

## Beverage Analysis Kit

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### I. INTRODUCTION

This instruction sheet describes the Waters® Beverage Analysis Kit (p/n 176002534) and how to use it. It has been designed for use with soft drink formulations containing Acesulfame-K, Saccharin, Caffeine, Benzoate, Sorbate, and Aspartame.

The Waters Beverage Analysis Kit is made up of four parts:

1. Beverage Analysis Mobile Phase—Four 1-liter bottles containing a pre-mixed solution of denatured ethanol and acetate buffer (p/n 186006006). Circulate one liter of mobile phase through the system for one week, then replace with one liter of fresh mobile phase.
2. Beverage Analysis Wash Solvent—Four 1-liter bottles containing a pre-mixed solution of denatured ethanol and water (p/n 186006007). Circulate one liter of wash solvent as the wash on the system for one week, then replace with one liter of fresh wash solvent.
3. Beverage Analysis Standards—Four 50 mg bottle of Aspartame powder (p/n 186006010) and Four 100 mL bottles of 5 beverage analysis standards (p/n 186006008) Caffeine 100 mg/L Benzoate 200 mg/L, Sorbate 100 mg/L, Acesulfame-K 150 mg/L, and Saccharin 100 mg/L.

**WARNING:** *Denatured ethanol is toxic. Do not ingest.*

## II. PREPARING THE STANDARDS SOLUTION

Prepare the standards solution by mixing 5 Beverage Analysis Standard and Aspartame. Prepare fresh standards solution weekly and store in the refrigerator.

1. Pour the entire contents (100 mL) of 5 Beverage Analysis Standards (p/n 186006008) into the bottle of aspartame powder (p/n 186006010).
2. Cap and shake vigorously until the aspartame is dissolved. Viewing against a dark background helps to determine when this occurs.
3. Transfer to vials for direct usage. Label as “Beverage Analysis Standard”. Store remaining unused vials in refrigerator. Refrigerated Beverage Analysis Standard vials expire after 1 week.

The standards solution prepared by this method contains:

- Caffeine 100 mg/L
- Benzoate 200 mg/L
- Sorbate 100 mg/L
- Acesulfame-K 150 mg/L
- Saccharin 100 mg/L
- Aspartame 500 mg/L

## III. SETTING UP OR REPLACING MOBILE PHASE

The Waters Beverage Analysis Mobile Phase can be re-circulated for one week. Waters recommends that the mobile phase be replaced with freshly prepared mobile phase using the following procedure:

1. Set the pump flow rate to 0.0 mL/min.
2. Remove the waste line from the solvent reservoir. Place the waste line into a waste solvent container.
3. Put the solvent line into the bottle containing freshly made mobile phase.
4. Follow the manufacturer’s instructions for priming and starting your solvent pump.
5. Set the pump flow to 0.5 mL/min and wait 15 minutes. (When installing the ACQUITY UPLC® BEH Phenyl Column (p/n 186002885), be sure to displace the column packing solvent and send to waste before recycling).
6. Monitor the baseline for stability. When stable, return the waste line to the solvent reservoir to recirculate.

7. Once stable, the system should be recalibrated using the Waters Beverage Analysis Standard.
8. The mobile phase is stable for one week under normal laboratory conditions.
9. Set the flow rate to 0.5 mL/min.

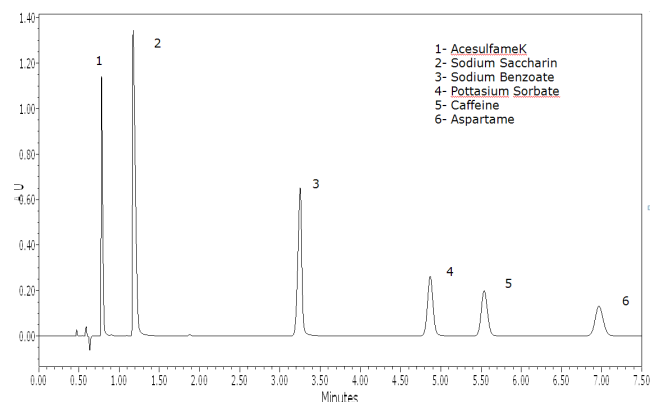


Figure 1. Chromatogram of the Beverage Analysis Standards Separation

## IV. INSTRUMENT SETTINGS

Table 1 shows the settings used to obtain the chromatogram in Figure 1.

Pump	ACQUITY UPLC H-Class
Data Acquisition	Empower®
Detection	UV @ 214 nm
Sample	Waters Beverage Standard Mixture from Waters Beverage Analysis Kit
Eluent	Waters Beverage Mobile Phase
Column	ACQUITY UPLC BEH Phenyl 2.1 x 100 mm p/n 186002885
Injection Volume	1 µL
Column Temperature	35 °C

## V. STORAGE

Store Beverage Analysis Mobile Phase at room temperature indefinitely. Allow Beverage Analysis Standard in direct use vials to come to room temperature before using. Make fresh standards solution weekly. Refrigerate the bottle of aspartame.

## VI. ORDERING INFORMATION

To order these products, contact your nearest subsidiary, or visit [www.waters.com](http://www.waters.com) and click on “Order Center”.

Description	Part Number
Waters Beverage Analysis Kit ( <i>Contains supplies of the individual parts listed below for 1 month of beverage analysis</i> )	176002534
Waters Beverage Analysis Standards Solution	186006008
Waters Beverage Analysis Standards Solid	186006010
Waters Beverage Analysis Mobile Phase	186006006
Waters Beverage Analysis Wash Solvent	186006007
Recommended Column for Beverage Analysis by UPLC® sold separately: ACQUITY UPLC BEH Phenyl Column 2.1 x 100 mm	186002885

# Waters

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