C); dichloromethane xx g/l (20 °C); ….

*Description* odorless, white powder

*Stability* stable in neutral acidic or alkaline conditions:
 ……

*Formulation(s)* Suspension concentrate (SC)

# AI TECHNICAL

**[[1]](#footnote-1)\*xxx**/TC/M/-

# Sampling Take at least XXX g.

# Identity tests

## 2.1 GC. Use the GC method below. The retention time of AI for the sample solution should not deviate by more than ... % from that of the calibration solution.

**2.2 Infrared.** Use either the ATR technique or prepare KBr discs from the sample and from AI reference substance. Scan from 4000 to 400 cm-1. The spectrum produced from the sample should not differ significantly from that of the standard.

**3 Active ingredient**

**OUTLINE OF METHOD**

The sample of XXX technical material is dissolved in ..., containing an internal standard, and the XXX content (g/kg) is determined by capillary gas chromatography with flame ionization detection.

**REAGENTS**

*XXX* reference standard, of known purity

*Solvent,* chromatographic grade

*YYY* internal standard. Must not contain impurities with the same retention time as XXX.

**Internal Standard Solution.** Prepare a single stock of x mg/ml internal standard solution, of sufficient volume for all samples to be analyzed.

**Calibration Solution.** Prepare calibration solutions in duplicate (CA and CB). Weigh to the nearest 0.1 mg about x mg (*s*) of reference standard into a volumetric flask (x ml)…… Mix thoroughly and transfer a portion of solution into chromatographic injection vials by filtering with a 0.45 µm … syringe filter.

**APPARATUS**

*Gas chromatograph,* equipped with a split/splitless injection and a flame

ionization detector.

*Capillary column*, fused silica, 30 m x 0.32 mm (i.d.), film thickness: 0.25 µm, coated with xxx (DB-XXX or equivalent).

*Ultrasonic bath*

*Syringe filter* compatible with the solvent (for example, 0.45 µm pore diameter, RC)

**PROCEDURE**

**(a) Gas Chromatographic conditions (typical)**

 *Column* fused silica, 30 m x 0.32 mm (i.d.), 0.25 µm film
 coated with xxx (DB-XXX or equivalent).

 *Injection system*

 Injector split injection

 Injection volume X µl

 Split ratio XX : X

 *Detector* flame ionization

 *Temperatures*

 Injection port XXX °C

 Detector XXX °C

 Oven XXX °C

 *Gas flow rates*

 *Column X* ml/min (XX), constant pressure

 *Detector*

Air XXX ml/min

 Hydrogen XXX ml/min

 *Retention times*

 AI X min (indicative)

 Internal standard X min (indicative)

**(b) System equilibration.**Prepare two calibration solutions. Inject X µl portions of solution CA until the response factors (*fi*) obtained for two consecutive injections differ by less than 1.0 %. Then inject a 1 µl portion of the solution CB. The response factor, *fi*, for this solution should not deviate by more than x % from that of solution CA....

**(c) Sample preparation.** Prepare sample solutions in duplicate for each sample. Weigh to the nearest 0.1 mg sufficient sample (*m*) to contain about XX mg of AI into a volumetric flask (XX ml). Add solvent (about XX ml) and place the flask in an ultrasonic bath for X min. Allow to cool to ambient temperature and fill to the mark with solvent. Mix thoroughly (sample solutions S1 and S2).

**(d) Determination*.*** Inject in duplicate x µl portions of each sample solution bracketing them by duplicate injections of the calibration solution as follows: calibration solution CA, calibration solution CB, calibration solution CA, sample solution S1A, sample solution S1B, calibration solution CA, sample solution S2A, sample solution S2B, calibration solution CA, and so on for further samples. Measure the relevant peak areas.

**(e) Calculation.** Calculate the mean value of each pair of calibration response factors, bracketing the two injections of a sample, and use this value for calculating the AI contents of the bracketed sample injections. The AI content is the mean value of two sample solutions.

$$f\_{i} = \frac{I\_{c} × s × P}{A\_{c}}$$

$$AI content = \frac{f × A\_{s}}{I\_{s} × m} g/kg$$

where:

*fi* = individual response factor
*f* = mean response factor
*Ac* = peak area of AI in the calibration solution
*As* = peak area of AI in the sample solution

*Ic* = peak area of the internal standard in the calibration solution

*Is* = peak area of the internal standard in the sample solutions

*s* = mass of AI reference standard in the calibration solution (mg)

*m* = mass of sample taken (mg)

*P* = purity of AI reference standard (g/kg)

**Repeatability r** = X to X g/kg
at XXX to XXX g/kg active ingredient content

**Reproducibility R** = XX to XX g/kg
at XX to XX g/kg active ingredient content

**AI WATER DISPERSIBLE GRANULES**

**[[2]](#footnote-2)\*XXX**/WG/M/-

# 1 Sampling. Take at least XXX g. Mix thoroughly to obtain samplehomogeneity.

# 2 Identity Tests

## 2.1 GC. As for technical XXX /TC/M/2.2 and Fig. 2.

## 2.2 Infrared. As for technical XXX/TC/M/2.1 and Fig. 1.

**3 Active ingredient.** As for AI technical XXX /TC/M/3 except:

**(c) Sample preparation.** Prepare solutions in duplicate for each sample. Weigh to the nearest 0.1 mg sufficient sample (*m*) to contain about XX mg of AI into a volumetric flask (XXX ml). Add by pipette or calibrated dispenser XX ml of the internal standard stock solution to the weighed aliquot. Place the capped glass container in an ultrasonic apparatus for XX min. Allow to cool to ambient temperature and fill to the mark with solvent. Mix thoroughly and filter an aliquot of each prepared solution through a x µm syringe filter prior to analysis (sample solutions S1 and S2).

**Repeatability r** = XX to XX g/kg
at XXX to XXX g/kg active ingredient content

**Reproducibility R** = XX to XX g/kg
at XXX to XXX g/kg active ingredient content

**AI SUSPENSION CONCENTRATES**

**[[3]](#footnote-3)\*XXX**/SC/M/-

# 1 Sampling. Take at least XXX ml. Mix thoroughly to obtain samplehomogeneity.

# 2 Identity Tests

## 2.1 GC. As for technical XXX /TC/M/2.2 and Fig. 2.

## 2.2 Infrared. As for technical XXX/TC/M/2.1 and Fig. 1.

**3 Active ingredient.** As for AI technical **XXX** /TC/M/3 except:

**(c) Sample preparation.**Prepare sample solutions in duplicate for each sample. Weigh to the nearest 0.1 mg sufficient sample (*m*) to contain about x mg of AI into….

**Repeatability r** = X to X g/kg
at XX to XX g/kg active ingredient content

**Reproducibility R** =X to X g/kg
at XX to XX g/kg active ingredient content

**4 Suspensibility**

**REAGENTS AND APPARATUS.** As for **XXX**/TC/M/3 and MT 184 (actual version)

**PROCEDURE**

**(a) Preparation of suspension and determination of sedimentation.** MT 184 (actual version)

**(b) Determination of AI in the bottom 25 ml of suspension.** After removal of the top 225 ml of suspension transfer the remaining 25 ml to a volumetric flask (XXX ml) and add solvent (about XX ml). Place the flask in an ultrasonic bath for X min. Allow to cool to ambient temperature and fill to the mark with solvent. Mix thoroughly and filter through a XXX µm filter prior to analysis. Determine the mass of AI (*Q* g) by **XXX**/TC/M/3.

**(c) Calculation**

See CIPAC method MT 184, actual version

**Fig. 1** Typical IR spectrum according to XXX/TC/M/2.1

**Fig. 2** Typical chromatogram of AI TC

**Fig. 3** Typical chromatogram of AI in WG

**Fig. 4** Typical chromatogram of AI in SC

1. \* CIPAC method 20xx. Based on a method supplied by …… [↑](#footnote-ref-1)
2. \* CIPAC method 20XX. Based on a method supplied by company [↑](#footnote-ref-2)
3. \* CIPAC method 20XX. Based on a method supplied by company [↑](#footnote-ref-3)