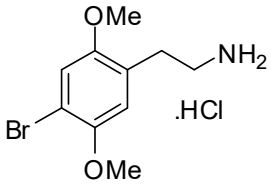
Australian Government
Department of Industry, Science, Energy and Resources

National Measurement Institute

NATA ACCREDITED FOR TECHNICAL COMPETENCE

CERTIFIED REFERENCE MATERIAL CERTIFICATE OF ANALYSIS

NMIA D758b: 4-Bromo-2,5-dimethoxyphenethylamine hydrochloride



Report ID: D758b.2025.01 (Bottled 150213)

Chemical Formula: $C_{10}H_{14}BrNO_2.HCl$

Molecular Weight: 296.6 g/mol (HCl), 260.1 g/mol (base)

Certified value

Batch No.	CAS No.	Purity (mass fraction)
13-D-07	56281-37-9 (HCl) 66142-81-2 (base)	99.1 ± 1.0%

The uncertainty has been calculated according to ISO Guide 35 and is stated at the 95% confidence limit (k = 2).

IUPAC name: 2-(4-Bromo-2,5-dimethoxyphenyl)ethanamine hydrochloride.

Expiration of certification: The property values are valid till 20 October 2035, ten years from the date of re-certification provided the **unopened** material is handled and stored in accordance with the recommendations below. The material as issued in the unopened container and stored as recommended below should be suitable for use beyond this date, subject to confirmation of batch stability from the issuing body. The expiry date/shelf life does not apply to sample bottles that have been opened. In such cases it is recommended that the end-user conduct their own in-house stability trials.

Description: Off-white powder prepared by synthesis and certified for identity and purity by NMI Australia. Packaged in amber glass bottles with a septum and crimped aluminium cap or screw top cap.

Intended use: This certified reference material is suitable for use as a primary calibrator.

Instructions for use: Equilibrate the bottled material to room temperature before opening.

Recommended storage: When not in use this material should be stored at or below 25 ºC in a closed container in a dry, dark area.

Metrological traceability: The certified purity value is traceable to the SI unit for mass (kg) through Australian national standards via balance calibration. In the mass balance approach all impurities are quantified as a mass fraction and subtracted from 100%.

Stability: This material has demonstrated stability over a minimum period of three years. The measurement uncertainty at the 95% confidence interval includes a stability component which has been estimated from annual stability trials.

The long-term stability of the compound in solution has not been examined.

Homogeneity assessment: The homogeneity of the material was assessed using purity assay by GC-FID on ten randomly selected 1-2 mg sub samples of the material. The material was judged to be sufficiently homogeneous at this level of sampling as the variation in analysis results between samples was not significantly different at a 95% confidence level from that observed on repeat analysis of the same sample.

Safety: Treat as a hazardous substance. Use appropriate work practices when handling to avoid skin or eye contact, ingestion or inhalation of dust. Refer to the provided safety data sheet.

S. R. Davies

Dr Stephen R. Davies,
Team Leader,
Chemical Reference Materials, NMI.
21 October 2025

This report supersedes any issued prior to 21 October 2025.

Characterisation Report:

The identity was confirmed by a range of spectroscopic techniques, NMR, IR and MS. The certified purity value was obtained by mass balance from a combination of traditional analytical techniques, including GC-FID, thermogravimetric analysis, Karl Fischer analysis and ^{1}H NMR spectroscopy. The purity value is calculated as per Equation 1.

Purity = (100 % - I_{ORG}) x (100 % - I_{VOL} – I_{NVR}) Equation 1

I_{ORG} = Organic impurities of related structure, I_{VOL} = volatile impurities, I_{NVR} = non-volatile residue.

Supporting evidence is provided by qualitative headspace GC-MS analysis of occluded solvents and elemental microanalysis.

GC-FID:	Instrument:	Agilent 7890A
	Column:	HP-1MS, 30 m × 0.32 mm I.D. × 0.25 μm
	Program:	160 °C (20 min), 20 °C/min to 300 °C (3 min)
	Injector:	250 °C
	Detector Temp:	320 °C
	Carrier:	Helium
	Split ratio:	20/1
	Relative mass fraction of the main component as the free base:	
	Initial analysis:	Mean = 99.7%, s = 0.05% (10 sub samples in duplicate, April 2013)
	Re-analysis:	Mean = 99.3%, s = 0.08% (5 sub samples in duplicate, April 2014)
	Re-analysis:	Mean = 99.7%, s = 0.02% (5 sub samples in duplicate, March 2017)
	Re-analysis:	Mean = 99.7%, s = 0.04% (5 sub samples in duplicate, February 2020)
	Re-analysis:	Mean = 99.7%, s = 0.06% (5 sub samples in duplicate, October 2025)
Karl Fischer analysis:		Moisture content 0.4% mass fraction (April 2013) Moisture content 0.4% mass fraction (March 2014) Moisture content 0.5% mass fraction (March 2017) Moisture content 0.4% mass fraction (January 2020) Moisture content 0.5% mass fraction (October 2025)
Thermogravimetric analysis:		Non-volatile residue < 0.2% mass fraction (April 2013). The volatile content (e.g. organic solvents and/or water) could not be determined because of the inherent volatility of the material and/or degradation at elevated temperatures.

Spectroscopic and other characterisation data

GC-MS:	Instrument:	HP6890/5973
	Column:	TG-1MS, 30 m x 0.25 mm I.D. x 0.25 μm
	Program:	120 °C (1 min), 10 °C/min to 300 °C (5 min)
	Injector:	250 °C
	Transfer line temp:	280 °C
	Carrier:	Helium, 1.0 mL/min
	Split ratio:	20/1
	The retention time of the free base is reported along with the major peaks in the mass spectrum. The latter are reported as mass/charge ratios and (in brackets) as a percentage relative to the base peak.	
	Free base (9.64 min):	261 (M^+, 12), 259 (M^+, 13), 232 (98), 230 (100), 217 (23), 215 (23), 201 (9), 199 (8), 105 (11), 91 (10), 77 (20), 63 (6), 51 (6) *m/z*
HS-GC-MS:	Instrument:	Agilent 6890/5973/G1888
	Column:	DB-624, 30 m x 0.25 mm I.D. x 1.4 μm
	Program:	50 °C (5 min), 7 °C/min to 120 °C, 15 °C/min to 220 °C (8.3 min)
	Injector:	150 °C
	Transfer line temp:	280 °C
	Carrier:	Helium, 1.2 mL/min
	Split ratio:	50/1
	Solvents detected:	Diethyl ether
TLC:	Conditions:	Kieselgel 60F_{254}. Methanol/diethyl amine (200/3) Single spot observed, R_f = 0.5. Visualisation with UV at 254 nm
IR:	Instrument:	Biorad FTS3000MX FT-IR
	Range:	4000-400 cm^{-1}, KBr powder
	Peaks:	2938, 2900 2699, 2606, 2444, 2364, 2038, 1606, 1500, 1490, 1435, 1389, 1305, 1211, 1117, 1049, 1029, 848, 775, 706 cm^{-1}
^{1}H NMR:	Instrument:	Bruker Avance-400
	Field strength:	400 MHz
	Solvent:	MeOH-d_4 (3.31 ppm)
	Spectral data:	δ 2.95 (2H, t, *J* = 7.2 Hz), 3.14 (2H, m), 3.82 (3H, s), 3.84 (3H, s), 6.95 (1H, s), 7.18 (1H, s) ppm
		Diethyl ether estimated at 0.04% mass fraction and acetic acid estimated at 0.04% mass fraction were observed in the ^{1}H NMR
^{13}C NMR:	Instrument:	Bruker DMX-600
	Field strength:	151 MHz
	Solvent:	MeOH-d_4
	Spectral data:	δ 29.7, 40.6, 56.6, 57.4, 111.4, 116.3, 117.2, 126.2, 151.7, 153.4 ppm
Melting point:		239-241 °C
Microanalysis:	Found:	C = 40.6%; H = 5.1%; N = 4.7% (April, 2013)
	Calculated:	C = 40.5%; H = 5.1%; N = 4.7% (Calculated for $C_{10}H_{14}BrNO_2$.HCl)