

GC Derivatization Reagents by Industrial Applications

Method	Functional Group	Derivatization Reagent	Cat. No.	Reference	
PHARMACEUTICALS, FORENSICS, AND DRUGS OF ABUSE					
Silylation	Alcohols	BSA	33035-U	13	
			33036		
			33037-U		
		BSA + TMCS	33018		
			33019-U		
			33024		
		BSTFA	33027		
			33084		
			33148		
		BSTFA + TMCS	33149-U		
			33154-U		
			33155-U		
	HMDS	33350-U	11		
		33011			
		33035-U			
	Amides	BSA	33036	13	
			33037-U		
			33024		
		BSTFA	33027		
			33084		
			394882		
	Amines	BSA	33035-U	14	
			33036		
			33037-U		
BSA + TMCS		33018			
		33019-U			
		33024			
BSTFA	33027				
	33084				
	33148				
BSTFA + TMCS	33149-U	15-17			
	33154-U				
	33155-U				
HMDS	33350-U	11			
	33011				
Carboxylic Acid	BSA	33035-U	1, 2		
		33036			
		33037-U			
	BSA + TMCS	33018		3	
		33019-U			
		33024			
	BSTFA	33027		4	
		33084			
		33148			
	BSTFA + TMCS	33149-U		5, 6	
		33154-U			
		33155-U			
HMDS	33350-U	7-10			
	33011				
	33035-U				
Steroids	BSA	33036	13		
		33037-U			
		33024			
	BSTFA	33027			
		33084			
		33148			
BSTFA + TMCS	33149-U				
	33154-U				
	33155-U				
TMSI	33068-U	11			
	33068-U				
Acylation	Amines	Acetic Anhydride	33085	18	
		HFBA	33170-U		23, 24
		PFPA	33167		
		33168			
		TFAA	33165-U		19-21
			33164		
	33170-U				
	Amides	HFBA	23, 24		
		PFPA			
33167					
33168					
TFAA	33165-U	19-21			
	33164				

Method	Functional Group	Derivatization Reagent	Cat. No.	Reference
Alkylation	Amines	DMF-DBA	395005	
		DMF-DEA	394971	
		DMF-DMA	394963	
		DMF-DPA	394998	
		PFBBR	33001	
		TMAH	33358-U 33097-U	
	Amides	DMF-DBA	395005	
		DMF-DEA	394971	
		DMF-DMA	394963	
		DMF-DPA	394998	
		TMAH	33358-U 33097-U	
		Steroids	BCl ₃ -Methanol	33353
	33089-U			
	33033			
	DMF-DBA		395005	
DMF-DEA	394971			
DMF-DMA	394963			
DMF-DPA	394998			
TMAH	33358-U 33097-U			
ENVIRONMENTAL				
Silylation	Steroids	BCl ₃ -Methanol	33353	
			33089-U	
			33033	
		DMF-DBA	395005	
		DMF-DEA	394971	
		DMF-DMA	394963	
		DMF-DPA	394998	
TMAH	33358-U 33097-U			
FOOD AND BEVERAGE				
Silylation	Carbohydrate	BSA	33035-U	1, 2
			33036	
			33037-U	
		BSA + TMCS	33018	3
			33019-U	
		BSTFA	33084	4
33024 33027				
BSTFA + TMCS	33148	5, 6		
	33149-U			
	33154-U 33155-U			
BIOFUELS				
Silylation		MSTFA	394866 69479	26, 27

References

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- ASTM D6584
- EN 14105

Note: Also refer to silylation, acylation and alkylation sections for additional readings

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GC Derivatization

Fluka Analytical
SUPELCO Analytical

HPLC Derivatization – Application Overview

Applications	Special Applications	Reagent	Description	Reaction Type	Pre-column Derv.(V), Post-column Derv.(N), Both(B)	Wavelength	Cat. No.
Primary amines, amino acids, secondary amines (via Hypochlorite)	Aminoglycosides, Gentamicin, Neomycin, biogenic Amines, amino acids	Phthaldialdehyde	BioChemika, for fluorescence, ≥ 99.0% (HPLC)	Isindole-reaction with OPA, boric acid, mercaptoethanol	B	340 nm Ex. 440 nm Em.	79760
Primary Amine, amino acids	Sulfonamides, Amoxicillin, Ampicillin, Gentamicin	Fluram	BioChemika, for fluorescence, ≥ 99.0% (UV)	Condensation to fluorescent pyrrolidone	B	395 nm Ex. 495 nm Em.	47614
Primary and secondary Amines, biogenic, Amines, amino acids	Secondary amines, Erythromycin, Gentamicin, Neomycin, Pirlimycin	Fmoc chloride	BioChemika, for fluorescence, ≥ 99.0% (HPLC)	Nucleophilic substitution to fluorescent chloroformiat-derivative	V	265 nm Ex. 315 nm Em.	23184
Primary and secondary amines, biogenicamines, amino acids, phenoles	Biogenic amines, Stilbene derivatives, Gentamicin	Dansyl chloride	BioChemika, for fluorescence, ≥ 99.0% (HPLC)	Nucleophilic substitution to fluorescent dansyl-derivative	V	360 nm Ex. 420 nm Em.	39220
Primary aromatic amines, hydrazines	Sulfonamides	4-(Dimethyl-amino)benzaldehyde solution (Ehrlich's reagent)	puriss. p.a., for the determination of hydroxyproline, ≥ 99.0% (HPLC)	Condensation with amines to schiff base	B	450 nm	39070
Primary aromatic amines	Sulfonamides, Clenbuterol, Mabuterol, Cimaterol, Brombuterol, Chloramphenicol (after reduction with zinc)	Bratton-Marshall (N-(1-naphthyl) ethylene-diamine-dihydrochloride)	ACS reagent, >98%	Diazotation of aromatic amines	B	550 nm	222488
Primary aliphatic and secondary aliphatic and aromatic amines	Streptomycin, Dihydrostreptomycin, Amphetamines, amino acids	Sodium 1,2-naphthoquinone-4-sulfonate (Folin's Reagent)	purum p.a., for spectrophotometric det. of isonicotic hydrazide, amines and amino acids, ≥ 97.0% (T)	Michael-Addition yielding the quinone imin acc. to Folin, Hartke and Lohmann	B	260 nm Ex. 435 nm Em.	70382
Polyether antibiotics in general	Monensin, Semduramicin, Narasin, Salinomycin	Vanillin (4-Hydroxy-3-methoxybenzaldehyde)	ReagentPlus, 99%	Decomposition reaction to the dye	N	520 nm	V1104
α-Aminocarboxylic acids	Paromomycin	1-Fluoro-2,4-dinitrobenzene (Sanger Reagent)	≥ 99%	Nucleophilic aromatic substitution	V	350 nm	D1529
Amino acids	amino acids, (Streptomycin)	Ninhydrin	ACS reagent	Condensation of primary amines to Aza-Oxonol	N	440 nm	151173
Steroides, Makrolid-Antibiotics	Josamicin, Rokitamycin, Progesterone	Dansylhydrazine	BioChemika, for fluorescence, ≥ 95.0% (HPLC)	Forming of a dansylhydrazone with an aldehyde	V	350 nm Ex. 540 nm Em.	30434
Amprolium	Amprolium	Potassium hexacyanoferrate(III)	BioUltra, ≥ 99.0% (RT)	Redox-reaction to fluorescent complex	N	370 nm Ex. 470 nm Em.	60299
Penicillines	Amoxicilline, Ampicilline, Penicilline G, Cloxacilline, Penicilline V, Oxacilline, Dicloxacilline, Cephalexine, Cephradine	Mercury (II) chloride	puriss. p.a., ACS reagent, reag. ISO, reag. Ph. Eur., ≥ 99.5% (calc. to the dried substance)	Nucleophilic addition of imidazol	V	325 nm	31005
Penicillines	Amoxicilline, Ampicilline	Formaldehyde solution	puriss. p.a., ACS reagent, ≥ 36.5%	Fluorescent Pyrazine-derivative	V	350 nm Ex. 420 nm Em.	33220
Avermectine	Ivermectine, Moxidectine	Trifluoroacetic anhydride	puriss. p.a., derivatization grade (for GC), ≥ 99.0% (GC)	Aromatization by elimination	V	365 nm Ex. 465 nm Em.	91719

TLC Applications by Compound Class

Application Group	Product Name	CAS Number	Pkg Size	Cat. No.
Aflatoxins	Fast Blue B Salt	14263-94-6	10, 100 g	D9805
Aliphatic Aldehydes	3-Methyl-2-benzothiazolinone hydrazone hydrochloride	38894-11-0	2.5, 10, 50 g	65875
Alkaloids	Dragendorff's reagent	39773-75-2	100 mL	44578
	Phosphomolybdic acid solution	12026-57-2	100, 500 mL	02553
	Potassium hexachloroplatinate(IV)	16921-30-5	1, 5, 25 g	520861
	Zinc chloride	7646-85-7	500 g, 1, 5 Kg	96470
Amines	Potassium hexachloroplatinate(IV)	16921-30-5	1, 5, 25 g	520861
	4-(Dimethylamino)benzaldehyde (Ehrlich's reagent)	100-10-7	50, 250 g	39070
	Ninhydrin	485-47-2	10, 100, 6 x 100 g	33437
	2,2-Dihydroxy-5-methoxy-1,3-indandione hydrate (5-Methoxyninhydrin)	304671-58-7	500 mg	341002
Antibiotics	4-(Dimethylamino)benzaldehyde (Ehrlich's reagent)	100-10-7	50, 250 g	39070
	Ninhydrin	485-47-2	10, 100, 6 x 100 g	33437
Amino Acids, Related Compounds	Ninhydrin	485-47-2	10, 100, 6 x 100 g	33437
	Sodium 1,2-naphthoquinone-4-sulfonate (Folin's reagent)	521-24-4	5, 10 g	70382
Antioxidants	Phosphomolybdic acid solution	12026-57-2	100, 500 mL	02553
Barbiturates	2,6-Dichlorophenolindophenol sodium salt hydrate	620-45-1	1, 5, 25 g	36180
	Mercury(II) chloride	7487-94-7	100, 500 g	31005
Base Metals (Pb, Zn, Cd, Cr, Cu, Fe, Mo)	Diphenylcarbazone	538-62-5	5, 25 g	42870
Bile Acids	Potassium dichromate	7778-50-9	250 g, 1, 50 Kg	31255
Cyanides	2,6-Dibromoquinone-4-chloroimide	537-45-1	10 g	34080
Dienes	Tetracyanoethylene	670-54-2	1, 5, 10, 25 g	T8809
Flavanoids and Foodstuffs	2-Aminoethyl diphenylborinate	524-95-8	5, 25 g	42810
	Bromocresol Green solution	76-60-8	500 mL	02559
	Antimony(III) chloride reagent (free of CHC)	-	100 mL	21623
Glycolipids	Orcinol monohydrate	6153-39-5	5, 10, 100 g	O1875
Glycosids	Lead tetraacetate	546-67-8	25, 100, 500 g	15370
Glycine	4-Chloro-7-nitrobenzofurazan	10199-89-0	1, 5, 25 g	25455
Halogens	Chloramine T trihydrate	7080-50-4	50, 250, 1000 g	23270
Hexylamine	Dansyl chloride	605-65-2	1, 5, 50 g	39220
	2-Methoxy-2,4-diphenyl-3(2H)-furanone	50632-57-0	25, 100 mg	64958
Indole Derivatives	4-(Dimethylamino)benzaldehyde (Ehrlich's reagent)	100-10-7	50, 250 g	39070
Iron	2,2'-Bipyridyl	366-18-7	5, 25, 100 g	14454
Lipids	Antimony(III) chloride reagent (free of CHC)	-	100 mL	21623
	Bromothymol Blue	76-59-5	5, 25 g	114413
	Dragendorff's reagent	39773-75-2	100 mL	44578
	Molybdenum Blue spray reagent	-	100 mL	M1942
	Ninhydrin	485-47-2	10, 100, 6 x 100 g	33437
	Orcinol monohydrate	6153-39-5	5, 10, 100 g	O1875
	Rhodamine B solution	81-88-9	100 mL	02558
Nickel	Dimethylglyoxime	95-45-4	25, 100 g	33133
Nitrate and Nitrite	N-(1-Naphthyl)ethylenediamine dihydrochloride monomethanolate	1465-25-4	25, 100 g	70720
Organic Acids	Bromocresol Green solution	76-60-8	500 mL	02559
Osazones	N,N,N',N'-Tetramethyl-1,4-phenylenediamine dihydrochloride	637-01-4	5, 25 g	87890
Phenols	Tetrachloro-1,4-benzoquinone	118-75-2	25, 100 g	232017
	2,6-Dibromoquinone-4-chloroimide	537-45-1	10 g	34080
	Phosphomolybdic acid solution	12026-57-2	100, 500 mL	02553
Precious metals (Cu, Ag, Au, Hg, Pt)	5-(4-Dimethylaminobenzylidene)rhodanine	536-17-4	10 g	39090
Steroids	Antimony(III) chloride reagent (free of CHC)	-	100 mL	21623
	4-(Dimethylamino)benzaldehyde (Ehrlich's reagent)	100-10-7	50, 250 g	39070
	Phosphomolybdic acid solution	12026-57-2	100, 500 mL	02553
Sugars and Derivatives	Ninhydrin	485-47-2	10, 100, 6 x 100 g	33437
	2',7'-Dichlorofluorescein solution	76-54-0	500 mL	02591
	Lead tetraacetate	546-67-8	25, 100, 500 g	15370
Terpenes	Phosphomolybdic acid solution	12026-57-2	100, 500 mL	02553
Urobilinogene	5-(4-Dimethylaminobenzylidene)rhodanine	536-17-4	10 g	39090
Vitamins	Antimony(III) chlorider eagent (free of CHC)	-	100 mL	21623
	Potassium hexachloroplatinate(IV)	16921-30-5	1, 5, 25 g	520861