



Analysis of Glyphosate and Glufosinate by Solid-Phase Anion Exchange Extraction with GC/MS or LC/MS Analysis

UCT Part Number:
EUQAX2M6 (1000 mg, QAX2, 6 mL cartridge)

September 2009

Analyte	CASRN	Common Name
Glyphosate ¹	1071-83-6	Roundup®
Glufosinate ²	51276-47-2	Basta®, Challenge®)

1. Sample Preparation

- a) Adjust water sample pH to 6 or higher with buffer

2. Cartridge Conditioning

- a) Place **EUQAX2M6** cartridges(s) on manifold
- b) Add 5 mL of methanol to the cartridge
- c) Slowly draw methanol through leaving enough to cover cartridge frit
- d) Rinse using 10 mL of pH 6 or higher buffer leaving a layer of buffer on frit

Note: Do not let the cartridge dry out after addition of methanol otherwise repeat

3. Extraction Protocol

- a) Draw a known volume of sample water through the cartridge, usually 100-500 mL

Note: Sample volume is determined by the analytical quantitation limit

- b) Adjust vacuum so that flow is approximately 1 - 3 mL per minute
- c) Wash sorbent using 10 ml of pH 6 buffer
- d) Dry the cartridge by drawing full vacuum for 10 minutes

4. Analyte Elution

- a) Elute using 5 mL of 1 mol/L HCl/methanol solution (4/1)
- b) Add eluant to the cartridge then draw through at 1 mL/minute
- c) Evaporate to dryness with N₂ flow in a water bath heated to 50°C

5. GC Analysis

- a) Add 50 μL of **MTBSTFA** (N-methyl-N-(tert-butyldimethylsilyl) trifluoroacetamide) and 50 μL of dimethylformamide for derivatization
- b) Sonicate at room temperature for 2 minutes (critical)
- c) Quantitatively transfer to GC vial and cap
- d) Heat to 80°C for a minimum of 30 minutes
- e) Cool to room temperature
- f) Sample is ready for analysis

6. LC Analysis (Alternative Analysis Procedure—no derivatization needed)

- a) After step 4) c) dissolve the dry residue using 100 μL of methanol
- b) Quantitatively transfer to an LC vial then cap
- c) Sample is ready for LC analysis

¹N-phosphonomethyl glycine

²RS-2-amino-4-(hydroxyl-methyl-phosphoryl)butanoic acid

DCN-218030-118