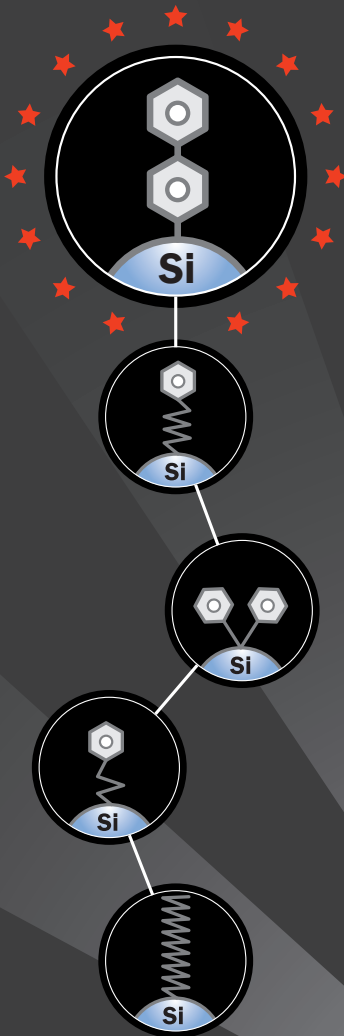


# Restek **Ultra Biphenyl** Columns

Next Generation Phenyl Columns are  
the Best Choice for Pain Panel Analyses



★ **The unique Biphenyl phase, created by Restek, exploits aromatic retention for pharmaceutical and drug-like compounds,** giving it a significant advantage over C18 phases for clinical diagnostic tests, such as pain drug panel analyses.

★ **The Restek Ultra Biphenyl column is the column of choice for pain drug panel testing.** In addition, the Biphenyl column has been incorporated into clinical methods for NSAIDs, THC and metabolites, synthetic cannabinoids, steroids, hormones, and sulfonamides in milk.

★ **Restek Ultra Biphenyl columns go through extra QA testing by LC/MS using 18 of the most problematic pain panel compounds.** This ensures lot-to-lot consistency so there will be no performance differences between the 1st column you buy and the 100th (see column Certificate of Analysis on reverse).

Visit [www.restek.com/biphenyl](http://www.restek.com/biphenyl) for a complete product listing.

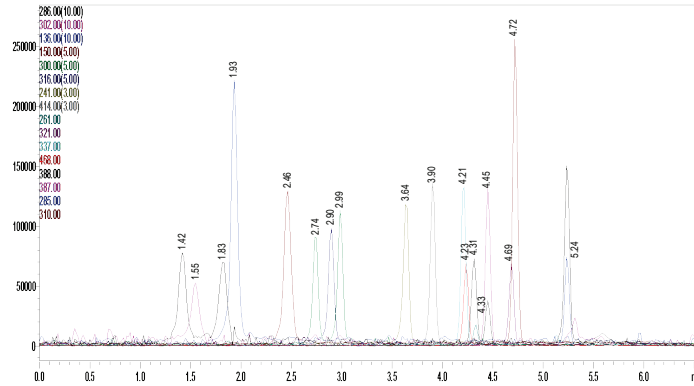
Every Restek Ultra Biphenyl column comes with a lot-specific Certificate of Analysis to ensure lot-to-lot consistency. QA testing includes pain panel compounds run under LC/MS conditions.

# LC Certificate of Analysis



## Lot Performance Report

Ultra Biphenyl 5um Lot# 110224R



Compound	Expected m/z	Expected Retention *	Minimum Retention	Maximum Retention	Result* for Lot# 110224R
Amphetamine	136	1.93	1.68	2.18	1.93 PASS
Buprenorphine	468	4.22	3.97	4.47	4.23 PASS
Carisoprodol	261	4.36	4.11	4.61	4.33 PASS
Codeine	300	2.73	2.48	2.98	2.74 PASS
Diazepam	285	5.24	4.99	5.49	5.24 PASS
Fentanyl	337	4.19	3.94	4.44	4.21 PASS
Flurazepam	388	4.29	4.04	4.54	4.31 PASS
Hydrocodone	300	2.98	2.73	3.23	2.99 PASS
Hydromorphone	286	1.82	1.57	2.07	1.83 PASS
Lorazepam	321	4.72	4.47	4.97	4.69 PASS
Meprobamate**	241**	3.66	3.41	3.91	3.64 PASS
Methadone	310	4.69	4.44	4.94	4.72 PASS
Methamphetamine	150	2.45	2.20	2.70	2.46 PASS
Morphine	286	1.42	1.17	1.67	1.42 PASS
Norbuprenorphine	414	3.88	3.63	4.13	3.90 PASS
Oxycodone	316	2.89	2.64	3.14	2.90 PASS
Oxymorphone	302	1.55	1.30	1.80	1.55 PASS
Sufentanil	387	4.43	4.18	4.68	4.45 PASS

\* Expected retention and results for the lot tested are based on an analysis using a Shimadzu Prominence UFLC-XR with an MS detector along with proprietary method parameters. Actual retention times obtained may vary depending on the specific instrument manufacturer, model, and system configuration used.

\*\* [M+H] of meprobamate is 219; however, dimer with formate is the predominant signal. An m/z = 241 is used for detection.

Approved By:

Date: April 12, 2011



Restek certifies that this product complies with all quality specifications. It was produced in accordance with the most current edition of the Restek Corporation Quality System Manual. Restek Corporation's quality system is registered to ISO 9001:2008 (BSI certificate # FM 80397).

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Lit. Cat.# GNTS1377

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