



Restek analytical reference materials for explosives are formulated to support nitroaromatic, nitroamine, and nitroester analyses. These materials can be analyzed using high performance liquid chromatography (HPLC-UV) according to US EPA Method 8330¹ or using gas chromatography (GC-ECD) according to Method 8095², developed by the US Army Cold Regions Research and Engineering Laboratory.³

EPA Method 8095 includes all the Method 8330 target compounds, plus 3,5-dinitroaniline, nitroglycerin, and pentaerythritol tetranitrate (PETN). Our Method 8095 calibration mixtures contain the additional components at the concentration ratios appropriate for ECD.

Compounds listed are explosives, intermediates that are used in the manufacture of explosives, or degradation products of explosive compounds.

References

1. US Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. SW-846 Update III, Office of Solid Waste, Washington, DC, 1997.
2. US Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. SW-846, Proposed Draft Update IVB, Office of Solid Waste, Washington, DC, 1999.
3. M. E. Walsh, T. Ranney. *Determination of Nitroaromatic, Nitramine, and Nitrate Ester Explosives in Water Using Solid-Phase Extraction and Gas Chromatography-Electron Capture Detection: Comparison with High-Performance Liquid Chromatography*. J. Chromatogr. Sci., Vol. 36, pp. 406-416, August 1998.

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Pinnacle II™ C18 5µm Column

Cat.#: 9214575
Dimensions: 250 x 4.6mm



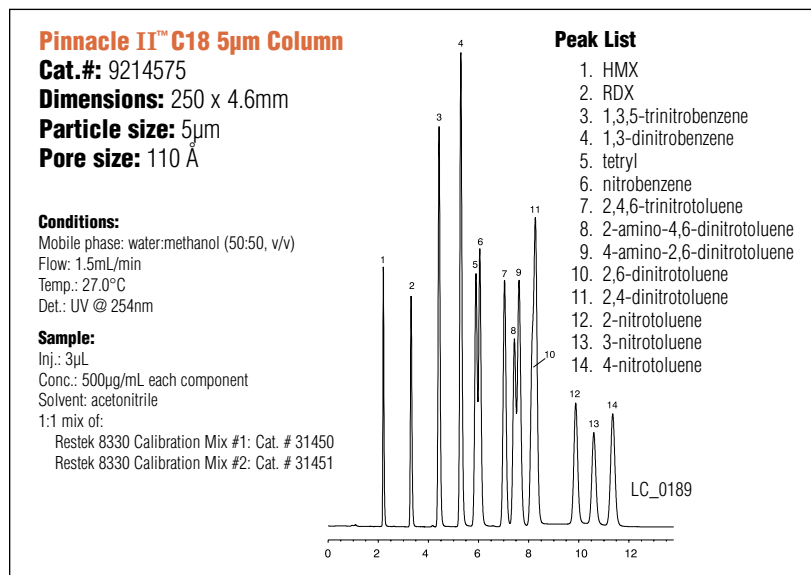
Pinnacle II™ Cyano 5µm Column

Cat.#: 9216575
Dimensions: 250 x 4.6mm



Reference Standards for Explosives Analysis

- 20 single-component certified solutions or retention time markers.
- Support the US Department of Defense base closures and remediation.
- Mixtures supporting HPLC Method 8330.
- Mixtures supporting GC-ECD Method 8095.
- Internal standards and surrogates to support both methods.



Single-Component Explosives Solutions

Packaged 1mL/ampul Compound	Solvent	µg/mL	Individual		5-pk. w/ data pack	10-pk. w/ data pack
			Individual	w/data pack		
2-amino-4,6-dinitrotoluene	ACN	1,000	31670	31670-500	31670-510	31670-520 31770
4-amino-2,6-dinitrotoluene	ACN	1,000	31671	31671-500	31671-510	31671-520 31771
3,5-dinitroaniline	ACN	1,000	31661	31661-500	31661-510	31661-520 31761
1,3-dinitrobenzene	ACN	1,000	31662	31662-500	31662-510	31662-520 31762
2,4-dinitrotoluene	ACN	1,000	31663	31663-500	31663-510	31663-520 31763
2,6-dinitrotoluene	ACN	1,000	31664	31664-500	31664-510	31664-520 31764
EGDN	M	1,000	31601	31601-500	31601-510	31601-520 31701
HMX	ACN	1,000	31665	31665-500	31665-510	31665-520 31765
nitrobenzene	ACN	1,000	31657	31657-500	31657-510	31657-520 31757
nitroglycerin	M	1,000	31498	31498-500	31498-510	31498-520 31598
nitroguanidine	M	1,000	31602	31602-500	31602-510	31602-520 31702
2-nitrotoluene	ACN	1,000	31659	31659-500	31659-510	31659-520 31759
3-nitrotoluene	ACN	1,000	31660	31660-500	31660-510	31660-520 31760
4-nitrotoluene	ACN	1,000	31658	31658-500	31658-510	31658-520 31758
PETN	M	1,000	31600	31600-500	31600-510	31600-520 31700
picric acid	M	1,000	31499	31499-500	31499-510	31499-520 31599
RDX	ACN	1,000	31666	31666-500	31666-510	31666-520 31766
tetryl	ACN	1,000	31667	31667-500	31667-510	31667-520 31767
1,3,5-trinitrobenzene	ACN	1,000	31668	31668-500	31668-510	31668-520 31768
2,4,6-trinitrotoluene	ACN	1,000	31669	31669-500	31669-510	31669-520 31769

A = acetone; ACN=acetonitrile; M = methanol

Reference Standards for Explosives Analysis



At-a-Glance
Product
Information
from Restek

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technical literature source!*

Application Note:

(#59177) Analyze Polar Compounds by Reversed Phase HPLC Using Ultra Aqueous C18 Column

Fast Facts:

(#59314) Trident™ Direct Guard Cartridge System

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Lit. Cat. # 59381A

Method 8095

8095 Calibration Mix A

2-amino-4,6-dinitrotoluene HMX
4-amino-2,6-dinitrotoluene RDX
1,3-dinitrobenzene tetryl
2,4-dinitrotoluene 1,3,5-trinitrobenzene
2,6-dinitrotoluene 2,4,6-trinitrotoluene
1,000µg/mL each in acetonitrile, 1mL/ampul

Each	5-pk.	10-pk.
31607	31607-510	—
w/data pack		
31607-500	31607-520	31707

8095 Calibration Mix B

3,5-dinitroaniline 1,000µg/mL
nitrobenzene 5,000
nitroglycerine 5,000
2-nitrotoluene 5,000
3-nitrotoluene 5,000
4-nitrotoluene 5,000
PETN 5,000

Prepared in acetonitrile, 1mL/ampul

Each	5-pk.	10-pk.
31608	31608-510	—
w/data pack		
31608-500	31608-520	31708

8095 Matrix Spike Mix A

2-amino-4,6-dinitrotoluene 200µg/mL
4-amino-2,6-dinitrotoluene 200
1,3-dinitrobenzene 200
2,4-dinitrotoluene 200
2,6-dinitrotoluene 200
HMX 2,000
RDX 200
tetryl 200
1,3,5-trinitrobenzene 200
2,4,6-trinitrotoluene 200

Prepared in acetonitrile, 1mL/ampul

Each	5-pk.	10-pk.
31609	31609-510	—
w/data pack		
31609-500	31609-520	31709

8095 Matrix Spike Mix B

3,5-dinitroaniline 200µg/mL
nitrobenzene 1,000
nitroglycerine 1,000
2-nitrotoluene 1,000
3-nitrotoluene 1,000
4-nitrotoluene 1,000
PETN 1,000

Prepared in acetonitrile, 1mL/ampul

Each	5-pk.	10-pk.
31610	31610-510	—
w/data pack		
31610-500	31610-520	31710

8095 Surrogate

2-methyl-4-nitroaniline
1,000µg/mL in methanol, 1mL/ampul

Each	5-pk.	10-pk.
31612	31612-510	—
w/data pack		
31612-500	31612-520	31712

Method 8330

8330 Calibration Mix #1

1,3-dinitrobenzene RDX
2,4-dinitrotoluene 1,3,5-trinitrobenzene
HMX 2,4,6-trinitrotoluene
nitrobenzene

1,000µg/mL each in acetonitrile, 1mL/ampul

Each	5-pk.	10-pk.
31450	31450-510	—
w/data pack		
31450-500	31450-520	31550

8330 Calibration Mix #2

2-amino-4,6-dinitrotoluene 3-nitrotoluene
4-amino-2,6-dinitrotoluene 4-nitrotoluene
2,6-dinitrotoluene tetryl
2-nitrotoluene

1,000µg/mL each in acetonitrile, 1mL/ampul

Each	5-pk.	10-pk.
31451	31451-510	—
w/data pack		
31451-500	31451-520	31551

8330 Internal Standard*

3,4-dinitrotoluene
1,000µg/mL in methanol, 1mL/ampul

Each	5-pk.	10-pk.
31452	31452-510	—
w/data pack		
31452-500	31452-520	31552

8330 Surrogate

1,2-dinitrobenzene
1,000µg/mL in methanol, 1mL/ampul

Each	5-pk.	10-pk.
31453	31453-510	—
w/data pack		
31453-500	31453-520	31553

8330 Nitroaromatics Kit

31450: 8330 Calibration Mix #1
31451: 8330 Calibration Mix #2
31452: 8330 Internal Standard Mix*
31453: 8330 Surrogate Mix

Contains 1mL each of these mixtures.

Kit	Kit w/Data Pack
31454	31454-500

* Cat.# 31452 also can be used as a surrogate standard for Method 8095.

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Rtx®-TNT2

Cat.#: 12999
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