



**EXPLOSIVES**  
**AccuStandard**

## *Technical Update*

*Individual Standards  
including TATP, HMTD,  
HNS & others.*

**2009  
Update**

*EPA Method 8330*

*EPA Method 529*

*EPA Method 8095*

*DIN 38407-21*

*Custom Standards &  
Synthesis*

# Reference Standards for the Analysis of Explosives

Explosives reference standards have classically been used for the remediation of soil and water in locations where explosives have been stored. In recent years, these standards have also been used to calibrate luggage screening detectors at airports and secure locations such as embassies. The other major use is to train animals to sniff out explosives, such as the dogs used by police departments and the military.

AccuStandard offers over 54 single analyte compounds such as TATP, TEGDN, HMTD, PETN and others.

These are offered as dilute solutions. AccuStandard also offers mixtures for use when analyzing to US EPA Methods 8330, 8095 and 529, German DIN 38407-21 and others. AccuStandard also manufactures custom formulations for unique requirements.

These explosives reference standards are shipped in a highly dilute solution form and are in compliance with all regulations from DOT, ATF&E and other authorities.

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### Individual Explosives and their Metabolites

#### EPA Method 8330 - Multi-Component Formulations for Explosive Analysis

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

#### EPA Method 8095 - Explosive by GC/ECD

#### DIN 38407-21 - Explosives and Related Compounds

#### Gun Surveillance Standard

# Explosive Standards

## Explosives

Compound	CAS No.	Conc.	Matrix	Cat. No.	1 mL
2-Amino-4,6-dinitrotoluene ■	35572-78-2	1 mg/mL	AcCN:MeOH	M-8330-13	
		0.1 mg/mL	AcCN:MeOH	M-8330-13-0.1X	
4-Amino-2,6-dinitrotoluene ■	19406-51-0	1 mg/mL	AcCN:MeOH	M-8330-14	
		0.1 mg/mL	AcCN:MeOH	M-8330-14-0.1X	
Ammonium picrate	131-74-8	0.1 mg/mL	AcCN	M-8330-ADD-27	
DEGDN <b>New</b>	693-21-0	100 µg/mL	AcCN:MeOH	M-8330-ADD-36	
1,2-Diaminopropane	78-90-0	0.1 mg/mL	MeOH	M-8330-ADD-9	
2,4-Diamino-6-nitrotoluene ■	6629-29-4	0.1 mg/mL	AcCN	M-8330-ADD-12	
2,6-Diamino-4-nitrotoluene ■	59229-75-3	0.1 mg/mL	AcCN	M-8330-ADD-13	
2,3-Dimethyl-2,3-dinitrobutane (DMNB)	3964-18-9	100 µg/mL	AcCN	M-8330-ADD-21	
3,5-Dinitroaniline	618-87-1	0.1 mg/mL	AcCN:MeOH	M-8330-ADD-4	
1,2-Dinitrobenzene	528-29-0	1 mg/mL	MeOH	M-8330-SS	
1,3-Dinitrobenzene	99-65-0	1 mg/mL	AcCN:MeOH	M-8330-01	
		0.1 mg/mL	AcCN:MeOH	M-8330-01-0.1X	
1,2-Dinitroglycerin <b>New</b>	621-65-8	100 µg/mL	AcCN:MeOH	M-8330-ADD-33	
1,3-Dinitroglycerin <b>New</b>	623-87-0	100 µg/mL	AcCN:MeOH	M-8330-ADD-34	
2,4-Dinitrotoluene ■	121-14-2	1 mg/mL	AcCN:MeOH	M-8330-02	
		0.1 mg/mL	AcCN:MeOH	M-8330-02-0.1X	
2,6-Dinitrotoluene ■	606-20-2	1 mg/mL	AcCN:MeOH	M-8330-03	
		0.1 mg/mL	AcCN:MeOH	M-8330-03-0.1X	
3,4-Dinitrotoluene	610-39-9	1 mg/mL	MeOH	M-8330-IS	
3,5-Dinitrotoluene ■	618-85-9	100 µg/mL	AcCN:MeOH	M-8330-ADD-39	
EGDN	628-96-6	0.1 mg/mL	AcCN	M-8330-ADD-5	
Guanidine nitrate	506-93-7	0.1 mg/mL	MeOH	M-8330-ADD-10	
Hexanitrodiphenylamine <b>New</b>	131-73-7	100 µg/mL	AcCN:MeOH	M-8330-ADD-37	
Hexanitrostilbene (HNS) ■	20062-22-0	0.1 mg/mL	AcCN	M-8330-ADD-26	
Hexamethylenetriperoxide diamine (HMTD)	283-66-9	0.1 mg/mL	AcCN	M-8330-ADD-25	
HMX	2691-41-0	1 mg/mL	AcCN:MeOH	M-8330-04	
		0.1 mg/mL	AcCN:MeOH	M-8330-04-0.1X	
Hydrazine	302-01-2	0.1 mg/mL	MeOH	M-8330-ADD-8	
2-Hydroxylamino-4,6-dinitrotoluene ■ (3 month stability)		0.1 mg/mL	AcCN	M-8330-ADD-18	
4-Hydroxylamino-2,6-dinitrotoluene ■ (3 month stability)		0.1 mg/mL	AcCN	M-8330-ADD-20	
Nitrobenzene ■	98-95-3	1 mg/mL	AcCN:MeOH	M-8330-06	
		0.1 mg/mL	AcCN:MeOH	M-8330-06-0.1X	
N-Nitrodimethylamine <b>New</b>	4164-28-7	100 µg/mL	AcCN	M-8330-ADD-40	
Nitroglycerin	55-63-0	0.1 mg/mL	EtOH	M-8330-ADD-1	
		1.0 mg/mL	EtOH:MeOH (97:3)	M-8330-ADD-1-10X	
1-Nitroglycerin <b>New</b>	624-43-1	100 µg/mL	AcCN:MeOH	M-8330-ADD-31	
2-Nitroglycerin <b>New</b>	620-12-2	100 µg/mL	AcCN:MeOH	M-8330-ADD-32	
Nitroguanidine	556-88-7	0.1 mg/mL	MeOH	M-8330-ADD-6	
Nitromethane	75-52-5	0.1 mg/mL	MeOH	M-8330-ADD-7	
2-Nitrotoluene ■	88-72-2	1 mg/mL	AcCN:MeOH	M-8330-07	
		0.1 mg/mL	AcCN:MeOH	M-8330-07-0.1X	
3-Nitrotoluene ■	99-08-1	1 mg/mL	AcCN:MeOH	M-8330-08	
		0.1 mg/mL	AcCN:MeOH	M-8330-08-0.1X	
4-Nitrotoluene ■	99-99-0	1 mg/mL	AcCN:MeOH	M-8330-09	
		0.1 mg/mL	AcCN:MeOH	M-8330-09-0.1X	
PETN	78-11-5	0.1 mg/mL	MeOH	M-8330-ADD-2	
		1.0 mg/mL	MeOH	M-8330-ADD-2-10X	
Picramic acid	831-52-7	100 µg/mL	AcCN:MeOH	M-8330-ADD-22	
Picric acid	88-89-1	0.1 mg/mL	AcCN:MeOH	M-8330-ADD-3	
Propyleneglycol dinitrate	6423-43-4	100 µg/mL	MeOH	M-8330-ADD-35	
PYX	38082-89-2	0.1 mg/mL	AcCN	M-8330-ADD-11	
RDX	121-82-4	1 mg/mL	AcCN:MeOH	M-8330-05	
		0.1 mg/mL	AcCN:MeOH	M-8330-05-0.1X	
TATP	17088-37-8	0.1 mg/mL	AcCN	M-8330-ADD-24	
TEGDN <b>New</b>		0.1 mg/mL	AcCN	M-8330-ADD-41	
2,2',6,6'-Tetranitro-4,4'-azotoluene ■		0.1 mg/mL	AcCN	M-8330-ADD-17	
4,4',6,6'-Tetranitro-2,2'-azotoluene ■		0.1 mg/mL	AcCN	M-8330-ADD-19	
2,2',6,6'-Tetranitro-4,4'-azoxytoluene ■		0.1 mg/mL	AcCN	M-8330-ADD-15	
Tetryl	479-45-8	1 mg/mL	AcCN:MeOH	M-8330-10	
		0.1 mg/mL	AcCN:MeOH	M-8330-10-0.1X	
TNT	118-96-7	1 mg/mL	AcCN:MeOH	M-8330-11	
		0.1 mg/mL	AcCN:MeOH	M-8330-11-0.1X	
1,3,5-Triamino-2,4,6-trinitrobenzene	3058-38-6	40 µg/mL	DMF	M-8330-ADD-14-DMF	
2,4,6-Triaminotoluene trihydrochloride	634-87-7	10 mg	NEAT	M-8330-ADD-23N	
Trimethylolethane trinitrate	3032-55-1	100 µg/mL	AcCN:MeOH	M-8330-ADD-28	
1,3,5-Trinitrobenzene ■	99-35-4	1 mg/mL	AcCN:MeOH	M-8330-12	
		0.1 mg/mL	AcCN:MeOH	M-8330-12-0.1X	
2,4,6-Trinitroresorcinol	82-71-3	1.0 mg/mL	AcCN:MeOH	M-8330-ADD-29	

■ TNT Metabolites

Widest selection of Explosives and their Metabolites

HMTD, TATP & HNS

EXCLUSIVELY from AccuStandard

### Technical Note

AccuStandard complies with ATF and other regulations for manufacturing and shipping explosives.

### Matrix Key

(SOLUTIONS in 1 mL NEATS in mg)

AcCN:MeOH in (1:1 ratio)  
AcCN Acetonitrile  
DMF Dimethyl formamide  
EtOH Ethanol  
MeOH Methanol

# Explosive Standards

## Method 8330 Multi-Component Formulations for Explosive Analysis

The following A and B mixes provide better resolution between possible coeluting analytes, assisting the chemist to optimize the HPLC system. We suggest that when first performing Method 8330 development, you 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 (1:1) 7 comps.  
**M-8330A-10X ‡** 1 x 1 mL  
1.0 mg/mL each in AcCN:MeOH (1:1) 7 comps.

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

### Mix B

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

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

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

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

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

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

### Composite Explosive Mixture

**M-8330-R** 1 x 1 mL  
**M-8330-R-PAK** **SAVE** 5 x 1 mL  
1.0 mg/mL each in MeOH:AcCN (1:1) 14 comps.

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

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

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

### Surrogate Standard

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

1,2-Dinitrobenzene

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

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

‡ To delay premature breakdown of thermally labile products in transit we suggest shipping with a "Cold Pack"

# Explosive Standards

## 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

### 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

### Internal Standard Fortification Solution

M-529-ISFS

1 x 1 mL

200 µg/mL each in Ethyl acetate

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

M-529-SS2

1 x 1 mL

M-529-SS2-PAK

SAVE

5 x 1 mL

1000 µg/mL each in CH<sub>2</sub>Cl<sub>2</sub>

Nitrobenzene-d<sub>5</sub>

### 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

Nitrobenzene-d<sub>5</sub>

1,2,4-Trimethyl-5-nitrobenzene

## 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 (1:1)

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 (1:1)

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-03

1 x 1 mL

M-8095-SS-03-PAK

SAVE

5 x 1 mL

10 µg/mL in AcCN

2,5-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

# 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 Standard

**EXP-GSS**

At stated conc. (µg/mL) in AcCN

1 x 1 mL  
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		

## Synthesis Department

We developed the procedures and synthesized these Explosives and Metabolites in response to customer requirements.



# AccuStandard®

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