

## Basic Compounds Analysis

### Rtx®-Volatile Amine Columns (fused silica)

- Unique selectivity for baseline resolution of all volatile amines.
- Excellent inertness assures accuracy and sensitivity for volatile amines, including free ammonia.
- Highly robust phase withstands repeated water injections, resulting in longer column lifetime.
- High temperature stability (290 °C) ensures elution of amines up to C16 and allows contaminants to be removed by “baking out” the column.

The Rtx®-Volatile Amine column was designed specifically for analyzing volatile amines in difficult matrices, such as water. The unique base deactivation creates an exceptionally inert surface for these sensitive compounds, resulting in highly symmetric peaks which allow low detection limits. The stable bonded phase yields a column that is not only retentive and highly selective for these compounds, but is also very robust and able to withstand repeated water injections. Comparisons made by customers performing routine volatile amine applications have shown the Rtx®-Volatile Amine column outperforms other amine-specific columns, especially for peak shape and lifetime. Each Rtx®-Volatile Amine column is held to stringent quality specifications and tested with a specially designed test mix that includes basic compounds to ensure exceptional inertness, reliability, and reproducibility. These qualities assure consistent performance and make the Rtx®-Volatile Amine column the best choice for volatile amines analysis.

ID	temp. limits	15-Meter	30-Meter	60-Meter
0.32mm	-60 to 290°C	18076	18077	18078



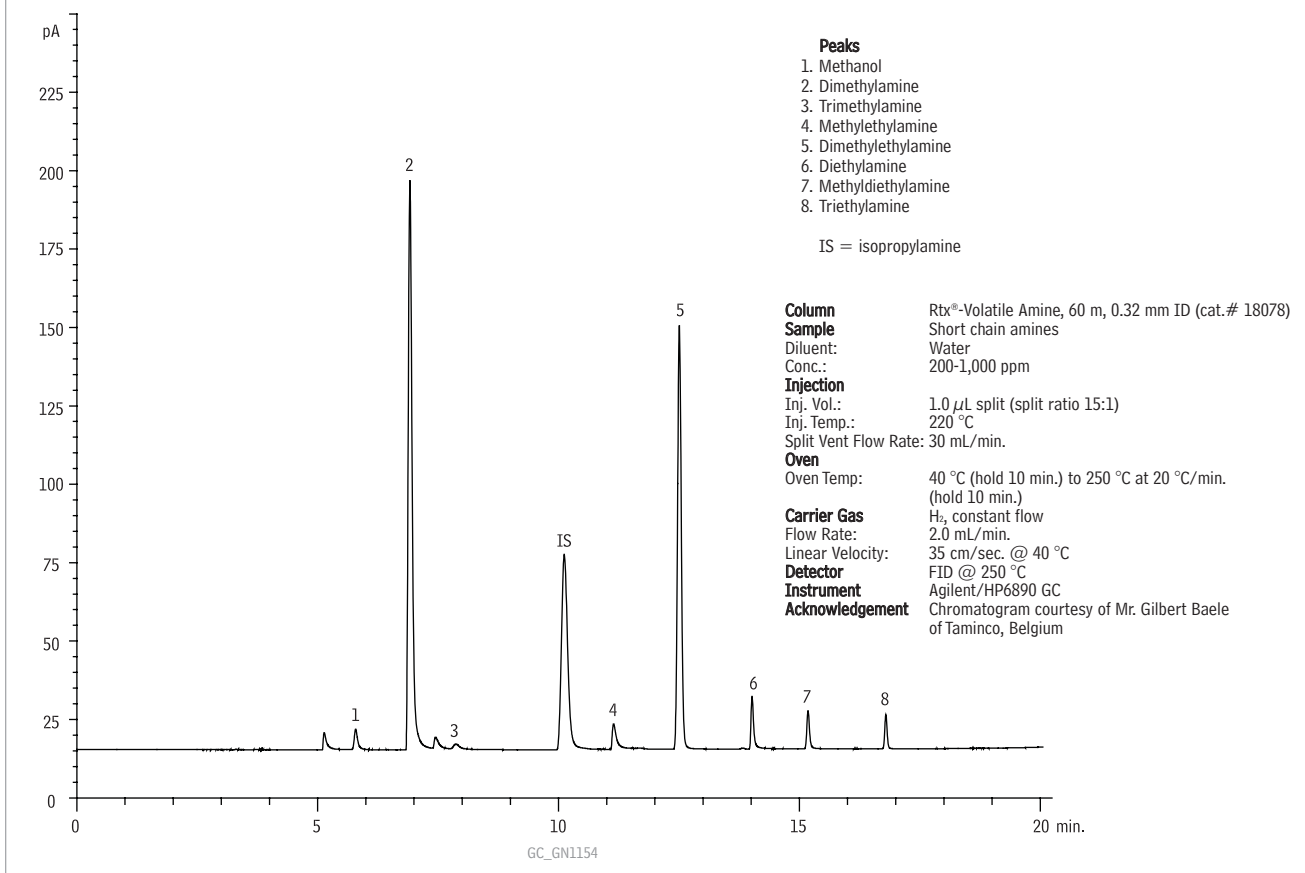
### similar phases

Direct replacement for CP-Volamine, thick-film CP-Sil 8 for amines, and other amine-deactivated columns coated with low polarity polysiloxane phases.

### please note

We recommend using base-deactivated fused silica guard columns (page 34) and base-deactivated liners (page 213) with Rtx®-Volatile Amine columns.

### Short chain amines in water on an Rtx®-Volatile Amine column.





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## Basic Compounds Analysis

### Rtx®-5 Amine Columns (fused silica)

(low polarity phase; Crossbond® 5% diphenyl/95% dimethyl polysiloxane)

- Application-specific columns for amines and other basic compounds, including alkylamines, diamines, triamines, ethanolamines, and nitrogen-containing heterocyclics.
- Stable to 315 °C.

Active basic compounds that otherwise require derivatization, or an alternative analytical technique, can be analyzed on an Rtx®-5 Amine column. The tubing surface is chemically altered to reduce tailing of basic compounds, eliminating the need for column priming. An Rtx®-5 Amine column is ideal for analyzing a wide variety of basic compounds, but breakthrough technology also allows the analysis of neutral compounds, adsorptive compounds with oxygen groups susceptible to hydrogen bonding, or even weakly acidic compounds such as phenols. Every Rtx®-5 Amine column is tested to ensure that it exceeds the requirements for analyzing ppm levels of amines, without priming, and to ensure low bleed at maximum operating temperature.

ID	df	temp. limits	15-Meter	30-Meter
0.25mm	0.25µm	-60 to 300/315°C	12320	12323
	0.50µm	-60 to 300/315°C	12335	12338
	1.00µm	-60 to 300/315°C	12350	12353
0.32mm	1.00µm	-60 to 300/315°C	12351	12354
	1.50µm	-60 to 290/305°C	12366	12369
0.53mm	1.00µm	-60 to 290/305°C	12352	12355
	3.00µm	-60 to 280/295°C	12382	12385

### similar phase

PTA-5, CP-Sil CB

### also available

See **page 65** for Rtx®-35 Amine columns.

### please note

We recommend using base-deactivated fused silica guard columns (**page 34**) and base-deactivated liners (**page 213**) with Rtx®-5 Amine columns.

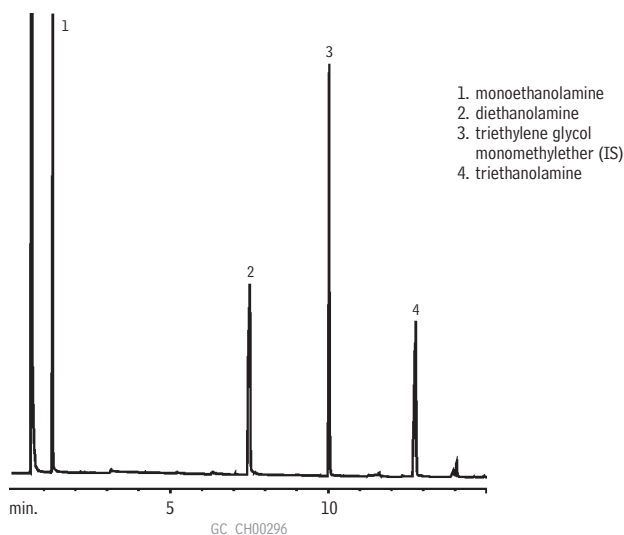
## Chromatogram Search Tool

Search by compound name, synonym,  
CAS # or keyword

[www.restek.com/chromatograms](http://www.restek.com/chromatograms)



### Ethanolamines on an Rtx®-5 Amine column.



Column: Rtx®-5 Amine, 15m, 0.25mm ID, 0.50µm (cat.# 12335)  
Sample: 1.0µL split injection of ethanolamine mix in methanol  
On-column conc.: 34ng  
Oven temp.: 50°C (hold 2 min.) to 180°C @ 10°C/min. (hold 2 min.)  
Inj./det. temp.: 280°C/300°C  
Carrier gas: hydrogen  
Linear velocity: 43cm/sec. set @ 50°C  
FID sensitivity: 6.4 x 10<sup>-11</sup> AFS  
Split ratio: 58:1

## Basic Compounds Analysis

### Rtx®-35 Amine Columns (fused silica)

(midpolarity phase; Crossbond® 35% diphenyl/65% dimethyl polysiloxane)

- Application-specific columns for amines and other basic compounds, including alkylamines, diamines, triamines, ethanolamines, and nitrogen-containing heterocyclics.
- Stable to 220 °C.

Active basic compounds that otherwise require derivatization, or an alternative analytical technique, can be analyzed on an Rtx®-35 Amine column. The tubing surface is chemically altered to reduce tailing of basic compounds, eliminating the need for column priming. An Rtx®-35 Amine column is ideal for analyzing a wide variety of basic compounds, but breakthrough technology also allows the analysis of neutral compounds, adsorptive compounds with oxygen groups susceptible to hydrogen bonding. Every Rtx®-35 Amine column is tested to ensure that it meets the requirements for analyzing ppm levels of amines, without priming, and to ensure low bleed at maximum operating temperature.

ID	df	temp. limits	15-Meter	30-Meter
0.25mm	0.50µm	0 to 220°C	11335	11338
	1.00µm	0 to 220°C	11350	11353
0.32mm	1.00µm	0 to 220°C	11351	11354
	1.50µm	0 to 220°C	11366	11369
0.53mm	1.00µm	0 to 220°C	11352	11355
	3.00µm	0 to 220°C	11382	11385

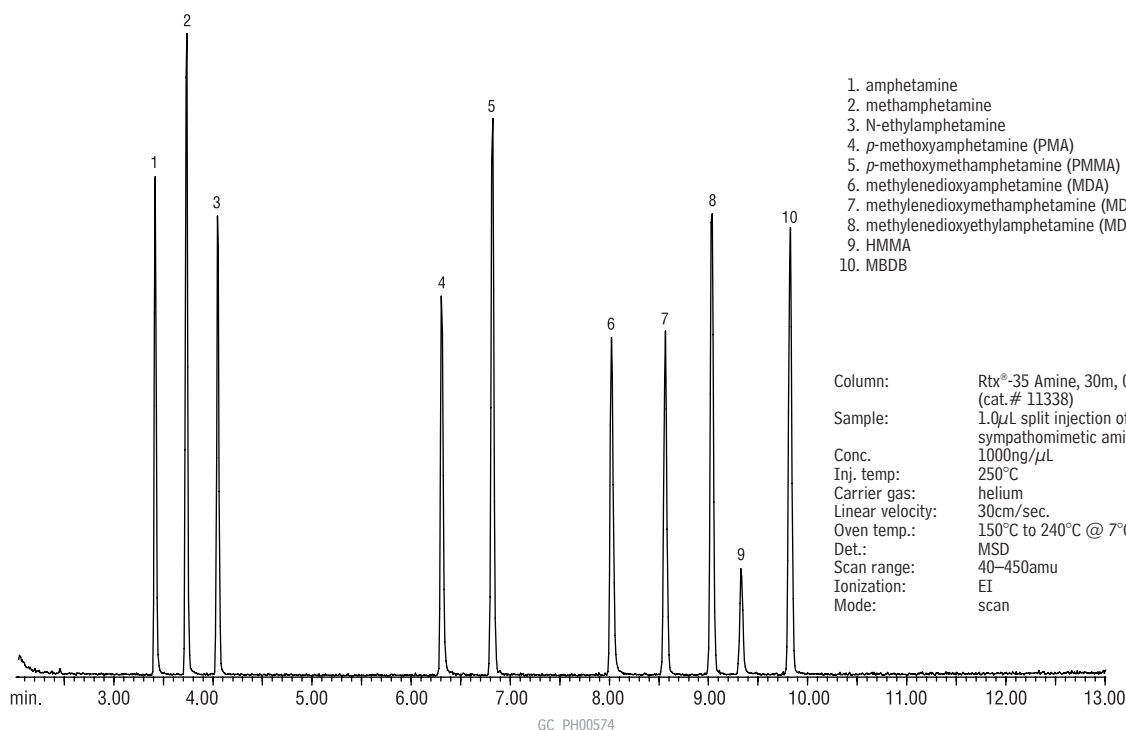
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### please note

We recommend using base-deactivated fused silica guard columns ([page 34](#)) and base-deactivated liners ([page 213](#)) with Rtx®-35 Amine columns.

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### Sympathomimetic amines (basic drugs) (underivatized) on an Rtx®-35 Amine column.



## Basic Compounds Analysis

free literature

### GC Analysis of Non-Purgeable Solvents in Pharmaceutical Discharges

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lit. cat.# 580027



### similar phases

DB-CAM, Carbowax® Amine, CP Wax 51 for amines

### Stabilwax®-DB Columns (fused silica)

(polar phase; Crossbond® base-deactivated Carbowax® polyethylene glycol—for amines and basic compounds)

- Application-specific columns for underivatized amines and other basic compounds, including alkylamines, diamines, triamines, nitrogen-containing heterocyclics. No need for column priming.
- Temperature range: 40 °C to 220 °C.

Stabilwax®-DB columns reduce adsorption and improve responses for many basic compounds, without analyte derivatization or column priming. For different selectivity of basic compounds, or higher oven temperatures, use an Rtx®-5 Amine column.

Stabilwax®-DB is a bonded stationary phase, but avoid rinsing these columns with water or alcohols.

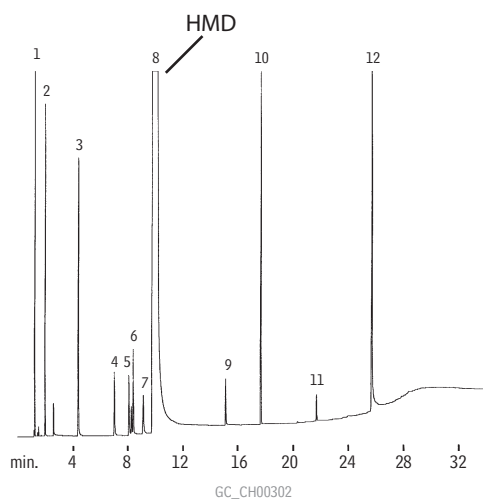
ID	df	temp. limits	15-Meter	30-Meter	60-Meter
0.25mm	0.25µm	40 to 210/220°C	10820	10823	
	0.50µm	40 to 210/220°C		10838	
0.32mm	0.25µm	40 to 210/220°C	10821	10824	
	0.50µm	40 to 210/220°C		10839	
	1.00µm	40 to 210/220°C	10851	10854	10857
0.53mm	0.50µm	40 to 210/220°C		10840	
	1.00µm	40 to 210/220°C	10852	10855	10858
	1.50µm	40 to 210/220°C		10869	

## ChromaBLOGraphy

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### Hexamethylenediamine (HMD) on a Stabilwax®-DB column.



Excellent resolution and peak shape for impurities in HMD!

1. cyclohexane
2. hexamethyleneimine
3. 1,4-diaminobutane
4. pentamethylenediamine
5. 1,2-diaminocyclohexane
6. 1,5-diamino-2-methylpentane
7. aminomethylcyclopentylamine
8. hexamethylenediamine
9. 6-aminocapronitrile
10. *n*-valeramide
11. adiponitrile
12. bis-hexamethylenetriamine

Column: Stabilwax®-DB, 30m, 0.32mm ID, 0.25µm (cat.# 10824)  
 Sample: 0.4µL direct injection of a neat hexamethylenediamine (HMD) sample  
 On-column conc.: 10 to 1,000ng/component  
 Oven temp.: 95°C (hold 6 min.) to 235°C @ 7°C/min. (hold 4 min.)  
 Inj./det. temp.: 250°C  
 Carrier gas: hydrogen  
 Linear velocity: 40cm/sec.  
 FID sensitivity: 2 x 10<sup>-11</sup> AFS