

HILIC QC Reference Material

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I. INTRODUCTION

The Quality Control (QC) Reference Material portfolio is a unique collection of standards and mixtures. These products allow the user to evaluate and benchmark their chromatography system before analysis of critical material. The products in the portfolio are all specifically formulated based on the expertise of Waters scientist.

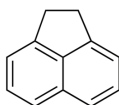
The retention of polar analytes and metabolites is a chromatographic challenge for scientists. Polar compounds often elute in the void of most reversed-phase columns or end up co-eluting with endogenous species present within various sample matrices in RPLC. Hydrophilic interaction chromatography (HILIC) is a complementary technique to reversed phase and normal phase, that can be used to successfully improve the retention of very polar species.¹

The HILIC QC Reference Material was designed as a standard to help benchmark this type of separation. It is a four component mix containing an un-retained void marker, a polar neutral compound, and two polar basic compounds that provides a stable chromatographic separation for HILIC Columns.

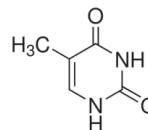
HILIC QC Reference Material Components

Compound name	Property	Concentration in vial (mg/mL)
Acenaphthene	VO marker	0.0190
Thymine	Polar neutral	0.0037
Adenine	Polar basic	0.0037
Cytosine	Polar basic	0.0077

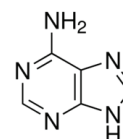
acenaphthene



thymine



adenine



cytosine

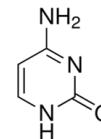


Figure 1. Individual compound formulas.

II. STORAGE AND STABILITY

The standard mix comes in a Waters crimp top vial for direct injection and contains 1 mL total in 90:10 acetonitrile:100 mM ammonium formate pH 3.0 buffer.

The standard mix is shipped at ambient temperatures. It is highly recommended that, upon receipt, the standard should be refrigerated at 2 – 8 °C for short term storage and for long term storage frozen (-15 – 0 °C).

The compounds used are stable in the unopened ampoule through the expiration date listed. Standard integrity and stability cannot be guaranteed after opening and should be determined by the user.

NOTE: Expiration date valid for unopened ampoule stored in compliance with the recommended conditions.

Note : If any undissolved material is visible inside the ampoule/vial, sonicate the unopened ampoule/ vial until the material is completely dissolved

III. EXAMPLE OF USING THE HILIC QC REFERENCE MATERIAL

Below is a reference chromatogram with conditions to help provide an example of using the HILIC QC Reference Material as a benchmark for system performance.

System Information

Mobile phase	(A1) 90% acetonitrile/10% 100mM ammonium formate pH 3.0 (v/v), (A2) not used, (B1) not used, (B2) not used
Samples:	
Acenaphthene	19.0 µg/mL
Thymine	3.7 µg/mL
Adenine	3.7 µg/mL
Cytosine	7.7 µg/mL
Detection wavelength	254 nm
Temperature	30 °C
System	ACQUITY UPLC
Weak needle wash	90/10 (v/v) MeCN/Milli-Q® Water
Strong needle wash	10/90 (v/v) MeCN/Milli-Q Water
Injection volume (µL)	2.0
Flow rate (mL/min)	0.5
Seal wash	20% MeCN/80% (v/v) Milli-Q water
Data acquisition	Empower® 2 Software

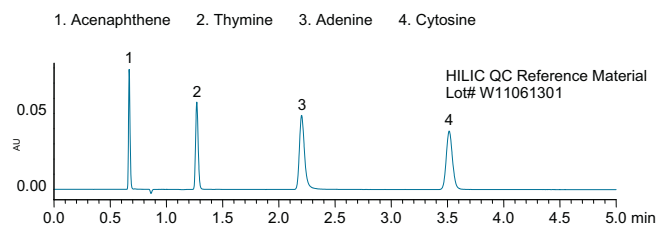


Figure 2. Chromatographic Resolution using the HILIC QC Reference Material.

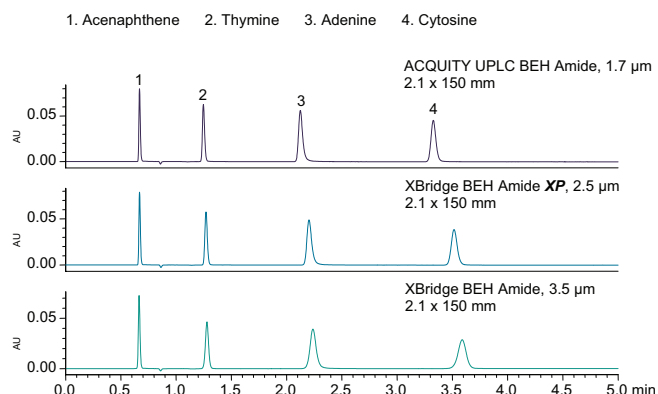


Figure 3. HILIC QC Reference Material across different particle sizes.

IV. ORDERING INFORMATION

Description	Part Number
LCMS QC Reference Material	186006963
Neutrals QC Reference Material	186006360
Reversed-Phase QC Reference Material	186006363
Preparative Chromatography QC Reference Material	186006703
HILIC QC Reference Material	186007226
UPC ² QC Reference Material	186007950
QDa QC Reference Material	186007345
Quad LCMS QC Reference Material	186007362
Autopurification System Standard	716000765
Comprehensive Guide to HILIC – Hydrophilic Interaction Chromatography Book	715002531

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