



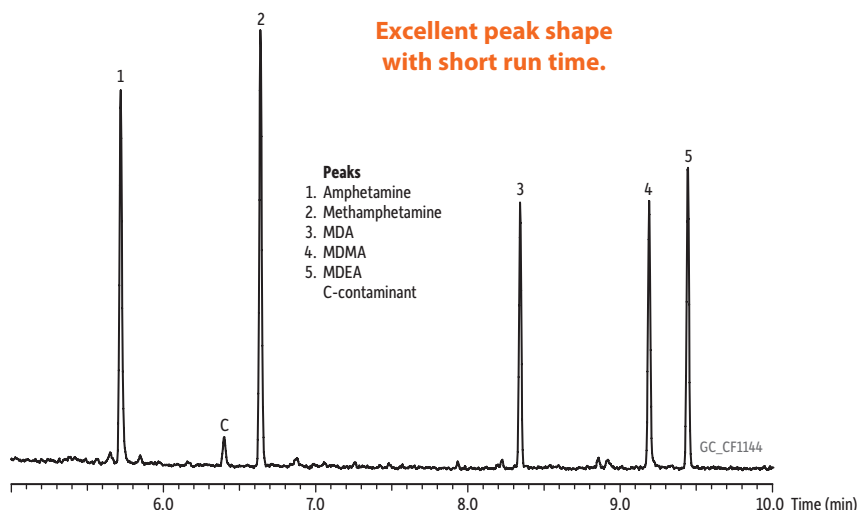
## Featured Application: Derivatized Amphetamines on Rxi-5Sil MS

# Improved GC Analysis of Derivatized Amphetamines

- Ideal selectivity for GC analysis of amphetamines.
- Exceptional inertness means good peak shape/response and better sensitivity.
- Robust, low-bleed phase results in longer column lifetime.

Many drug assays, such as GC analysis of amphetamines, require that compounds be derivatized prior to analysis. Derivatization allows compounds that are not otherwise amenable to GC to be analyzed by this technique, and it also helps to produce unique, high molecular weight fragments that assist with GC-MS quantitation. While derivatization has its advantages, derivatization reagents and their byproducts are extremely harsh and can reduce GC column lifetime by damaging the stationary phase. Phase damage usually manifests as increased bleed and tailing of active compounds. The GC analysis of derivatized amphetamines shown here illustrates the low bleed levels, good peak responses, and symmetrical peak shapes that can be obtained by using a highly inert Rxi-5Sil MS column.

The unique Rxi-5Sil MS stationary phase, with its embedded arylene groups, provides a more rigid structure that is less likely to be damaged by drug derivatization reagents or their byproducts. Internal lifetime testing at Restek has demonstrated that after 400 injections of HFAA, a reagent used to derivatize amphetamines and other drugs prior to analysis, no changes in bleed or inertness were observed. The enhanced stability of Rxi-5Sil MS columns reduces phase bleed, resulting in longer column lifetimes and improved chromatographic performance for the GC analysis of derivatized amphetamines and other drugs of abuse with sensitive mass spectrometry detectors.



**Column** Rxi-5Sil MS, 30 m, 0.25 mm ID, 0.25  $\mu$ m (cat.# 13623)  
**Sample** Butyl chloride  
**Diluent:** 500 ng/mL HFAA derivatives  
**Conc.:**  
**Injection** 1.0  $\mu$ L splitless (hold 1 min)  
**Inj. Vol.:** 3.5 mm splitless taper w/wool (cat.# 22286-200.1)  
**Liner:**  
**Inj. Temp.:** 250 °C  
**Purge Flow:** 28 mL/min  
**Oven**  
**Oven Temp.:** 75 °C to 300 °C at 15 °C/min  
**Carrier Gas** He, constant linear velocity  
**Linear Velocity:** 45 cm/sec, 13.5 psi, 93.1 kPa @ 75 °C

**Detector** MS  
**Mode:** Scan  
**Transfer Line Temp.:** 250 °C  
**Analyzer Type:** Quadrupole  
**Source Temp.:** 200 °C  
**Electron Energy:** 70 eV  
**Solvent Delay Time:** 4 min  
**Tune Type:** PFTBA  
**Ionization Mode:** EI  
**Scan Range:** 40-300 amu  
**Scan Rate:** 5 scans/sec  
**Instrument** Shimadzu 2010 GC & QP2010+ MS

## Rxi-5Sil MS Columns (fused silica)

low-polarity phase; Crossbond 1,4-bis(dimethylsiloxy)phenylene dimethyl polysiloxane

- Engineered to be a low-bleed GC-MS column.
- Excellent inertness for active compounds.
- General-purpose columns—ideal for GC-MS analysis of semivolatiles, polycyclic aromatic compounds, chlorinated hydrocarbons, phthalates, phenols, amines, organochlorine pesticides, organophosphorus pesticides, drugs, solvent impurities, and hydrocarbons.
- Temperature range: -60 °C to 350 °C.

Description	temp. limits	qty.	cat.#
30 m, 0.25 mm ID, 0.25 $\mu$ m	-60 to 320/350 °C	ea.	13623



Pure Chromatography

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## Acylation Derivatization Reagents

- Most commonly used for electron capture detection.
- React with alcohols, amines, and phenols.
- Frequently used for drugs of abuse confirmation.

Acylation reagents offer the same advantage available from silylation reagents: creating less polar, more volatile derivatives. In comparison to silylating reagents, the acylating reagents can more readily target highly polar multifunctional compounds, such as carbohydrates and amino acids. In addition, acylating reagents offer the distinct advantage of introducing electron-capturing groups, thus enhancing detectability during analysis.

Compound		CAS #	cat.#
TFAA (trifluoroacetic acid anhydride)	10-pk. (10x1 g)	407-25-0	35618
PFAA (pentafluoropropionic acid anhydride)	10-pk. (10x1 g)	356-42-3	35620
	25 g vial	356-42-3	35621
HFAA (heptafluorobutyric acid anhydride)	10-pk. (10x1 g)	336-59-4	35622
	25 g vial	336-59-4	35623
PFPOH (pentafluoropropanol)	25 g vial	422-05-9	35625

## Restek Electronic Leak Detector

Don't let a small leak turn into a costly repair—protect your analytical column by using a Restek leak detector.

Features & benefits include:

- Audible tone indicates the severity of a leak.
- Redesigned circuitry offers 12 hours of operation between charges.
- Detects a broad range of gases; Ex rated for use with hydrogen and other explosive gases.\*
- Ergonomic, handheld design.
- Rugged side grips for added durability.
- Handy probe storage for cleanliness and convenience.
- Automatic shutoff.
- A convenient carrying and storage case.
- Easy-to-clean probe assembly.
- A universal charger set (U.S., European, UK, and Australian plugs included).

Backed by a one-year warranty, the Restek leak detector is the industry standard for performance and affordability in handheld leak detectors.



Description	qty.	cat.#
Leak Detector with Hard-Sided Carrying Case and Universal Charger Set (U.S., UK, European, Australian)	ea.	22655
Small Probe Adaptor for Leak Detector	ea.	22658
Dynamic Duo Combo Pack (Restek Leak Detector and ProFLOW 6000 Flowmeter)	kit	22654
Soft-Sided Storage Case for Leak Detector or ProFLOW 6000 Flowmeter	ea.	22657
Car Charger/Adaptor	ea.	22652
Universal AC Power Adaptor	ea.	22653

Avoid using liquid leak detectors on a GC! Liquids can be drawn into the system and/or into the leak detector.

\*Caution: The Restek electronic leak detector is designed to detect trace amounts of hydrogen in a noncombustible environment. It is NOT designed for determining leaks in a combustible environment. A combustible gas detector should be used for determining combustible gas leaks under any condition. When using it to detect hydrogen, the Restek electronic leak detector may only be used for determining trace amounts in a GC environment.

Restek Recommends: If you think that your Restek electronic leak detector needs service or repair, please contact Restek Customer Service before sending your unit in (cat.# 22655-R). Leak detector service/repair will include inspection and testing of the unit.