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 8330\(^1\) or using gas chromatography (GC-ECD) according to Method 8095\(^2\), developed by the US Army Cold Regions Research and Engineering Laboratory.\(^3\)

EPA Method 8330B has all the same target compounds as Method 8095, including 3,5-dinitroaniline, nitroglycerin, and pentaerythritol tetranitrate (PETN). Our Method 8095 calibration mixtures contain the 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.

### Single-Component Explosives Solutions

<table>
<thead>
<tr>
<th>Compound</th>
<th>Packaged 1mL/ampul</th>
<th>CAS#</th>
<th>Code</th>
<th>µg/mL</th>
<th>cat.#</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-amino-4,6-dinitrotoluene</td>
<td>35572-76-2</td>
<td>ACN</td>
<td>1,000</td>
<td>31670</td>
<td></td>
</tr>
<tr>
<td>4-amino-2,6-dinitrotoluene</td>
<td>19406-51-0</td>
<td>ACN</td>
<td>1,000</td>
<td>31571</td>
<td></td>
</tr>
<tr>
<td>ammonium picrate</td>
<td>131-74-8</td>
<td>ACN</td>
<td>2,000</td>
<td>31890</td>
<td></td>
</tr>
<tr>
<td>3,5-dinitroaniline</td>
<td>618-87-1</td>
<td>ACN</td>
<td>1,000</td>
<td>31661</td>
<td></td>
</tr>
<tr>
<td>1,3-dinitrobenezene</td>
<td>99-65-0</td>
<td>ACN</td>
<td>1,000</td>
<td>31662</td>
<td></td>
</tr>
<tr>
<td>1,4-dinitrobenezene</td>
<td>100-25-4</td>
<td>ACN</td>
<td>2,000</td>
<td>31663</td>
<td></td>
</tr>
<tr>
<td>2,4-dinitrotoluene</td>
<td>121-14-2</td>
<td>ACN</td>
<td>1,000</td>
<td>31603</td>
<td></td>
</tr>
<tr>
<td>2,6-dinitrotoluene</td>
<td>606-20-2</td>
<td>ACN</td>
<td>1,000</td>
<td>31664</td>
<td></td>
</tr>
<tr>
<td>ethylnitrite</td>
<td>628-96-6</td>
<td>M</td>
<td>1,000</td>
<td>31601</td>
<td></td>
</tr>
<tr>
<td>HMX</td>
<td>1261-41-0</td>
<td>ACN</td>
<td>1,000</td>
<td>31665</td>
<td></td>
</tr>
<tr>
<td>nitrobenzene</td>
<td>99-95-3</td>
<td>M</td>
<td>1,000</td>
<td>31657</td>
<td></td>
</tr>
<tr>
<td>nitroglycerin</td>
<td>556-88-7</td>
<td>M</td>
<td>1,000</td>
<td>31670</td>
<td></td>
</tr>
<tr>
<td>nitroguanine</td>
<td>556-88-7</td>
<td>M</td>
<td>1,000</td>
<td>31670</td>
<td></td>
</tr>
<tr>
<td>2-nitrotoluene</td>
<td>88-72-2</td>
<td>ACN</td>
<td>1,000</td>
<td>31659</td>
<td></td>
</tr>
<tr>
<td>3-nitrotoluene</td>
<td>99-99-0</td>
<td>ACN</td>
<td>1,000</td>
<td>31660</td>
<td></td>
</tr>
<tr>
<td>4-nitrotoluene</td>
<td>99-99-0</td>
<td>ACN</td>
<td>1,000</td>
<td>31658</td>
<td></td>
</tr>
<tr>
<td>PETN</td>
<td>78-11-5</td>
<td>M</td>
<td>1,000</td>
<td>31600</td>
<td></td>
</tr>
<tr>
<td>picric acid</td>
<td>88-89-1</td>
<td>M</td>
<td>1,000</td>
<td>31600</td>
<td></td>
</tr>
<tr>
<td>propylene glycol dimintrate</td>
<td>6423-43-4</td>
<td>M</td>
<td>1,000</td>
<td>31699</td>
<td></td>
</tr>
</tbody>
</table>

### References

Method 8330 Reference Materials

**Nitroaromatics and Nitramine Explosives by HPLC** (14 components)

- 1,3-dinitrobenzene
- 2-amino-4,6-dinitrotoluene
- 4-amino-2,6-dinitrotoluene
- 2,4-dinitrotoluene
- 2,6-dinitrotoluene
- HMX
- nitrobenzene
- 1,000µg/mL each in acetonitrile, 1mL/ampul

8330 Calibration Mix #1 (7 components)

- 1,3-dinitrobenzene
- 2-amino-4,6-dinitrotoluene
- 4-amino-2,6-dinitrotoluene
- 2,4-dinitrotoluene
- 2,6-dinitrotoluene
- HMX
- nitrobenzene
- 1,000µg/mL each in acetonitrile, 1mL/ampul

8330 Calibration Mix #2 (7 components)

- 2-amino-4,6-dinitrotoluene
- 4-amino-2,6-dinitrotoluene
- 2,4-dinitrotoluene
- 2-nitrotoluene
- 1,000µg/mL each in acetonitrile, 1mL/ampul

8330 Internal Standard (3,4-dinitrotoluene)

1,000µg/mL in methanol, 1mL/ampul

8330 Surrogate (1,2-dinitrobenzene)

1,000µg/mL in methanol, 1mL/ampul

HPLC Columns

**Pinnacle™ II C18 Columns (USP L1)**

- 5µm Column, 4.6mm
  - 250mm: cat. # 9214575
  - 250mm (with Trident Inlet Fitting): 9214575-700

**Pinnacle™ II Cyano Columns (USP L10)**

- 5µm Column, 4.6mm
  - 250mm: cat. # 9214675
  - 250mm (with Trident Inlet Fitting): 9216575-700

**Ultra C18 Columns (USP L1)**

- 5µm Column, 4.6mm
  - 250mm: cat. # 9174575
  - 250mm (with Trident Inlet Fitting): 9174575-700

**Pinnacle™ II Biphenyl Columns (USP L11)**

- 5µm Column, 4.6mm
  - 250mm: cat. # 9209575
  - 250mm (with Trident Inlet Fitting): 9209575-700

Method 8095 Reference Materials

**8095 Calibration Mix A** (10 components)

- 2-amino-4,6-dinitrotoluene
- 4-amino-2,6-dinitrotoluene
- 1,3-dinitrobenzene
- 2,4-dinitrotoluene
- 2,6-dinitrotoluene
- HMX
- nitrobenzene
- 1,000µg/mL each in acetonitrile, 1mL/ampul

8095 Calibration Mix B (7 components)

- 3,5-dinitroaniline*
- nitrobenzene
- nitroglycerine
- 2-nitrotoluene
- 1,000µg/mL in acetonitrile (*3,5-dinitroaniline at 1,000µg/mL), 1mL/ampul

8095 Matrix Spike Mix A (10 components)

- 2-amino-4,6-dinitrotoluene
- 3,5-dinitroaniline*
- nitrobenzene
- nitroglycerine
- 2-nitrotoluene
- 1,000µg/mL in acetonitrile (*3,5-dinitroaniline at 2,000µg/mL), 1mL/ampul

8095 Matrix Spike Mix B (7 components)

- 3,5-dinitroaniline*
- nitrobenzene
- nitroglycerine
- 2-nitrotoluene
- 1,000µg/mL in acetonitrile (*3,5-dinitroaniline at 200µg/mL), 1mL/ampul

Surrogates:

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

GC Columns

- Better resolution of Method 8095 analytes in 20 minutes.
- Eight elution order differences between Rtx®-TNT and Rtx®-TNT2 columns.

**Rtx®-TNT Columns (fused silica)**

- ID: 0.53mm
- df (µm): 1.50
- temp. limits: -20 to 300/310°C
- length: 6-Meter
- qty.: 3-pk.
- cat.: 12998

**Rtx®-TNT2 Columns (fused silica)**

- ID: 0.53mm
- df (µm): 1.50
- temp. limits: -20 to 300/310°C
- length: 6-Meter
- qty.: 3-pk.
- cat.: 12999