Explosive Standards Reference Guide

AccuStandard®

Explosive standards are traditionally used for the remediation of soil and water in locations where explosives have been stored. These same standards are being used to calibrate baggage screening detectors at airports and other secure locations (embassies and other government buildings). They also are used by police departments, government agencies (i.e. TSA, Homeland Security) and the military in K-9 odor recognition training for explosives. Recent advances in analytical instrumentation have demonstrated detection in the part per trillion range.[1]

AccuStandard has working relationships with both government and private sector K-9 training facilities and laboratories that provide valuable information and insight into the latest developments in explosives.

To assist in all aspects of explosive detection and analysis, we synthesize an array of explosives as well as metabolites, degradation products, and raw materials. AccuStandard is the only U.S. commercial source for TATP, HMTD, and HNS.

In addition to catalog items we offer special formulations for EPA method and customer-specific applications.

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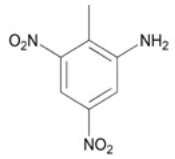
Widest Selection of Explosives and associated Metabolites

[1] Anal. Chem. 2017, 89, 6482-6490 Ong, T.H. et al

Bomb detection dogs are imprinted and trained to detect various types of explosives using pharmaceutical-type tins. Holes are drilled into the top of the tin to provide an odor cone for each explosive. The dog is repeatedly subjected to each odor and is rewarded when it properly alerts to it. Through this positve reinforcement process, the dog "learns" the odors associated with each explosive.

Individual Explosive Standards

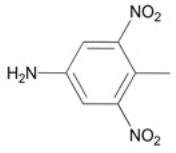
2-Amino-4,6-dinitrotoluene ♦



CAS 35572-78-2 **MF** $C_7H_7N_3O_4$ **MW** 197.15
log Pow 2.2 **SG** 1.50 g/cm³ **MP** 174-175 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-13-0.1X	1 mL
1000 µg/mL in AcCN:MeOH	M-8330-13	1 mL

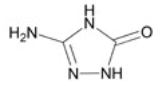
4-Amino-2,6-dinitrotoluene ♦



CAS 19406-51-0 **MF** $C_7H_7N_3O_4$ **MW** 197.15
log Pow 2.2 **SG** 1.50 g/cm³ **MP** 171 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-14-0.1X	1 mL
1000 µg/mL in AcCN:MeOH	M-8330-14	1 mL

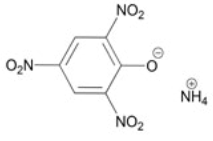
3-Amino-1,2,4-triazol-5-one ♦ NEW



CAS N/A **MF** $C_2H_4N_4O$ **MW** 100.08 **log Pow** N/A
SG N/A **MP** 188-189 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-55	1 mL

Ammonium picrate



CAS 131-74-8 **MF** $C_6H_6N_4O_7$ **MW** 246.13
log Pow -1.4 **SG** N/A **MP** 265-271 °C

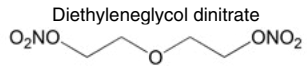
Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-27	1 mL

Property Key

CAS	Chemical Abstract Service Number
MF	Molecular Formula
MW	Molecular Weight
log Pow	Partition Coefficient
SG	Specific Gravity (g/cm³)
MP	Melting Point (°C)

♦ TNT Metabolites

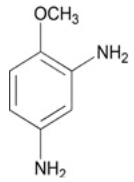
DEGDN



CAS 693-21-0 **MF** $C_4H_8N_2O_7$ **MW** 196.12
log Pow 0.98 **SG** 1.41 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-ADD-36	1 mL

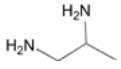
2,4-Diaminoanisole NEW



CAS 615-05-4 **MF** $C_7H_{10}N_2O$ **MW** 138.17
log Pow N/A **SG** N/A **MP** 67-68 °C

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-58	1 mL

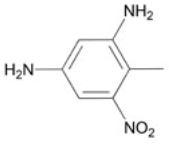
1,2-Diaminopropane



CAS 78-90-0 **MF** $C_3H_{10}N_2$ **MW** 74.12
log Pow -1.20 **SG** 0.86 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-9	1 mL

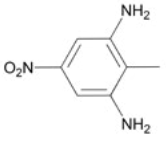
2,4-Diamino-6-nitrotoluene ♦



CAS 6629-29-4 **MF** $C_7H_9N_3O_2$ **MW** 167.17
log Pow -2.23 **SG** 1.40 g/cm³ **MP** 211 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-12	1 mL

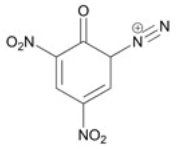
2,6-Diamino-4-nitrotoluene ♦



CAS 59229-75-3 **MF** $C_7H_9N_3O_2$ **MW** 167.17
log Pow -2.23 **SG** 1.40 g/cm³ **MP** 219 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-13	1 mL

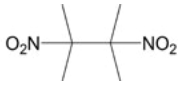
Diazodinitrophenol



CAS 4682-03-5 **MF** $C_6H_2N_4O_5$ **MW** 210.10
log Pow 2.09 **SG** N/A **MP** 152-154 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-48	1 mL
1000 µg/mL in AcCN	M-8330-ADD-48-10X	1 mL

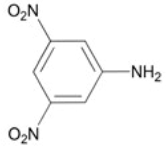
2,3-Dimethyl-2,3-dinitrobutane (DMNB)



CAS 3964-18-9 **MF** $C_6H_{12}N_2O_4$ **MW** 176.17
log Pow -0.24 **SG** 1.15 g/cm³ **MP** 214-215 °C (dec)

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-21	1 mL

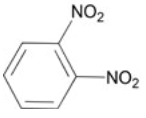
3,5-Dinitroaniline



CAS 618-87-1 **MF** $C_6H_5N_3O_4$ **MW** 183.12
log Pow 1.89 **SG** 1.59 g/cm³ **MP** 162 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-ADD-4	1 mL

1,2-Dinitrobenzene



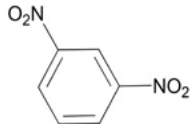
CAS 528-29-0 **MF** $C_6H_4N_2O_4$ **MW** 168.11
log Pow 1.69 **SG** 1.49 g/cm³ **MP** 118 °C

Matrix	Cat. No.	Unit
1000 µg/mL in MeOH	M-8330-SS	1 mL

AcCN:MeOH Ratio 50:50

Individual Explosive Standards

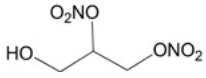
1,3-Dinitrobenzene



CAS 99-65-0 **MF** $C_6H_4N_2O_4$ **MW** 168.11
log Pow 1.49 **SG** 1.49 g/cm³ **MP** 89-90 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcN:MeOH	M-8330-01-0.1X	1 mL
1000 µg/mL in AcN:MeOH	M-8330-01	1 mL

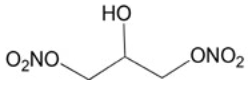
1,2-Dinitroglycerin



CAS 621-65-8 **MF** $C_3H_6N_2O_7$ **MW** 182.09
log Pow 0.83 **SG** 1.59 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in AcN:MeOH	M-8330-ADD-33	1 mL

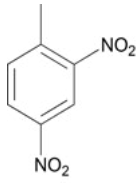
1,3-Dinitroglycerin



CAS 623-87-0 **MF** $C_3H_6N_2O_7$ **MW** 182.09
log Pow 0.71 **SG** 1.59 g/cm³ **MP** 26 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcN:MeOH	M-8330-ADD-34	1 mL

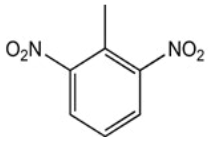
2,4-Dinitrotoluene ♦



CAS 121-14-2 **MF** $C_7H_6N_2O_4$ **MW** 182.13
log Pow 1.98 **SG** 1.41 g/cm³ **MP** 71 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcN:MeOH	M-8330-02-0.1X	1 mL
1000 µg/mL in AcN:MeOH	M-8330-02	1 mL

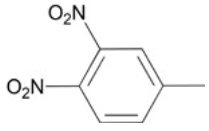
2,6-Dinitrotoluene ♦



CAS 606-20-2 **MF** $C_7H_6N_2O_4$ **MW** 182.13
log Pow 2.10 **SG** 1.41 g/cm³ **MP** 66 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcN:MeOH	M-8330-03-0.1X	1 mL
1000 µg/mL in AcN:MeOH	M-8330-03	1 mL

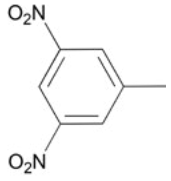
3,4-Dinitrotoluene



CAS 610-39-9 **MF** $C_7H_6N_2O_4$ **MW** 182.13
log Pow 2.08 **SG** 1.41 g/cm³ **MP** 58 °C

Matrix	Cat. No.	Unit
1000 µg/mL in MeOH	M-8330-IS	1 mL

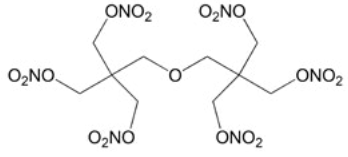
3,5-Dinitrotoluene ♦



CAS 618-85-9 **MF** $C_7H_6N_2O_4$ **MW** 182.13
log Pow 2.18 **SG** 1.41 g/cm³ **MP** 93 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcN:MeOH	M-8330-ADD-39	1 mL

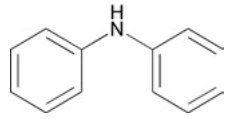
Dipentaerythritol hexanitrate



CAS 13184-80-0 **MF** $C_{10}H_{16}N_6O_{19}$ **MW** 524.26
log Pow 1.23 **SG** 1.66 g/cm³ **MP** 75 °C

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-43	1 mL

Diphenylamine

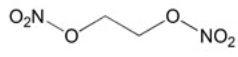


CAS 122-39-4 **MF** $C_{12}H_{11}N$ **MW** 169.22
log Pow 3.50 **SG** 1.09 g/cm³ **MP** 52-54 °C

Matrix	Cat. No.	Unit
1000 µg/mL in Ethanol	ALR-041S-ET-10X	1 mL

EGDN

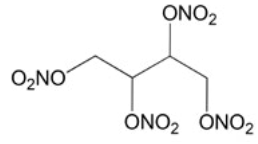
Dinitroethylene glycol



CAS 628-96-6 **MF** $C_2H_4N_2O_6$ **MW** 152.06
log Pow 1.16 **SG** 1.52 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-5	1 mL

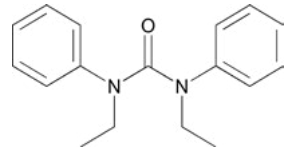
Erythritol tetranitrate (ETN)



CAS 7297-25-8 **MF** $C_4H_6N_4O_{12}$ **MW** 302.11
log Pow 1.85 **SG** 1.76 g/cm³ **MP** 61 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-47	1 mL
1000 µg/mL in AcCN	M-8330-ADD-47-10X	1 mL

Ethylcentralite



CAS 85-98-3 **MF** $C_{17}H_{20}N_2O$ **MW** 268.35
log Pow 4.20 **SG** 1.12 g/cm³ **MP** 79 °C

Matrix	Cat. No.	Unit
1000 µg/mL in AcCN:MeOH	M-8330-ADD-50	1 mL

Property Key

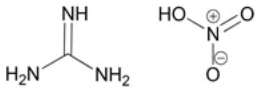
CAS	Chemical Abstract Service Number
MF	Molecular Formula
MW	Molecular Weight
log Pow	Partition Coefficient
SG	Specific Gravity (g/cm³)
MP	Melting Point (°C)

AcCN:MeOH Ratio 50:50

♦ TNT Metabolites

Individual Explosive Standards

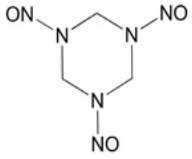
Guanidine nitrate



CAS 506-93-4 **MF** $CH_5N_3 \cdot HNO_3$ **MW** 122.08
log Pow -8.35 **SG** N/A **MP** 213-214 °C

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-10	1 mL

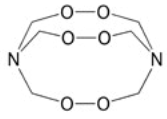
Hexahydro-1,3,5-trinitroso-1,3,5-triazine (R-Salt)



CAS 13980-04-6 **MF** $C_3H_6N_6O_3$ **MW** 174.12
log Pow -1.78 **SG** 1.92 g/cm³ **MP** 106-107 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-46	1 mL
1000 µg/mL in AcCN	M-8330-ADD-46-10X	1 mL

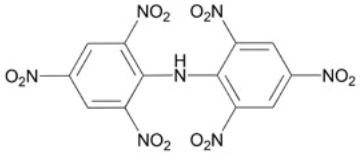
Hexamethylene triperoxide diamine (HMTD)



CAS 283-66-9 **MF** $C_6H_{12}N_2O_6$ **MW** 208.17
log Pow 1.01 **SG** 1.47 g/cm³ **MP** 162-164 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-25	1 mL

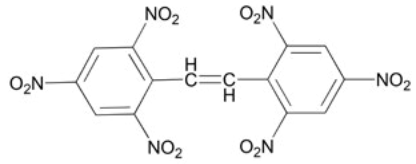
Hexanitrodiphenylamine



CAS 131-73-7 **MF** $C_{12}H_5N_7O_{12}$ **MW** 439.21
log Pow 3.35 **SG** 1.94 g/cm³ **MP** 244 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-ADD-37	1 mL

Hexanitrostilbene (HNS) ♦

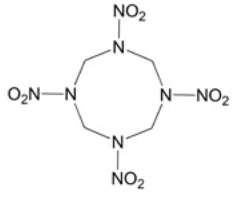


CAS 20062-22-0 **MF** $C_{14}H_6N_6O_{12}$ **MW** 450.23
log Pow 1.23 **SG** 1.85 g/cm³ **MP** 320 °C (dec)

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-26	1 mL

HMX

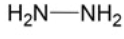
Cyclotetramethylene-tetranitramine



CAS 2691-41-0 **MF** $C_4H_8N_8O_8$ **MW** 296.16
log Pow 0.16 **SG** 1.95 g/cm³ **MP** 275 °C (dec)

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-04-0.1X	1 mL
1000 µg/mL in AcCN: MeOH	M-8330-04	1 mL

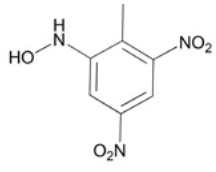
Hydrazine



CAS 302-01-2 **MF** H_4N_2 **MW** 32.05 **log Pow** -2.07
SG 1.01 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-8	1 mL

2-Hydroxylamino-4,6-dinitrotoluene ♦

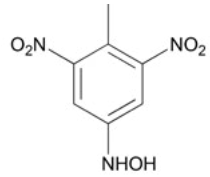


(3 months stability)

CAS 59283-76-0 **MF** $C_7H_7N_3O_5$ **MW** 213.15
log Pow 1.79 **SG** 1.64 g/cm³ **MP** 142-143 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-18 ❄	1 mL

4-Hydroxylamino-2,6-dinitrotoluene ♦

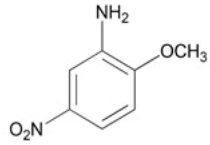


(3 months stability)

CAS 59283-75-9 **MF** $C_7H_7N_3O_5$ **MW** 213.15
log Pow 1.79 **SG** 1.64 g/cm³ **MP** 142-143 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-20 ❄	1 mL

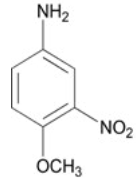
2-Methoxy-5-nitroaniline NEW



CAS 99-59-2 **MF** $C_7H_8N_2O_3$ **MW** 168.15
log Pow 1.16 **SG** 0.99 g/cm³ **MP** 117-119 °C

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-56	1 mL

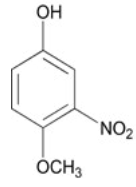
4-Methoxy-3-nitroaniline NEW



CAS 577-72-0 **MF** $C_7H_8N_2O_3$ **MW** 168.15
log Pow N/A **SG** N/A **MP** 97 °C

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-57	1 mL

4-Methoxy-3-nitrophenol NEW



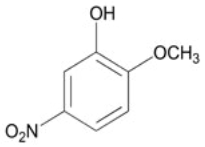
CAS 15174-02-4 **MF** $C_7H_7NO_4$ **MW** 169.14
log Pow N/A **SG** N/A **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-59	1 mL

❄ To delay premature breakdown of thermally labile products in transit a ColdPAK is required.

Individual Explosive Standards

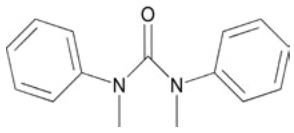
2-Methoxy-5-nitrophenol NEW



CAS 636-93-1 **MF** $C_7H_7NO_4$ **MW** 169.14
log Pow 1.88 **SG** N/A **MP** 103-107 °C

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-60	1 mL

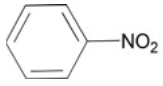
Methylcentralite



CAS 611-92-7 **MF** $C_{15}H_{16}N_2O$ **MW** 240.30
log Pow 3.22 **SG** 1.16 g/cm³ **MP** 122 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-ADD-49	1 mL

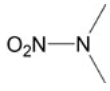
Nitrobenzene ♦



CAS 98-95-3 **MF** $C_6H_5NO_2$ **MW** 123.11
log Pow 1.85 **SG** 1.22 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-06-0.1X	1 mL
1000 µg/mL in AcCN:MeOH	M-8330-06	1 mL

N-Nitrodimethylamine



CAS 4164-28-7 **MF** $C_2H_6N_2O_2$ **MW** 90.08
log Pow -0.52 **SG** 1.10 g/cm³ **MP** 58 °C

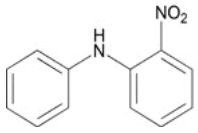
Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-40	1 mL

Property Key

CAS	Chemical Abstract Service Number
MF	Molecular Formula
MW	Molecular Weight
log Pow	Partition Coefficient
SG	Specific Gravity (g/cm³)
MP	Melting Point (°C)

♦ TNT Metabolites

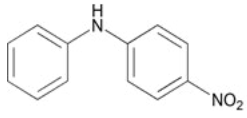
2-Nitrodiphenylamine



CAS 119-75-5 **MF** $C_{12}H_{10}N_2O_2$ **MW** 214.22
log Pow 3.66 **SG** 1.28 g/cm³ **MP** 74-76 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-51	1 mL

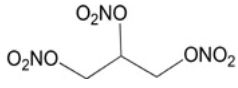
4-Nitrodiphenylamine



CAS 836-30-6 **MF** $C_{12}H_{10}N_2O_2$ **MW** 214.22
log Pow 3.74 **SG** 1.28 g/cm³ **MP** 132-136 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-52	1 mL

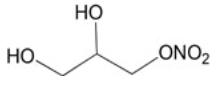
Nitroglycerin



CAS 55-63-0 **MF** $C_3H_5N_3O_9$ **MW** 227.09
log Pow 1.62 **SG** 1.67 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in ETOH	M-8330-ADD-1	1 mL
1000 µg/mL in ETOH:MeOH(97:3)	M-8330-ADD-1-10X	1 mL

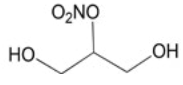
1-Nitroglycerin



CAS 624-43-1 **MF** $C_3H_7NO_5$ **MW** 137.09
log Pow -0.86 **SG** 1.48 g/cm³ **MP** 61 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-ADD-31	1 mL

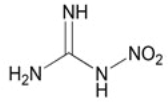
2-Nitroglycerin



CAS 620-12-2 **MF** $C_3H_7NO_5$ **MW** 137.09
log Pow -0.86 **SG** 1.48 g/cm³ **MP** 54 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-ADD-32	1 mL

Nitroguanidine



CAS 556-88-7 **MF** $CH_4N_4O_2$ **MW** 104.07
log Pow -0.89 **SG** 2.01 g/cm³ **MP** 239 °C (dec)

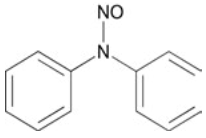
Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-6	1 mL

Nitromethane

CAS 75-52-5 **MF** CH_3NO_2 **MW** 61.04
log Pow -0.35 **SG** 1.06 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-7	1 mL

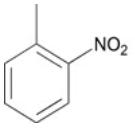
N-Nitrosodiphenylamine



CAS 86-30-6 **MF** $C_{12}H_{10}N_2O$ **MW** 198.22
log Pow 3.16 **SG** 1.23 g/cm³ **MP** 66-67 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	APP-9-150	1 mL

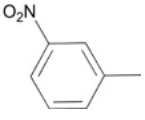
2-Nitrotoluene ♦



CAS 88-72-2 **MF** $C_7H_7NO_3$ **MW** 137.14
log Pow 2.30 **SG** 1.17 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-07-0.1X	1 mL
1000 µg/mL in AcCN:MeOH	M-8330-07	1 mL

3-Nitrotoluene ♦

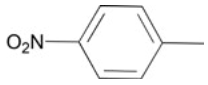


CAS 99-08-1 **MF** $C_7H_7NO_3$ **MW** 137.14
log Pow 2.45 **SG** 1.16 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-08-0.1X	1 mL
1000 µg/mL in AcCN:MeOH	M-8330-08	1 mL

Individual Explosive Standards

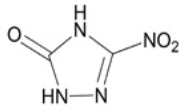
4-Nitrotoluene ♦



CAS 99-99-0 **MF** $C_7H_7NO_3$ **MW** 137.14
log Pow 2.37 **SG** 1.39 g/cm³ **MP** 51-54 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-09-0.1X	1 mL
1000 µg/mL in AcCN:MeOH	M-8330-09	1 mL

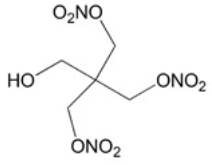
3-Nitro-1,2,4-triazol-5-one (NTO)



CAS 932-64-9 **MF** $C_2H_2O_3N_4$ **MW** 130.10
log Pow -2.72 **SG** 2.55 g/cm³ **MP** 265-268 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-ADD-53	1 mL

Pentaerithrityl trinitrate

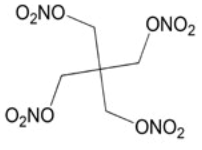


CAS 1607-17-6 **MF** $C_5H_9N_3O_{10}$ **MW** 271.14
log Pow 0.99 **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-44	1 mL

PETN

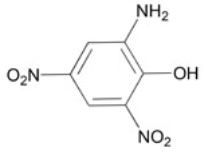
Pentaerythritol tetranitrate



CAS 78-11-5 **MF** $C_5H_8N_4O_{12}$ **MW** 316.14
log Pow 2.38 **SG** 1.68 g/cm³ **MP** 140 °C

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-2	1 mL
1000 µg/mL in MeOH	M-8330-ADD-2-10X	1 mL

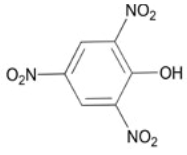
Picramic acid



CAS 96-91-3 **MF** $C_6H_5N_3O_5$ **MW** 199.12
log Pow 0.93 **SG** N/A **MP** 169 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-ADD-22	1 mL

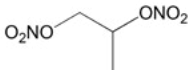
Picric acid



CAS 88-89-1 **MF** $C_6H_3N_3O_7$ **MW** 229.10
log Pow 1.44 **SG** 1.86 g/cm³ **MP** 122-123 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-ADD-3	1 mL

Propyleneglycol dinitrate

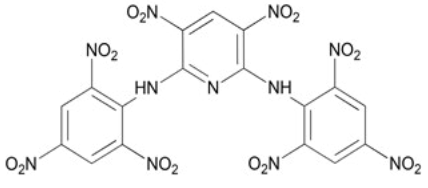


CAS 6423-43-4 **MF** $C_3H_6N_2O_6$ **MW** 166.09
log Pow 1.59 **SG** 1.42 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-35	1 mL

PYX

2-6-bis,bis(Picrylamino)-3,5-dinitropyridine

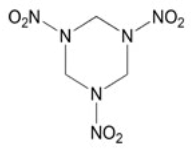


CAS 38082-89-2 **MF** $C_{17}H_7N_{11}O_{16}$ **MW** 621.30
log Pow N/A **SG** 2.01 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-11	1 mL

RDX

Cyclotrimethylene-trinitramine

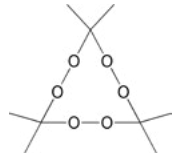


CAS 121-82-4 **MF** $C_3H_6N_6O_6$ **MW** 222.12
log Pow 0.87 **SG** 1.90 g/cm³ **MP** 205-208 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-05-0.1X	1 mL
1000 µg/mL in AcCN:MeOH	M-8330-05	1 mL

TATP

Triacetone triperoxide

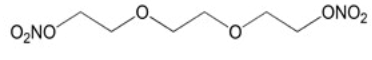


CAS 17088-37-8 **MF** $C_9H_{18}O_6$ **MW** 222.24
log Pow 4.63 **SG** 1.00 g/cm³ **MP** 94-96 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-24 ❄	1 mL

TEGDN

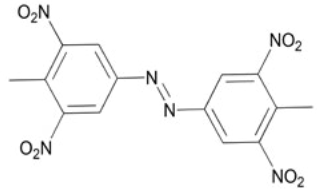
Triethyleneglycol dinitrate



CAS 111-22-8 **MF** $C_6H_{12}N_2O_8$ **MW** 240.17
log Pow 0.62 **SG** 1.34 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-ADD-41-R1	1 mL

2,2',6,6'-Tetranitro-4,4'-azotoluene ♦



CAS N/A **MF** $C_{14}H_{10}N_6O_8$ **MW** 390.26
log Pow N/A **SG** N/A **MP** N/A

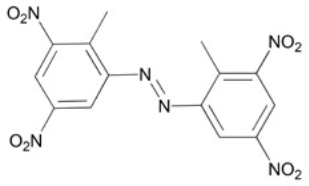
Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-17	1 mL

AcCN:MeOH Ratio 50:50

❄ To delay premature breakdown of thermally labile products in transit a ColdPAK is required.

Individual Explosive Standards

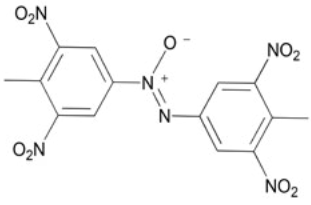
4,4',6,6'-Tetranitro-2,2'-azotoluene ♦



CAS N/A **MF** $C_{14}H_{10}N_6O_8$ **MW** 390.26
log Pow N/A **SG** N/A **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-19	1 mL

2,2',6,6'-Tetranitro-4,4'-azoxytoluene ♦

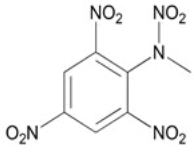


CAS N/A **MF** $C_{14}H_{10}N_6O_9$ **MW** 406.26
log Pow N/A **SG** N/A **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in AcCN	M-8330-ADD-15	1 mL

Tetryl

N-Methyl-N,2,4,6-tetranitroaniline

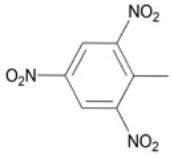


CAS 479-45-8 **MF** $C_7H_5N_5O_8$ **MW** 287.14
log Pow 1.64 **SG** 1.80 g/cm³ **MP** 130 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-10-0.1X	1 mL
1000 µg/mL in AcCN:MeOH	M-8330-10	1 mL

TNT

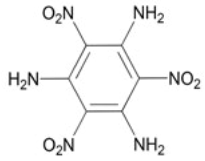
Trinitrotoluene



CAS 118-96-7 **MF** $C_7H_5N_3O_6$ **MW** 227.13
log Pow 1.6 **SG** 1.61 g/cm³ **MP** 81 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-11-0.1X	1 mL
1000 µg/mL in AcCN:MeOH	M-8330-11	1 mL

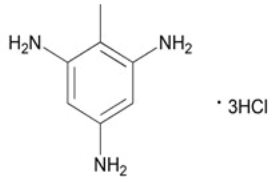
1,3,5-Triamino-2,4,6-trinitrobenzene



CAS 3058-38-6 **MF** $C_6H_6N_6O_6$ **MW** 258.15
log Pow -2.93 **SG** 1.96 g/cm³ **MP** 278 °C

Matrix	Cat. No.	Unit
40 µg/mL in DMF	M-8330-ADD-14-DMF	1 mL

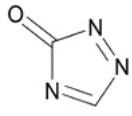
2,4,6-Triaminotoluene trihydrochloride (TNT free)



CAS 634-87-7 **MF** $C_7H_{11}N_3 \cdot 3HCl$ **MW** 246.56
log Pow -0.76 **SG** 1.22 g/cm³ **MP** 109-110 °C

Matrix	Cat. No.	Unit
Neat	M-8330-ADD-23N-5MG	5 mg

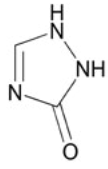
1,2,4-Triazol-5-one NEW



CAS 42131-33-9 **MF** C_2HN_3O **MW** 83.05
log Pow N/A **SG** N/A **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-61	1 mL

1,2,4-Triazolin-3-one NEW

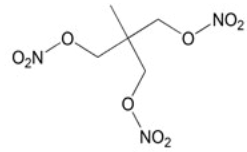


CAS 930-33-6 **MF** $C_2H_3N_3O$ **MW** 85.07
log Pow N/A **SG** N/A **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in MeOH	M-8330-ADD-62	1 mL

♦ TNT Metabolites

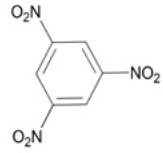
Trimethylolethane trinitrate



CAS 3032-55-1 **MF** $C_5H_9N_3O_9$ **MW** 255.14
log Pow 2.46 **SG** 1.51 g/cm³ **MP** N/A

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-ADD-28	1 mL

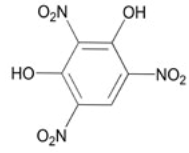
1,3,5-Trinitrobenzene ♦



CAS 99-35-4 **MF** $C_6H_3N_3O_6$ **MW** 213.10
log Pow 1.18 **SG** 1.70 g/cm³ **MP** 122 °C

Matrix	Cat. No.	Unit
100 µg/mL in AcCN:MeOH	M-8330-12-0.1X	1 mL
1000 µg/mL in AcCN:MeOH	M-8330-12	1 mL

2,4,6-Trinitroresorcinol



CAS 82-71-3 **MF** $C_6H_3N_3O_8$ **MW** 245.10
log Pow 1.06 **SG** 2.01 g/cm³ **MP** 175-176 °C

Matrix	Cat. No.	Unit
1000 µg/mL in AcCN:MeOH	M-8330-ADD-29	1 mL

AcCN:MeOH Ratio 50:50

Synthesis Department

In response to customer requirements, AccuStandard has developed procedures to synthesize explosives and metabolites.

Explosive Methods

Method 8330 Multi-Component Formulations for Explosive Analysis

The following A and B mixes provide better resolution between possible coeluting analytes to better optimize the HPLC system.
We suggest when first performing Method 8330 development, to purchase the high concentration 14 x 1 mL set "M-8330-R-10X-SET".

Mix A

M-8330A ❄ — **1 x 1 mL**
0.1 mg/mL each in AcCN:MeOH (50:50) — 7 comps.

M-8330A-10X ❄ — **1 x 1 mL**
1.0 mg/mL each in AcCN:MeOH (50:50) — 7 comps.

- 1,3-Dinitrobenzene
- 2,4-Dinitrotoluene
- HMX
- Nitrobenzene
- RDX
- 1,3,5-Trinitrobenzene
- TNT

M-8330A-R ❄ — **1 x 1 mL**
0.1 mg/mL each in AcCN:MeOH (50:50) — 8 comps.

M-8330A-R-10X ❄ — **1 x 1 mL**
1.0 mg/mL each in AcCN:MeOH (50:50) — 8 comps.

- 2-Amino-4,6-dinitrotoluene
- 1,3-Dinitrobenzene
- 2,4-Dinitrotoluene
- HMX
- Nitrobenzene
- RDX
- 1,3,5-Trinitrobenzene
- TNT

Composite Explosive Mixture

M-8330-R-0.1X — **1 x 1 mL**
0.1 mg/mL each in AcCN:MeOH (50:50) — 14 comps.

M-8330-R-0.5X — **1 x 1 mL**
0.5 mg/mL each in AcCN:MeOH (50:50) — 14 comps.

- 1,3-Dinitrobenzene
- 2,4-Dinitrotoluene
- 2,6-Dinitrotoluene
- HMX
- RDX
- Nitrobenzene
- 2-Nitrotoluene
- 3-Nitrotoluene
- 4-Nitrotoluene
- Tetryl
- TNT
- 1,3,5-Trinitrobenzene
- 2-Amino-4,6-dinitrotoluene
- 4-Amino-2,6-dinitrotoluene

Internal Standard

M-8330-IS — **1 x 1 mL**
M-8330-IS-PAK — *SAVE* — **5 x 1 mL**
1.0 mg/mL in MeOH

- 3,4-Dinitrotoluene

Explosives by HPLC Set

M-8330-R-SET ❄ — **14 x 1 mL**
Each at 100 µg/mL in AcCN:MeOH (50:50)

M-8330-R-10X-SET ❄ — **14 x 1 mL**
Each at 1000 µg/mL in AcCN:MeOH (50:50)

- 1,3-Dinitrobenzene (01)
- 2,4-Dinitrotoluene (02)
- 2,6-Dinitrotoluene (03)
- HMX (04)
- RDX (05)
- Nitrobenzene (06)
- 2-Nitrotoluene (07)
- 3-Nitrotoluene (08)
- 4-Nitrotoluene (09)
- Tetryl (10)
- TNT (11)
- 1,3,5-Trinitrobenzene (12)
- 2-Amino-4,6-dinitrotoluene (13)
- 4-Amino-2,6-dinitrotoluene (14)

❄ To delay premature breakdown of thermally labile products in transit a ColdPAK is required.

Mix B

M-8330B ❄ — **1 x 1 mL**
0.1 mg/mL each in AcCN:MeOH (50:50) — 5 comps.

M-8330B-10X ❄ — **1 x 1 mL**
1.0 mg/mL each in AcCN:MeOH (50:50) — 5 comps.

- Tetryl
- 2,6-Dinitrotoluene
- 2-Nitrotoluene
- 3-Nitrotoluene
- 4-Nitrotoluene

M-8330B-R ❄ — **1 x 1 mL**
0.1 mg/mL each in AcCN:MeOH (50:50) — 7 comps.

M-8330B-R-10X ❄ — **1 x 1 mL**
1.0 mg/mL each in AcCN:MeOH (50:50) — 7 comps.

- 2-Amino-4,6-dinitrotoluene
- 4-Amino-2,6-dinitrotoluene
- Tetryl
- 2,6-Dinitrotoluene
- 2-Nitrotoluene
- 3-Nitrotoluene
- 4-Nitrotoluene

M-8330B-R2 ❄ — **1 x 1 mL**
0.1 mg/mL each in AcCN:MeOH (50:50) — 6 comps.

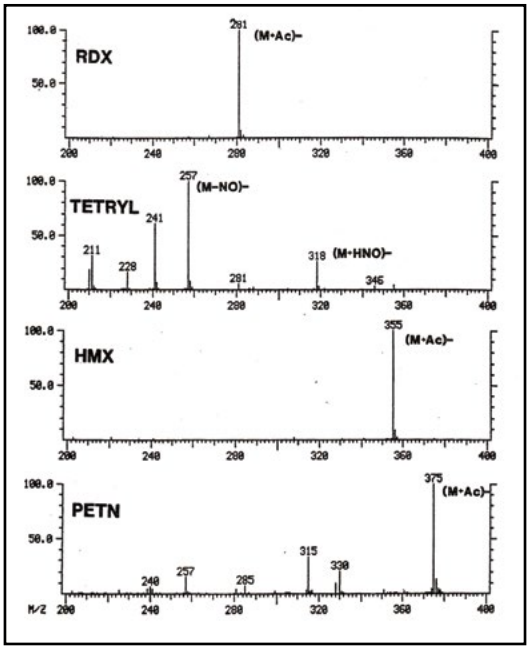
M-8330B-R2-10X ❄ — **1 x 1 mL**
1.0 mg/mL each in AcCN:MeOH (50:50) — 6 comps.

- 4-Amino-2,6-dinitrotoluene
- Tetryl
- 2,6-Dinitrotoluene
- 2-Nitrotoluene
- 3-Nitrotoluene
- 4-Nitrotoluene

Surrogate Standard

M-8330-SS — **1 x 1 mL**
1.0 mg/mL in MeOH

- 1,2-Dinitrobenzene



Negative ion thermospray mass spectra for RDX, HMX, PETN and tetryl from Berberich, D.W., Yost, R.A., and Fetterholf, D.D., J. Forensic Sci., 33, 946, 1988.

Explosive Methods

Method 529 Explosive & Related Compounds by SPE & Capillary Column GC/MS

Method 529 Calibration Curve

All in µg/mL in Ethyl acetate

M-529-	01	02	03	04	05	06	07	08	09
2-Amino-4,6-dinitrotoluene	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10
4-Amino-2,6-dinitrotoluene	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10
3,5-Dinitroaniline	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10
1,3-Dinitrobenzene	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10
2,4-Dinitrotoluene	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10
2,6-Dinitrotoluene	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10
RDX	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10
Nitrobenzene	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10
2-Nitrotoluene	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10
3-Nitrotoluene	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10
4-Nitrotoluene	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10
1,3,5-Trinitrobenzene	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10
Tetryl	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10
TNT	0.025	0.05	0.10	0.25	0.50	1.0	2.0	5.0	10

Full Scan MS Calibration Set

M-529-MS-SET **6 x 1 mL**

M-529-03, M-529-05, M-529-06, M-529-07, M-529-08, M-529-09

SIM Calibration Set

M-529-SIM-SET **7 x 1 mL**

M-529-01, M-529-02, M-529-03, M-529-04, M-529-05, M-529-06, M-529-07

Storage Condition.: Freeze (<-10°C)

Internal Standard Stock Solution

M-529-IS **1 x 1 mL**

2.0 mg/mL Ethyl acetate

3,4-Dinitrotoluene

Internal Standard Fortification Solution

M-529-ISFS **1 x 1 mL**

200 µg/mL each in Ethyl acetate:AcCN (96:4) 14 comps.

2-Amino-4,6-dinitrotoluene	Nitrobenzene
4-Amino-2,6-dinitrotoluene	2-Nitrotoluene
3,5-Dinitroaniline	3-Nitrotoluene
1,3-Dinitrobenzene	4-Nitrotoluene
2,4-Dinitrotoluene	1,3,5-Trinitrobenzene
2,6-Dinitrotoluene	Tetryl
RDX	TNT

Surrogate Analyte Stock Solutions

M-529-SS1 **1 x 1 mL**

M-529-SS1-PAK ***SAVE*** **5 x 1 mL**

1000 µg/mL each in MeOH 2 comps.

1,3,5-Trimethyl-2-nitrobenzene 1,2,4-Trimethyl-5-nitrobenzene

M-529-SS2 **1 x 1 mL**

M-529-SS2-PAK ***SAVE*** **5 x 1 mL**

1000 µg/mL each in CH_2Cl_2

Nitrobenzene-d_5

Surrogate Analyte Fortification Solution

M-529-SAFS **1 x 1 mL**

100 µg/mL each in MeOH 3 comps.

1,3,5-Trimethyl-2-nitrobenzene
1,2,4-Trimethyl-5-nitrobenzene
Nitrobenzene-d_5

Method 8095 Explosives by GC/ECD

This method is a companion to EPA Method 8330, utilizing the sensitivity and selectivity of the ECD.

Explosive Stock Solution A

M-8095-SSA-100X **1 x 1 mL**

M-8095-SSA-100X-PAK ***SAVE*** **5 x 1 mL**

100 µg/mL each in AcCN:MeOH (50:50) 10 comps.

2-Amino-4,6-dinitrotoluene	1,3,5-Trinitrobenzene
4-Amino-2,6-dinitrotoluene	TNT
1,3-Dinitrobenzene	RDX
2,6-Dinitrotoluene	Tetryl
2,4-Dinitrotoluene	HMX

Explosive Stock Solution B

M-8095-SSB-100X **1 x 1 mL**

M-8095-SSB-100X-PAK ***SAVE*** **5 x 1 mL**

At stated conc. in AcCN:MeOH (50:50) 7 comps.

Nitrobenzene	(500 µg/mL)	Nitroglycerin	(500 µg/mL)
3-Nitrotoluene	(500 µg/mL)	PETN	(500 µg/mL)
2-Nitrotoluene	(500 µg/mL)	3,5-Dinitroaniline	(100 µg/mL)
4-Nitrotoluene	(500 µg/mL)		

Explosive Surrogate Standards

M-8095-SS-01 **1 x 1 mL**

M-8095-SS-01-PAK ***SAVE*** **5 x 1 mL**

100 µg/mL in AcCN

3,4-Dinitrotoluene

M-8095-SS-02 **1 x 1 mL**

M-8095-SS-02-PAK ***SAVE*** **5 x 1 mL**

100 µg/mL in AcCN

2-Methyl-4-nitroaniline

M-8095-SS-03 **1 x 1 mL**

M-8095-SS-03-PAK ***SAVE*** **5 x 1 mL**

100 µg/mL in AcCN

2,5-Dinitrotoluene

Explosive Standards

DIN Explosive Standards

DIN 38407-21 Explosives

Examination of water, wastewater, and sludge for determination of selected explosives and related compounds by HPLC with UV detection.

DIN38407-21-A — **1 x 1 mL**

10 µg/mL each in MeOH — 12 comps.

Picric acid	Nitroglycerin
HMX	TNT
RDX	2-Nitrotoluene
Tetryl	PETN
EGDN	4-Nitrotoluene
DEGDN	3-Nitrotoluene

DIN 38407-21 Related Compounds

Examination of water, wastewater, and sludge for determination of selected explosives and related compounds by HPLC with UV detection.

DIN38407-21-B — **1 x 1 mL**

10 µg/mL each in MeOH:AcCN (98:2) — 8 comps.

1,3,5-Trinitrobenzene
1,3-Dinitrobenzene
4-Amino-2,6-dinitrotoluene
2,2',4,4',6,6'-Hexanitrodiphenylamine
2-Amino-4,6-dinitrotoluene
2,6-Dinitrotoluene
2,4-Dinitrotoluene
Diphenylamine

Gun Surveillance Standards

Gun Surveillance Standard

EXP-GSS — **1 x 1 mL**

At stated conc. (µg/mL) in AcCN — 9 comps.

Dimethyl phthalate	200	2,2'-Dinitrodiphenylamine	50
2,4'-Dinitrodiphenylamine	50	4,4'-Dinitrodiphenylamine	50
2,4-Dinitrodiphenylamine	50	Diphenylamine	200
2-Nitrodiphenylamine	50	N-Nitrosodiphenylamine	75
4-Nitrodiphenylamine	50		

Photo courtesy of the Connecticut Department of Emergency Services and Public Protection

Inorganic Standards for Gunshot Residue

Element / Starting Material / Matrix	Unit	1000 µg/mL Cat. No.	10,000 µg/mL Cat. No.
Aluminum	50 mL	---------	ICP-01N-10X-0.5
$Al(NO_3)_3 \cdot 9H_2O$	100 mL	ICP-01N-1	ICP-01N-10X-1
2-5% Nitric acid	500 mL	ICP-01N-5	ICP-01N-10X-5
Antimony	50 mL	---------	ICP-02N-10X-0.5
Sb Dilute HNO_3 tr.	100 mL	ICP-02N-1	ICP-02N-10X-1
Tartaric acid	500 mL	ICP-02N-5	ICP-02N-10X-5
Barium	50 mL	---------	ICP-04N-10X-0.5
$Ba(NO_3)_2$	100 mL	ICP-04N-1	ICP-04N-10X-1
2-5% Nitric acid	500 mL	ICP-04N-5	ICP-04N-10X-5
Lead	50 mL	---------	ICP-29N-10X-0.5
$Pb(NO_3)_2$	100 mL	ICP-29N-1	ICP-29N-10X-1
2-5% Nitric acid	500 mL	ICP-29N-5	ICP-29N-10X-5

Element / Starting Material / Matrix	Unit	1000 µg/mL Cat. No.	10,000 µg/mL Cat. No.
Tin	50 mL	---------	ICP-63N-10X-0.5
Sn 2-5% Nitric acid tr.	100 mL	ICP-63N-1	ICP-63N-10X-1
Hydrofluoric acid	500 mL	ICP-63N-5	ICP-63N-10X-5
Zinc	50 mL	---------	ICP-70N-10X-0.5
Zn	100 mL	ICP-70N-1	ICP-70N-10X-1
2-5% Nitric acid	500 mL	ICP-70N-5	ICP-70N-10X-5

Technical Note

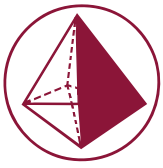
Gunshot residue standards may be used for ICP, ICP-MS and SEM/EDAX analysis. Custom solutions for these metals are available upon request. Contact our Technical Service Department for additional information. Organic compounds identified in the discharge of a firearm are also available. These include the 14 organic compounds listed below.

Organic Compounds for Firearm Discharge Analysis

Compound	Conc.	Matrix	Cat. No.
2,4-Dinitrotoluene $C_7H_6N_2O_4$	100 µg/mL	AcCN:MeOH	M-8330-02-0.1X
	1000 µg/mL	AcCN:MeOH	M-8330-02
2,6-Dinitrotoluene $C_7H_6N_2O_4$	100 µg/mL	AcCN:MeOH	M-8330-03-0.1X
	1000 µg/mL	AcCN:MeOH	M-8330-03
3,4-Dinitrotoluene $C_7H_6N_2O_4$	1000 µg/mL	AcCN:MeOH	M-8330-IS
Diphenylamine $C_{12}H_{11}N$	100 µg/mL	DCM	APP-9-097
Ethylcentralite $C_{17}H_{20}N_2O$	100 µg/mL	AcCN:MeOH	M-8330-ADD-50
Methylcentralite $C_{15}H_{16}N_2O$	100 µg/mL	AcCN:MeOH	M-8330-ADD-49
2-Nitrodiphenylamine $C_{12}H_{10}N_2O_2$	100 µg/mL	AcCN	M-8330-ADD-51

Compound	Conc.	Matrix	Cat. No.
4-Nitrodiphenylamine $C_{12}H_{10}N_2O_2$	100 µg/mL	AcCN	M-8330-ADD-52
1-Nitroglycerine $C_3H_5N_3O_9$	100 µg/mL	AcCN:MeOH	M-8330-ADD-31
2-Nitroglycerine $C_3H_5N_3O_9$	100 µg/mL	AcCN:MeOH	M-8330-ADD-32
N-Nitrosodiphenylamine $C_{12}H_{10}N_2O$	100 µg/mL	DCM	APP-9-150
2-Nitrotoluene $C_7H_7NO_3$	1000 µg/mL	AcCN:MeOH	M-8330-07
3-Nitrotoluene $C_7H_7NO_3$	1000 µg/mL	AcCN:MeOH	M-8330-08
4-Nitrotoluene $C_7H_7NO_3$	1000 µg/mL	AcCN:MeOH	M-8330-09

See pages 1-6 for structures and physical data.



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