

Reference Standards

Column & Detector Test Mixes & Reagents



Deactivating Agent
 Derivatization Reagents
 Detector Tuning Mixtures
 GC Column & Detector Test Mixes
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 LC Column & Detector Test Mixes

Deactivating Agent

Dimethyldichlorosilane (DMDCS) Deactivating Agent

- Easy deactivation of liners and other glass surfaces.
 - Convenient—25 mL bottle deactivates 60 inlet liners.
 - Tested to ensure consistent quality and effectiveness.
- Restek offers dimethyldichlorosilane (DMDCS) for deactivating liners and other glassware. DMDCS reacts with active hydroxyl groups on the glass surface to produce a deactivated surface. A simple, step-by-step procedure is included with the product.

Dimethyldichlorosilane (DMDCS) (75-78-5)

Neat, 25 mL/bottle

cat.# 31861 (ea.)

Ground transportation shipments only.
 No data pack available.

Quantity Discounts Available

— Buy 3 Standards, Get 10% Off

— Buy 5 Standards, Get 20% Off

Not available for all standards. Contact your local Restek® representative for more details.

Derivatization Reagents

Acylation Derivatization Reagents

- Most commonly used for electron capture detection.
- React with alcohols, amines, and phenols.
- Frequently used for drugs of abuse confirmation.

Acylation reagents offer the same advantage available from silylation reagents: creating less polar, more volatile derivatives. In comparison to silylating reagents, the acylating reagents can more readily target highly polar multifunctional compounds, such as carbohydrates and amino acids. In addition, acylating reagents offer the distinct advantage of introducing electron-capturing groups, thus enhancing detectability during analysis.

Compound	CAS #	cat.#
MBTFA (N-methyl-bis-trifluoroacetamide)		
10-pk. (10x1 g)	685-27-8	35616
25 g vial	685-27-8	35617
TFAA (trifluoroacetic acid anhydride)		
10-pk. (10x1 g)	407-25-0	35618
25 g vial	407-25-0	35619
PFAA (pentafluoropropionic acid anhydride)		
10-pk. (10x1 g)	356-42-3	35620
25 g vial	356-42-3	35621
HFAA (heptafluorobutyric acid anhydride)		
10-pk. (10x1 g)	336-59-4	35622
25 g vial	336-59-4	35623
PFPOH (pentafluoropropanol)		
10-pk. (10x1 g)	422-05-9	35624
25 g vial	422-05-9	35625

Derivatization Reagents, *cont.*

Silylation Derivatization Reagents

- Replace active hydrogen, reducing polarity and making the compounds more volatile.
- Increase stability of derivatives.

Silylation is the most widely used derivatization procedure for sample analysis by GC. In silylation, an active hydrogen is replaced by an alkylsilyl group such as trimethylsilyl (TMS) or *tert*-butyldimethylsilyl (*tert*-BDMS). Silyl derivatives are more volatile, less polar, and more thermally stable. As a result, GC separation is improved and detection is enhanced.

Both TMS and *tert*-BDMS reagents are suitable for a wide variety of compounds and can be used for many GC applications. (Note that silylation reagents are generally moisture-sensitive and must be sealed to prevent deactivation.)

Compound	CAS #	cat. #
MSTFA (N-methyl-N-trimethylsilyltrifluoroacetamide)		
10-pk. (10x1 g)	24589-78-4	35600
25 g vial	24589-78-4	35601
MSTFA w/1% TMCS (N-methyl-N-trimethylsilyltrifluoroacetamide w/1% trimethylchlorosilane)		
10-pk. (10x1 g)	24589-78-4	35602
25 g vial	24589-78-4	35603
BSTFA (N,O-bis[trimethylsilyl]trifluoroacetamide)		
10-pk. (10x1 g)	25561-30-2	35604
BSTFA w/1% TMCS (N,O-bis[trimethylsilyl]trifluoroacetamide w/1% trimethylchlorosilane)		
10-pk. (10x1 g)	25561-30-2	35606
25 g vial	25561-30-2	35607
MTBSTFA w/1% TBDMCS (N-methyl-N[<i>tert</i>-butyldimethylsilyl] trifluoroacetamide w/1% <i>tert</i>-butyldimethylchlorosilane)		
10-pk. (10x1 g)	77377-52-7	35608
25 g vial	77377-52-7	35610
TMCS (trimethylchlorosilane)		
10-pk. (10x1 g)	75-77-4	35611



Restek® Safe Cracker

Included with every reference standard shipment for added convenience.



Detector Tuning Mixes

VOA Tuning Compound

1-Bromo-4-fluorobenzene (BFB) (460-00-4)
5,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30003 (ea.)

SV Tuning Compound

Decafluorotriphenylphosphine (DFTPP) (5074-71-5)
2,500 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31001 (ea.)

PFTBA (MS Tuning Compound)

Perfluorotributylamine (PFTBA) (311-89-7)
Neat, 1 mL/ampul
cat.# 30482 (ea.)

No data pack available.

GC-MS Tuning Mixture (4 components)

Benzidine (92-87-5)	Decafluorotriphenylphosphine (DFTPP) (5074-71-5)
4,4'-DDT (50-29-3)	Pentachlorophenol (87-86-5)

1,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31615 (ea.)

GC Column & Detector Test Mixes

Amine Column Test Mix (8 components)

For Stabilwax®-DB, Rtx®-5 Amine, Rtx®-35 Amine, and Rtx®-Volatile Amine columns.

Decane (C10) (124-18-5)	0.60 mg/mL	Diethylenetriamine (111-40-0)	1.20
Dodecane (C12) (112-40-3)	0.60	2,6-Dimethylaniline (87-62-7)	0.60
1,2-Butanediol (26171-83-5)	0.60	2-Nonanol (628-99-9)	0.60
Diethanolamine (DEA) (111-42-2)	1.20	Pyridine (110-86-1)	0.60

In methylene chloride:methanol (1:1), 1 mL/ampul
cat.# 35002 (ea.)

No data pack available.

FID Performance Evaluation Standard (3 components)

<i>n</i> -Tetradecane (C14) (629-59-4)	<i>n</i> -Pexadecane (C16) (544-76-3)
<i>n</i> -Pentadecane (C15) (629-62-9)	

0.03 w/w% each in hexane, 1 mL/ampul
cat.# 33908 (ea.)

GC-FID Test Mix (3 components)

<i>n</i> -Dodecane (C12) (112-40-3)	<i>n</i> -Hexadecane (C16) (544-76-3)
<i>n</i> -Tetradecane (C14) (629-59-4)	

20 µg/mL each in hexane, 1 mL/ampul
cat.# 35108 (ea.)

GC Column & Detector Test Mixes, *cont.*

Grob Test Mix (12 components)

For use with temperature-programmed conditions.

<i>n</i> C10-FAME (110-42-9)	0.42 mg/mL	Dicyclohexylamine (101-83-7)	0.31
<i>n</i> C11-FAME (1731-86-8)	0.42	2,6-Dimethylaniline (87-62-7)	0.32
<i>n</i> C12-FAME (111-82-0)	0.41	2,6-Dimethylphenol (576-26-1)	0.32
Decane (C10) (124-18-5)	0.28	2-Ethylhexanoic acid (149-57-5)	0.38
Undecane (C11) (1120-21-4)	0.29	Nonanal (124-19-6)	0.40
2,3-Butanediol (6982-25-8)	0.53	1-Octanol (111-87-5)	0.36

In methylene chloride, 1 mL/ampul

cat.# 35000 (ea.)

No data pack available.

Inter-Polar Column Test Mix (11 components)

<i>n</i> -Heptane (C7) (142-82-5)	1.25 mg/mL	1,2-Dichloropropane (78-87-5)	2.00
<i>n</i> -Octane (C8) (111-65-9)	1.40	Methanol (67-56-1)	1.25
<i>n</i> -Nonane (C9) (111-84-2)	2.00	1-Propanol (71-23-8)	1.25
Acetone (67-64-1)	1.25	Pyridine (110-86-1)	1.40
2-Butanone (MEK) (78-93-3)	1.25	Tetrachloroethylene (127-18-4)	3.25
Chlorobenzene (108-90-7)	2.00		

In methylene chloride, 1 mL/ampul

cat.# 35076 (ea.)

ISO-C14-C20 Column Test Mix (5 components)

<i>n</i> -Tetradecane (C14) (629-59-4)	<i>n</i> -Octadecane (C18) (593-45-3)
<i>n</i> -Pentadecane (C15) (629-62-9)	<i>n</i> -Eicosane (C20) (112-95-8)
<i>n</i> -Hexadecane (C16) (544-76-3)	

400 µg/mL each in cyclohexane, 1 mL/ampul

cat.# 35006 (ea.)

OQ/PV Headspace Standard (3 components)

<i>tert</i> -Butyl disulfide (110-06-5)	Nitrobenzene (98-95-3)
1,2-Dichlorobenzene (95-50-1)	

2,000 µg/mL each in ethanol, 1 mL/ampul

cat.# 33909 (ea.)

OQ Response Linearity Test Standard (6 components)

<i>n</i> -Heptadecane (C17) (629-78-7)	1.5 µg/mL	<i>n</i> -Eicosane (C20) (112-95-8)	100
<i>n</i> -Octadecane (C18) (593-45-3)	10	<i>n</i> -Docosane (C22) (629-97-0)	1,000
<i>n</i> -Nonadecane (C19) (629-92-5)	2	<i>n</i> -Tetracosane (C24) (646-31-1)	10,000

In isooctane, 1 mL/ampul

cat.# 33906 (ea.)

Polar ISO Column Test Mix (8 components)

<i>n</i> -Heptadecane (C17) (629-78-7)	2-Dodecanol (10203-28-8)
<i>n</i> -Nonadecane (C19) (629-92-5)	Methyl dodecanoate
Aniline (62-53-3)	2-Nonanone (821-55-6)
2-Chlorophenol (95-57-8)	1-Octanol (111-87-5)

250 µg/mL each in 1,2-dichloroethane, 1 mL/ampul

cat.# 35103 (ea.)

Q-BOND and U-BOND Column Test Mix (7 components)

<i>n</i> -Pentane (C5) (109-66-0)	Ethanol (64-17-5)
<i>n</i> -Hexane (C6) (110-54-3)	Ethyl acetate (141-78-6)
Acetone (67-64-1)	Methanol (67-56-1)
Diethyl ether (ethyl ether) (60-29-7)	

0.1% vol/vol each in heptane, 1 mL/ampul

cat.# 35202 (ea.)

Volatile Amine Column Test Mix (8 components)

<i>n</i> -Nonane (C9) (111-84-2)	900 µg/mL	Diethylenetriamine (111-40-0)	1,800
<i>n</i> -Dodecane (C12) (112-40-3)	900	2,6-Dimethylaniline (87-62-7)	900
1,2-Butanediol (26171-83-5)	900	2-Nonanol (628-99-9)	900
Diethanolamine (DEA) (111-42-2)	1,800	Pyridine (110-86-1)	900

In methanol:dichloromethane (50:50), 1 mL/ampul

cat.# 35008 (ea.)

XIL-350 Column Test Mix (8 components)

<i>n</i> -Tridecane (C13) (629-50-5)	2-Ethylhexanoic acid (149-57-5)
<i>n</i> -Tetradecane (C14) (629-59-4)	1,6-Hexanediol (629-11-8)
4-Chlorophenol (106-48-9)	1-Methylnaphthalene (90-12-0)
Dicyclohexylamine (101-83-7)	1-Undecanol (112-42-5)

350 µg/mL each in methylene chloride, 1 mL/ampul

cat.# 35226 (ea.)

GPC Calibration Mixes

CLP GPC Calibration Mix (5 components)

Qualitative mixture useful for determining GPC dump/collect times. The compounds are dissolved in methylene chloride at the concentrations listed.

Bis(2-ethylhexyl) phthalate (117-81-7)	10 mg/mL	Methoxychlor (72-43-5)	2.0
Corn oil (8001-30-7)	250	Perylene (198-55-0)	0.2
		Sulfur (7704-34-9)	0.8

In methylene chloride, 1 mL/ampul

cat.# 32019 (ea.)

In methylene chloride, 5 mL/ampul

cat.# 32023 (ea.)

No data pack available.

Revised GPC Calibration Mix (5 components)

Qualitative mixture useful for determining GPC dump/collect times. The compounds are dissolved in methylene chloride at the concentrations listed.

Bis(2-ethylhexyl) phthalate (117-81-7)	5 mg/mL	Methoxychlor (72-43-5)	1.0
Corn oil (8001-30-7)	250	Perylene (198-55-0)	0.2
		Sulfur (7704-34-9)	0.8

In methylene chloride, 1 mL/ampul

cat.# 32041 (ea.)

In methylene chloride, 5 mL/ampul

cat.# 32042 (ea.)

No data pack available.

LC Column & Detector Test Mixes

LC Normal Phase Test Mix #1 (4 components)

Routine analysis using this mix can assist in determining the need to perform column and/or system maintenance.

Benzene (71-43-2)	1.00 mg/mL	Benzyl alcohol (100-51-6)	3.00
Benzaldehyde (100-52-7)	0.04	4-Methoxybenzyl alcohol (105-13-5)	2.00

In hexane, 1 mL/ampul

cat.# 35004 (ea.)

LC Reversed Phase Test Mix #1 (4 components)

Routine analysis using this mix can assist in determining the need to perform column and/or system maintenance.

Benzene (71-43-2)	3.00 mg/mL	Naphthalene (91-20-3)	0.50
Biphenyl (92-52-4)	0.06	Uracil (66-22-8)	0.02

In methanol:water (75:25), 1 mL/ampul

cat.# 35005 (ea.)

LC Performance Test Mix (5 components)

- Highly effective for characterizing LC column parameters.
- Simple, easy, reliable approach to quality control (QC) evaluations or column classification.
- Monitor column performance over time.

The National Institute of Standards and Technology (NIST) has formulated a mixture that is highly effective for characterizing LC columns for efficiency, void volume, methylene selectivity, retentiveness, and activity toward chelators and organic bases. Results can be used for column classification, for column selection, for monitoring column performance over time, or for quality control. We test our material against the NIST 870 standard.

Amitriptyline hydrochloride (549-18-8)	2,800 µg/mL	Quinizarin (81-64-1)	94
Ethylbenzene (100-41-4)	1,700	Toluene (108-88-3)	1,400
		Uracil (66-22-8)	28

In methanol, 1 mL/ampul

cat.# 31699 (ea.)

For Restek's complete line of column test mixes, visit

www.restek.com/testmixes



Carbohydrate LC Performance Check Mix (5 components)

Performance qualification (PQ) determines the precision of the LC system. Our performance check mix for LC-RI consists of five simple sugars in varied concentrations. We prepare the reference material in water, dehydrate it, and package it dry for enhanced stability.

Glucose (50-99-7)	2.1 mg	Maltose (6363-53-7)	4.5
Fructose (57-48-7)	2.0	Sucrose (57-50-1)	4.0
Lactose (5989-81-1)	4.4		

Dry components in 4 mL screw-cap vial. Reconstitute in 1 mL acetonitrile:water (75:25) to 2.1, 2.0, 4.4, 4.5, 4.0 mg/mL, respectively.

cat.# 31809 (ea.)

No data pack available.

LC OQ Wavelength Accuracy Standard

Erbium perchlorate (14017-55-1)

10 mg/mL in water, 5 mL/ampul

cat.# 31053 (ea.)

No data pack available.

LC OQ Gradient Standard (Acetone)

Acetone (67-64-1)

Neat, 1 mL/ampul

cat.# 30012 (ea.)

No data pack available.

LC OQ Linearity Test Mix Kit

Linear detector responses to concentration variations are an important part of operation qualification (OQ) for LC instruments. Our kit of five aqueous solutions of caffeine can be used to generate simple plots of UV response versus concentration. Certificate of analysis includes caffeine concentration, calculated variance in preparing each mixture, a linearity plot, and coefficient of determination (r^2) for the linear plot.

Contains 1 mL each of these mixtures.

- 31804: Caffeine (caffeine at 5 µg/mL in water)
- 31803: Caffeine (caffeine at 25 µg/mL in water)
- 31802: Caffeine (caffeine at 125 µg/mL in water)
- 31801: Caffeine (caffeine at 250 µg/mL in water)
- 31800: Caffeine (caffeine at 500 µg/mL in water)

1 mL each of these mixtures.

cat.# 31805 (kit)

kit

No data pack available.

LC OQ Standards Kit

Contains the following:

- 30012: LC OQ Gradient Standard, 1 mL
- 31053: LC OQ Wavelength Accuracy Standard, 5 mL
- 31068: LC OQ Linearity Kit, 6 - 1 mL/ampuls

cat.# 31069 (kit)

kit

No data pack available.