

CERTIFICATE of ANALYSIS



Amphetamine Analytical Standards Panel

For R&D purposes only. Not intended for human or animal use.

Item No.:	31615
Batch No.:	0657529
Size:	100 µg/well
Expiry Date:	05OCT2027 (valid from date of certification)
Storage & Handling:	Store upright and unopened at -20°C. Warm to room temperature prior to opening.
Safety:	Danger. Review the Safety Data Sheets before use.

Description

This product consists of 106-well Matrix plates containing individual amphetamine and amphetamine-class standards. The individual well locations for each unique standard are listed in the table below.

Traceability Statement

This kit was prepared from individual standards that have been verified through standard quality testing and are traceable via individual item and batch numbers. All compounds used to make this kit were used within their valid expiry dates. Stability testing of this kit is ongoing to ensure continuous quality and traceability of the materials.

Quality Testing

A single kit was pulled randomly from the batch and high resolution accurate mass analysis was performed to verify the contents of each vial position. A summary of results is reported below as the average ppm mass error $\pm$ standard deviation determined for all analytes.

Test	Result	Specification	Meets Specification
Average mass error	3.76 $\pm$ 0.84 ppm	$\pm$ 10 ppm	Yes

Individual results are reported in the table on pages 2-9.

Approval: 

Title: Manager, Analytical Chemistry

Certification Date: 05OCT2022

Cayman Chemical certifies that this product meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiry date when stored unopened as recommended.

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Kit Contents Plate 1

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] ⁺ m/z	Measured [M+H] ⁺ m/z	Mass Accuracy (ppm)
A1	Unused	Unused	Unused	Unused	Unused
A2	Methylhexanamine (hydrochloride)	C ₇ H ₁₇ N	116.1440	116.1433	6.02
A3	(±)-Amphetamine (hydrochloride)	C ₉ H ₁₃ N	136.1127	136.1121	4.40
A4	3-Chloroamphetamine (hydrochloride)	C ₉ H ₁₂ ClN	170.0737	170.0731	3.69
A5	BMPEA (hydrochloride)	C ₉ H ₁₃ N	136.1127	136.1121	4.40
A6	Thiopropamine (hydrochloride)	C ₇ H ₁₁ NS	142.0691	142.0685	4.37
A7	(+)-Methamphetamine (hydrochloride)	C ₁₀ H ₁₅ N	150.1283	150.1277	4.32
A8	4-Hydroxymethamphetamine (hydrochloride)	C ₁₀ H ₁₅ NO	166.1233	166.1227	3.40
A9	Phentermine (hydrochloride)	C ₁₀ H ₁₅ N	150.1283	150.1278	3.66
A10	2-Fluoromethamphetamine (hydrochloride)	C ₁₀ H ₁₄ FN	168.1189	168.1183	3.73
A11	(±)-Methamphetamine (hydrochloride)	C ₁₀ H ₁₅ N	150.1283	150.1277	4.32
A12	Unused	Unused	Unused	Unused	Unused
B1	Unused	Unused	Unused	Unused	Unused
B2	2-Methylamphetamine (hydrochloride)	C ₁₀ H ₁₅ N	150.1283	150.1277	4.32
B3	6-APDB (hydrochloride)	C ₁₁ H ₁₅ NO	178.1233	178.1226	3.73
B4	4-hydroxy Amphetamine (hydrochloride)	C ₉ H ₁₃ NO	152.1076	152.1069	4.69
B5	4-Fluoroamphetamine (hydrochloride)	C ₉ H ₁₂ FN	154.1033	154.1026	4.39
B6	5-IT	C ₁₁ H ₁₄ N ₂	175.1236	175.1229	3.99
B7	3-Fluoroamphetamine (hydrochloride)	C ₉ H ₁₂ FN	154.1033	154.1026	4.39
B8	Methiopropamine (hydrochloride)	C ₈ H ₁₃ NS	156.0848	156.0842	3.66
B9	5-APB (hydrochloride)	C ₁₁ H ₁₃ NO	176.1076	176.107	3.49
B10	Propylhexedrine (hydrochloride)	C ₁₀ H ₂₁ N	156.1753	156.1746	4.48
B11	N,N-DMA (hydrochloride)	C ₁₁ H ₁₇ N	164.1440	164.1434	3.65
B12	Unused	Unused	Unused	Unused	Unused

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Kit Contents Plate 1 Continued

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] ⁺ m/z	Measured [M+H] ⁺ m/z	Mass Accuracy (ppm)
C1	Unused	Unused	Unused	Unused	Unused
C2	N-Ethylamphetamine (hydrochloride)	C ₁₁ H ₁₇ N	164.1440	164.1434	3.65
C3	<i>para</i> -Methoxymethamphetamine (hydrochloride)	C ₁₁ H ₁₇ NO	180.1389	180.1383	3.41
C4	4-Methylmethamphetamine (hydrochloride)	C ₁₁ H ₁₇ N	164.1440	164.1434	3.65
C5	4-Methoxyamphetamine (hydrochloride)	C ₁₀ H ₁₅ NO	166.1233	166.1225	4.60
C6	4-APDB (hydrochloride)	C ₁₁ H ₁₅ NO	178.1233	178.1226	3.73
C7	3-Methoxyamphetamine (hydrochloride)	C ₁₀ H ₁₅ NO	166.1233	166.1225	4.60
C8	(-)-Methamphetamine (hydrochloride)	C ₁₀ H ₁₅ N	150.1283	150.1277	4.32
C9	3,4-Dihydroxyamphetamine (hydrochloride)	C ₉ H ₁₃ NO ₂	168.1025	168.1019	3.74
C10	4-Methylamphetamine (hydrochloride)	C ₁₀ H ₁₅ N	150.1283	150.1276	4.99
C11	4-Fluoromethamphetamine (hydrochloride)	C ₁₀ H ₁₄ FN	168.1189	168.1183	3.73
C12	Unused	Unused	Unused	Unused	Unused
D1	Unused	Unused	Unused	Unused	Unused
D2	3-Fluoromethamphetamine (hydrochloride)	C ₁₀ H ₁₄ FN	168.1189	168.1183	3.73
D3	2-Chloroamphetamine (hydrochloride)	C ₉ H ₁₂ ClN	170.0737	170.073	4.27
D4	D-Amphetamine (hydrochloride)	C ₉ H ₁₃ N	136.1127	136.1121	4.40
D5	4-Chloroamphetamine (hydrochloride)	C ₉ H ₁₂ ClN	170.0737	170.073	4.27
D6	2-Fluoroamphetamine (hydrochloride)	C ₉ H ₁₂ FN	154.1033	154.1025	5.04
D7	6-IT	C ₁₁ H ₁₄ N ₂	175.1236	175.1229	3.99
D8	6-APB (hydrochloride)	C ₁₁ H ₁₃ NO	176.1076	176.1069	4.05
D9	Methiopropamine 3'-thiophene isomer (hydrochloride)	C ₈ H ₁₃ NS	156.0848	156.0841	4.30
D10	2-Fluoroethamphetamine (hydrochloride)	C ₁₁ H ₁₆ FN	182.1346	182.1339	3.72
D11	7-APB (hydrochloride)	C ₁₁ H ₁₃ NO	176.1076	176.1069	4.05
D12	Unused	Unused	Unused	Unused	Unused

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Kit Contents Plate 1 Continued

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] ⁺ m/z	Measured [M+H] ⁺ m/z	Mass Accuracy (ppm)
E1	Unused	Unused	Unused	Unused	Unused
E2	2-APB (hydrochloride)	C ₁₁ H ₁₃ NO	176.1076	176.107	3.49
E3	2-Amino-1-phenylbutane (hydrochloride)	C ₁₀ H ₁₅ N	150.1283	150.1277	4.32
E4	5-APDB (hydrochloride)	C ₁₁ H ₁₅ NO	178.1233	178.1225	4.29
E5	6-MAPB (hydrochloride)	C ₁₂ H ₁₅ NO	190.1233	190.1225	4.02
E6	2-Methoxyamphetamine (hydrochloride)	C ₁₀ H ₁₅ NO	166.1233	166.1226	4.00
E7	7-APDB (hydrochloride)	C ₁₁ H ₁₅ NO	178.1233	178.1225	4.29
E8	N-Propylamphetamine (hydrochloride)	C ₁₂ H ₁₉ N	178.1596	178.1589	4.20
E9	3-MAPB (hydrochloride)	C ₁₂ H ₁₅ NO	190.1233	190.1225	4.02
E10	(±)-MDA (hydrochloride)	C ₁₀ H ₁₃ NO ₂	180.1025	180.1018	4.05
E11	N-Acetylmethamphetamine	C ₁₂ H ₁₇ NO	192.1389	192.1382	3.72
E12	Unused	Unused	Unused	Unused	Unused
F1	Unused	Unused	Unused	Unused	Unused
F2	DOI (hydrochloride)	C ₁₁ H ₁₆ INO ₂	322.030474	322.0298	2.09
F3	2-Methylamino-1-phenylbutane (hydrochloride)	C ₁₁ H ₁₇ N	164.143999	164.1435	3.04
F4	2-Methoxymethamphetamine (hydrochloride)	C ₁₁ H ₁₇ NO	180.138914	180.1382	3.96
F5	4-MTA	C ₁₀ H ₁₅ NS	182.100421	182.0998	3.41
F6	Amphetamine Methyl Carbamate	C ₁₁ H ₁₅ NO ₂	194.118179	194.1176	2.98
F7	3,4-DHMA (trifluoroacetate salt)	C ₁₀ H ₁₅ NO ₂	182.118179	182.1176	3.18
F8	HMMA (hydrochloride)	C ₁₁ H ₁₇ NO ₂	196.133829	196.1332	3.21
F9	3-Fluoroethamphetamine (hydrochloride)	C ₁₁ H ₁₆ FN	182.134577	182.1339	3.72
F10	4-APB (hydrochloride)	C ₁₁ H ₁₃ NO	176.107614	176.107	3.49
F11	4-Fluoroethamphetamine (hydrochloride)	C ₁₁ H ₁₆ FN	182.134577	182.134	3.17
F12	Unused	Unused	Unused	Unused	Unused

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Kit Contents Plate 1 Continued

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] ⁺ m/z	Measured [M+H] ⁺ m/z	Mass Accuracy (ppm)
G1	Unused	Unused	Unused	Unused	Unused
G2	4-CAB (hydrochloride)	C ₁₀ H ₁₄ ClN	184.089377	184.0888	3.13
G3	2,4-DMA (hydrochloride)	C ₁₁ H ₁₇ NO ₂	196.133829	196.1331	3.72
G4	5-MAPB (hydrochloride)	C ₁₂ H ₁₅ NO	190.123264	190.1226	3.49
G5	N-Formylmethamphetamine	C ₁₁ H ₁₅ NO	178.123264	178.1227	3.17
G6	2-MAPB (hydrochloride)	C ₁₂ H ₁₅ NO	190.123264	190.1226	3.49
G7	6-EAPB (hydrochloride)	C ₁₃ H ₁₇ NO	204.138914	204.1382	3.50
G8	7-MAPB (hydrochloride)	C ₁₂ H ₁₅ NO	190.123264	190.1225	4.02
G9	2-Ethylamino-1-phenylbutane (hydrochloride)	C ₁₂ H ₁₉ N	178.159649	178.1591	3.08
G10	5-MAPDB (hydrochloride)	C ₁₂ H ₁₇ NO	192.138914	192.1382	3.72
G11	2,3-MDA (hydrochloride)	C ₁₀ H ₁₃ NO ₂	180.102529	180.1019	3.49
G12	Unused	Unused	Unused	Unused	Unused
H1	Unused	Unused	Unused	Unused	Unused
H2	N-butyl Amphetamine (hydrochloride)	C ₁₃ H ₂₁ N	192.175299	192.1747	3.12
H3	2,3-MDMA (hydrochloride)	C ₁₁ H ₁₅ NO ₂	194.118179	194.1173	4.53
H4	MBDB (hydrochloride)	C ₁₂ H ₁₇ NO ₂	208.133829	208.1332	3.02
H5	BDB (hydrochloride)	C ₁₁ H ₁₅ NO ₂	194.118179	194.1171	5.56
H6	4-MTA (hydrochloride)	C ₁₀ H ₁₅ NS	182.100421	182.1005	0.43
H7	N-ethyl-4-Methoxyamphetamine (hydrochloride)	C ₁₂ H ₁₉ NO	194.154564	194.1537	4.45
H8	N-hydroxy MDA (hydrochloride)	C ₁₀ H ₁₃ NO ₃	196.097444	196.0968	3.28
H9	3,4-DMA (hydrochloride)	C ₁₁ H ₁₇ NO ₂	196.133829	196.1332	3.21
H10	4-hydroxy-3-Methoxyamphetamine (hydrochloride)	C ₁₀ H ₁₅ NO ₂	182.118179	182.1177	2.63
H11	3,5-DMA (hydrochloride)	C ₁₁ H ₁₇ NO ₂	196.133829	196.1332	3.21
H12	Unused	Unused	Unused	Unused	Unused

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CERTIFICATE of ANALYSIS



Kit Contents Plate 2

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] ⁺ m/z	Measured [M+H] ⁺ m/z	Mass Accuracy (ppm)
A1	Unused	Unused	Unused	Unused	Unused
A2	2,6-DMA (hydrochloride)	C ₁₁ H ₁₇ NO ₂	196.133829	196.1331	3.72
A3	4-Chloromethamphetamine (hydrochloride)	C ₁₀ H ₁₄ ClN	184.089377	184.0888	3.13
A4	2,5-Dimethoxyamphetamine	C ₁₁ H ₁₇ NO ₂	196.133829	196.1331	3.72
A5	Methamnetamine (hydrochloride)	C ₁₄ H ₁₇ N	200.143999	200.1433	3.49
A6	3-Trifluoromethylamphetamine (hydrochloride)	C ₁₀ H ₁₂ F ₃ N	204.100083	204.0994	3.35
A7	5-EAPB (hydrochloride)	C ₁₃ H ₁₇ NO	204.138914	204.1382	3.50
A8	4-MAPB (hydrochloride)	C ₁₂ H ₁₅ NO	190.123264	190.1224	4.54
A9	4-EAPB (hydrochloride)	C ₁₃ H ₁₇ NO	204.138914	204.1382	3.50
A10	3,4-MDMA methylene homolog (hydrochloride)	C ₁₂ H ₁₇ NO ₂	208.133829	208.133	3.98
A11	α-ethyl 2C-D (hydrochloride)	C ₁₃ H ₂₁ NO ₂	224.165129	224.1641	4.59
A12	Unused	Unused	Unused	Unused	Unused
B1	Unused	Unused	Unused	Unused	Unused
B2	MDDMA (hydrochloride)	C ₁₂ H ₁₇ NO ₂	208.133829	208.133	3.98
B3	3,4-MDMA (hydrochloride)	C ₁₁ H ₁₅ NO ₂	194.118179	194.1174	4.01
B4	Methamphetamine Methyl Carbamate	C ₁₂ H ₁₇ NO ₂	208.133829	208.133	3.98
B5	3,4-EDMA (hydrochloride)	C ₁₂ H ₁₈ NO ₂	208.133000	208.1331	0.48
B6	MMDA (hydrochloride)	C ₁₁ H ₁₅ NO ₃	210.113094	210.1122	4.25
B7	2,3,5-Trimethoxyamphetamine (hydrochloride)	C ₁₂ H ₁₉ NO ₃	226.144394	226.1434	4.40
B8	N-hydroxy MDMA (hemioxalate)	C ₁₁ H ₁₅ NO ₃	210.113094	210.1123	3.78
B9	3,4-DMMA (hydrochloride)	C ₁₂ H ₁₉ NO ₂	210.149479	210.1485	4.66
B10	2,3,6-Trimethoxyamphetamine (hydrochloride)	C ₁₂ H ₁₉ NO ₃	226.144394	226.1433	4.84
B11	2,5-DMMA	C ₁₂ H ₁₉ NO ₂	210.149479	210.1487	3.71
B12	Unused	Unused	Unused	Unused	Unused

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Kit Contents Plate 2 Continued

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] ⁺ m/z	Measured [M+H] ⁺ m/z	Mass Accuracy (ppm)
C1	Unused	Unused	Unused	Unused	Unused
C2	2-Bromoamphetamine (hydrochloride)	C ₉ H ₁₂ BrN	214.023210	214.0225	3.32
C3	N-pyrrolidinyI-3,4-DMA (hydrochloride)	C ₁₅ H ₂₃ NO ₂	250.180779	250.1798	3.91
C4	4-Bromoamphetamine (hydrochloride)	C ₉ H ₁₂ BrN	214.023210	214.0223	4.25
C5	3-trifluoromethyl-N-Methylamphetamine (hydrochloride)	C ₁₁ H ₁₄ F ₃ N	218.115733	218.1149	3.82
C6	Prolintane (hydrochloride)	C ₁₅ H ₂₃ N	218.190949	218.1901	3.89
C7	UWA-101 (hydrochloride)	C ₁₃ H ₁₇ NO ₂	220.133829	220.1328	4.67
C8	3,4-MDPA (hydrochloride)	C ₁₃ H ₁₉ NO ₂	222.149479	222.1486	3.96
C9	MMDMA (hydrochloride)	C ₁₂ H ₁₇ NO ₃	224.128744	224.1278	4.21
C10	DOET	C ₁₃ H ₂₁ NO ₂	224.165129	224.1642	4.14
C11	3,4-MDEA (hydrochloride)	C ₁₂ H ₁₇ NO ₂	208.133829	208.133	3.98
C12	Unused	Unused	Unused	Unused	Unused
D1	Unused	Unused	Unused	Unused	Unused
D2	N-ethyl-3,4-DMA (hydrochloride)	C ₁₃ H ₂₁ NO ₂	224.165129	224.1641	4.59
D3	4-MMA-NBOMe (hydrochloride)	C ₁₉ H ₂₅ NO	284.201514	284.2007	2.86
D4	2,4,5-Trimethoxyamphetamine	C ₁₂ H ₁₉ NO ₃	226.144394	226.1433	4.84
D5	Fenethylline (hydrochloride)	C ₁₈ H ₂₃ N ₅ O ₂	342.193075	342.1923	2.26
D6	3,4,5-Trimethoxyamphetamine (hydrochloride)	C ₁₂ H ₁₉ NO ₃	226.144394	226.1434	4.40
D7	MMDA-2 (hydrochloride)	C ₁₁ H ₁₅ NO ₃	210.113094	210.1122	4.25
D8	2,3,4-Trimethoxyamphetamine (hydrochloride)	C ₁₂ H ₁₉ NO ₃	226.144394	226.1434	4.40
D9	DOM	C ₁₂ H ₁₉ NO ₂	210.149479	210.1487	3.71
D10	6-chloro-MDMA (hydrochloride)	C ₁₁ H ₁₄ ClNO ₂	228.079207	228.0782	4.42
D11	4-chloro-2,5-DMA (hydrochloride)	C ₁₁ H ₁₆ ClNO ₂	230.094857	230.0941	3.29
D12	Unused	Unused	Unused	Unused	Unused

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Kit Contents Plate 2 Continued

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] ⁺ m/z	Measured [M+H] ⁺ m/z	Mass Accuracy (ppm)
E1	Unused	Unused	Unused	Unused	Unused
E2	3-trifluoromethyl-N-Ethylamphetamine (hydrochloride)	C ₁₂ H ₁₆ F ₃ N	232.131383	232.1305	3.80
E3	DOPR (hydrochloride)	C ₁₄ H ₂₃ NO ₂	238.180779	238.1798	4.11
E4	Methamphetamine <i>tert</i> -butyl Carbamate	C ₁₅ H ₂₃ NO ₂	250.180779	250.1794	5.51
E5	3-Bromoamphetamine (hydrochloride)	C ₉ H ₁₂ BrN	214.023210	214.0224	3.78
E6	N-Moc-MDMA	C ₁₃ H ₁₇ NO ₄	252.123659	252.1229	3.01
E7	DOBU	C ₁₅ H ₂₅ NO ₂	252.196429	252.1955	3.68
E8	3C-P (hydrochloride)	C ₁₄ H ₂₃ NO ₃	254.175694	254.1746	4.30
E9	ALEPH-2	C ₁₃ H ₂₁ NO ₂ S	256.137201	256.1363	3.52
E10	2-Iodoamphetamine (hydrochloride)	C ₉ H ₁₂ IN	262.009344	262.0084	3.60
E11	3,4-DMA-NBOMe (hydrochloride)	C ₁₉ H ₂₅ NO ₃	316.191344	316.1907	2.04
E12	Unused	Unused	Unused	Unused	Unused
F1	Unused	Unused	Unused	Unused	Unused
F2	4-Iodoamphetamine (hydrochloride)	C ₉ H ₁₂ IN	262.009344	262.0084	3.60
F3	Lisdexamfetamine (mesylate)	C ₁₅ H ₂₅ N ₃ O	264.207662	264.2068	3.26
F4	N-(1,4-dimethylpentyl)-4-Methoxyamphetamine (hydrochloride)	C ₁₇ H ₂₉ NO	264.232814	264.2319	3.46
F5	2,4,6-Trimethoxyamphetamine (hydrochloride)	C ₁₂ H ₁₉ NO ₃	226.144394	226.1434	4.40
F6	DOAM	C ₁₆ H ₂₇ NO ₂	266.212079	266.2111	3.68
F7	ALEPH-4	C ₁₄ H ₂₃ NO ₂ S	270.152851	270.152	3.15
F8	4-MA-NBOMe (hydrochloride)	C ₁₈ H ₂₃ NO	270.185864	270.185	3.20
F9	6-bromo-MDMA (hydrochloride)	C ₁₁ H ₁₄ BrNO ₂	272.028690	272.028	2.54
F10	4-bromo-2,5-DMA (hydrochloride)	C ₁₁ H ₁₆ BrNO ₂	274.044340	274.0437	2.34
F11	N-(1-methylpentyl)-3,4-DMA (hydrochloride)	C ₁₇ H ₂₉ NO ₂	280.227729	280.227	2.60
F12	Unused	Unused	Unused	Unused	Unused

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Kit Contents
Plate 2 Continued

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] ⁺ m/z	Measured [M+H] ⁺ m/z	Mass Accuracy (ppm)
G1	Unused	Unused	Unused	Unused	Unused
G2	4-EA-NBOMe (hydrochloride)	C ₁₉ H ₂₅ NO	284.201514	284.2007	2.86
G3	N,N-dimethyl-3,4-DMA (hydrochloride)	C ₁₃ H ₂₁ NO ₂	224.165129	224.1642	4.14
G4	N-benzyl-3,4-DMA (hydrochloride)	C ₁₈ H ₂₃ NO ₂	286.180779	286.1799	3.07
G5	4-bromo-2,5-DMMA	C ₁₂ H ₁₈ BrNO ₂	288.059990	288.0593	2.40
G6	Bromo-DragonFLY (hydrochloride)	C ₁₃ H ₁₂ BrNO ₂	294.013040	294.0124	2.18
G7	3,4-MDMA <i>tert</i> -butyl Carbamate	C ₁₆ H ₂₃ NO ₄	294.170609	294.1684	7.51
G8	N-(1,4-dimethylpentyl)-3,4-DMA (hydrochloride)	C ₁₈ H ₃₁ NO ₂	294.243379	294.2427	2.31
G9	3C-B-fly (hydrochloride)	C ₁₃ H ₁₆ BrNO ₂	298.044340	298.0437	2.15
G10	(S)-Methamphetamine <i>p</i> -toluenesulfonamide	C ₁₇ H ₂₁ NO ₂ S	304.137201	304.1363	2.96
G11	3-Iodoamphetamine (hydrochloride)	C ₉ H ₁₂ IN	262.009344	262.0084	3.60
G12	Unused	Unused	Unused	Unused	Unused

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Revision History

Revision No.	Date	Reason for Revision
01	05OCT2022	Initial version
02	29SEP2025	Expiry date extension

Disclaimers

Material Safety Data

This material should be considered hazardous until information to the contrary becomes available. Do not ingest, swallow, or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. This information contains some but not all of the information required for the safe and proper use of this material. Before use, review the complete Material Safety Data Sheet, which has been sent *via* email to your institution.

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