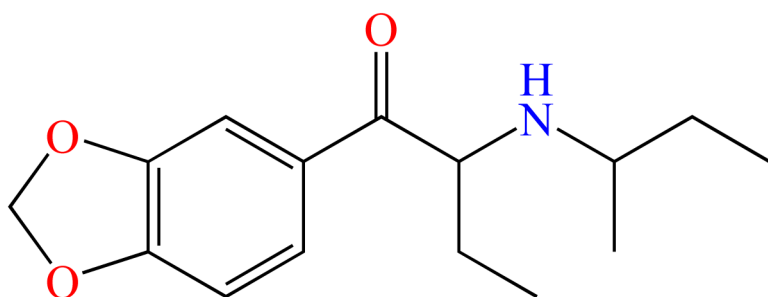




N-sec-Butyl Butylone



NPS SUBCLASS	Stimulant
REPORT DATE	March 24, 2026
SAMPLE RECEIVED	February 18, 2026
SAMPLE TYPE	Drug Material

Preferred Name	N-sec-Butyl Butylone				
Synonyms	N-sec-Butyl Norbutylone; 3,4-Methylenedioxy- <i>alpha</i> -sec-butylaminobutiophenone				
Formal Name	1-(benzo[d][1,3]dioxol-5-yl)-2-(sec-butylamino)butan-1-one				
Chemical Formula	C ₁₅ H ₂₁ NO ₃				
Molecular Weight	263.3	Molecular Ion [M⁺]	263	Exact Mass [M+H]⁺	264.1597

About: In collaboration with medical examiner and coroner offices, crime laboratories, clinical partners, and other stakeholders, the Center for Forensic Science Research and Education (CFSRE) is documenting first confirmations of NPS through analysis of drug materials and/or toxicology samples. These reports are generated using comprehensive analytical techniques (e.g., GC-MS, LC-QTOF-MS, NMR) and include available information about the new substances identified at the time of reporting, as well as the analytical data generated during testing. Our new drug monographs are intended to assist with the rapid identification of NPS, and should not be used for confirmatory purposes alone.

Funding: CFSRE's NPS Discovery is supported by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice (Award Number 15PNJ-24-GK-00981-COAP, "Novel Psychoactive Substance Discovery, Education, and Reporting Institute"). The opinions, findings, conclusions and/or recommendations expressed in this publication are those of the author(s) and do not necessarily represent the official position or policies of the U.S. Department of Justice.

Analytical Notes: All identifications were made based on evaluation of analytical data (GC-MS and LC-QTOF-MS) in comparison to analysis of acquired reference material.

Acknowledgements: This report was prepared by Brianna N. Stang, Sara E. Walton, Nicholas Khorozov, Max T. Denn, Alexis D. Quinter, Angel McDowell, Joshua S. DeBord, Barry K. Logan, and Alex J. Krotulski at the Center for Forensic Science Research and Education (CFSRE) at the Fredric Rieders Family Foundation. The authors acknowledge scientists at the CFSRE for their involvements and contributions. For more information, contact npsdiscovery@cfsre.org or visit www.npsdiscovery.org.

Suggested Citations: Stang BN, Walton SE, Khorozov N, Denn MT, Quinter AD, McDowell A, DeBord JS, Logan BK, Krotulski AJ. (2026) *N-sec-Butyl Butylone* — NPS Discovery New Drug Monograph, Center for Forensic Science Research and Education, United States.

Characterization & Intelligence

The following information was compiled in March 2026 and is subject to change as new research is conducted and as new information becomes available:

Description: N-sec-Butyl butylone is a novel stimulant characterized as a cathinone bearing structural resemblance to other synthetic cathinones (e.g., butylone, N-isopropyl butylone). There are currently no available data investigating the potency and activity of N-sec-butyl butylone; however, due to structural similarity to other synthetic cathinones, it is hypothesized that N-sec-butyl butylone acts on dopamine and serotonin (5-HT) transporters to inhibit reuptake and promote the release of neurotransmitters.¹ A structurally similar substance, N-ethyl pentylone (DAT IC₅₀=0.13±0.01 μM, SERT IC₅₀=6.37±0.09 μM), demonstrated stronger inhibitory effects on DAT/SERT compared to pentylone (DAT IC₅₀=0.21±0.02 μM, SERT IC₅₀=137.9±13.4 μM), likely due to the elongation of the alkyl amino group.^{2,3} N-sec-Butyl butylone is not explicitly scheduled in the United States. N-sec-Butyl butylone was first detected at the CFSRE in a drug material from Florida, and has since been detected in one postmortem blood specimen received from Florida alongside fentanyl and cocaine.

References:

- ▶ Cayman Chemical: [N-sec-butyl Butylone](#)
- ▶ ¹Saha et al. (2020): [The synthetic cathinones, butylone and pentylone, are stimulants that act as dopamine transporter ...](#)
- ▶ ²Nadal-Gratacós et al. (2021): [Structure-Activity Relationship of Novel Second-Generation Synthetic Cathinones ...](#)
- ▶ ³Nadal-Gratacós et al. (2024): [Structure-Activity Relationship of Synthetic Cathinones: An Updated Review](#)

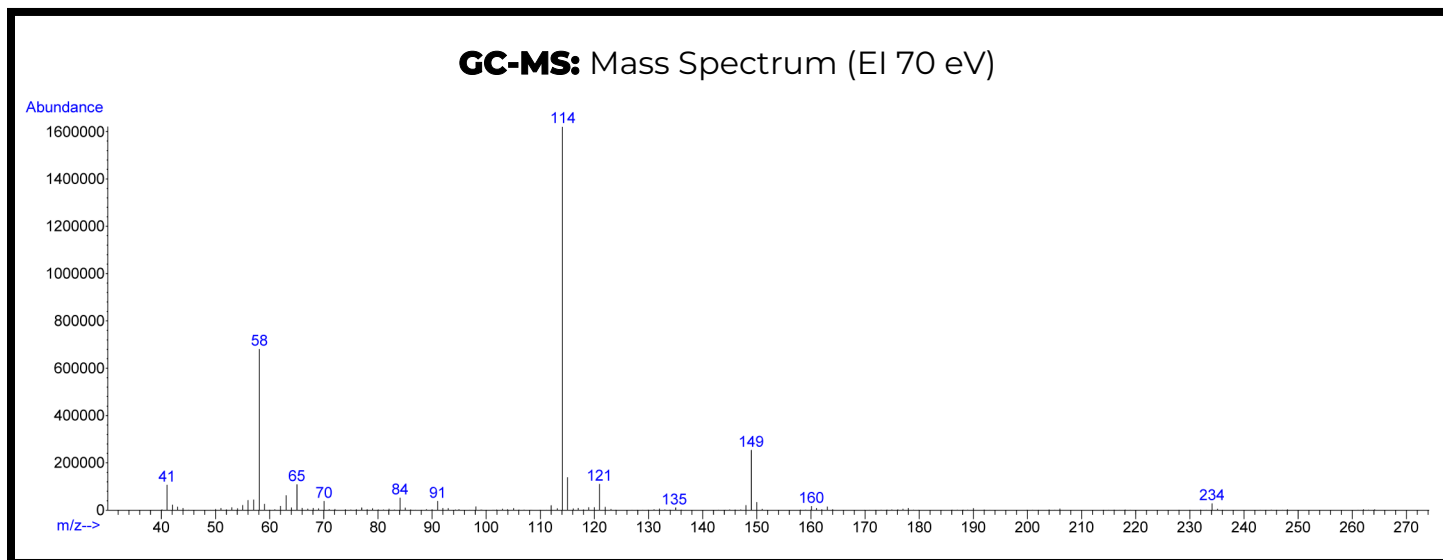
Gas Chromatography Mass Spectrometry (GC-MS)

Laboratory: Center for Forensic Science Research and Education (CFSRE, Horsham PA, USA)

Instrument: Agilent 5975 Series GC/MSD

Methods: [GC-MS Method Details](#) & [Monographs](#)

Sample Preparation: Acid-base extraction



Confirmation Using Drug Standard: Reference material for N-sec-butyl butylone (Batch: 0818873) was purchased from Cayman Chemical (Ann Arbor, MI, USA). The analyte was confirmed to be N-sec-butyl butylone based on retention time (sample: 5.46 min vs. standard: 5.45 min) and mass spectral data comparisons.

Liquid Chromatography Quadrupole Time-of-Flight Mass Spectrometry (LC-QTOF-MS)

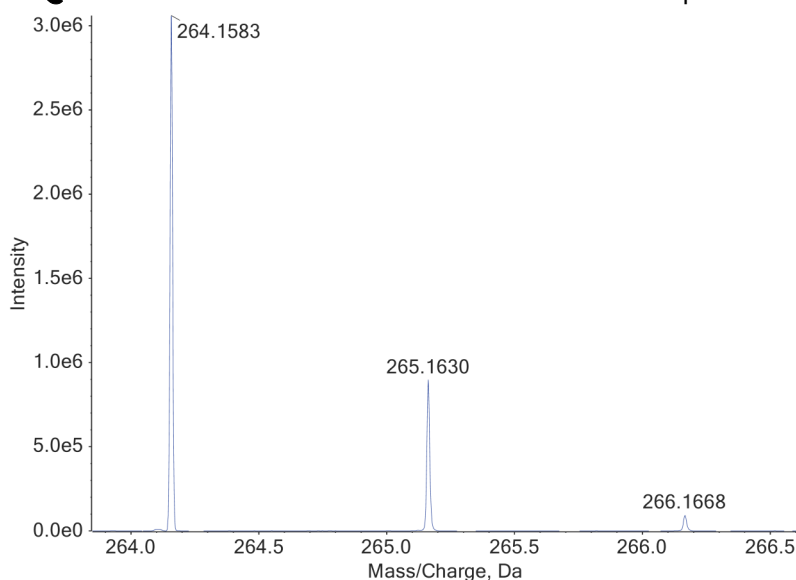
Laboratory: Center for Forensic Science Research and Education (CFSRE, Horsham, PA, USA)

Instrument: Sciex X500R LC-QTOF-MS

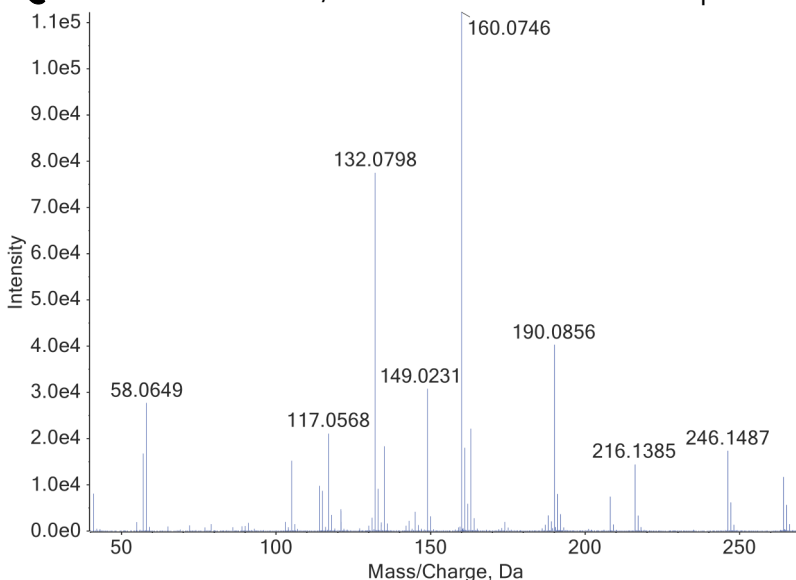
Methods: [LC-QTOF-MS Method Details](#) & [Monographs](#)

Sample Preparation: Dilution in mobile phase

LC-QTOF-MS: TOF-MS Precursor Ion Mass Spectrum



LC-QTOF-MS: TOF-MS/MS Product Ion Mass Spectrum



Confirmation Using Drug Standard: Reference material for N-sec-butyl butylone (Batch: 0818873) was purchased from Cayman Chemical (Ann Arbor, MI, USA). The analyte was confirmed to be N-sec-butyl butylone based on retention time (sample: 5.33 min vs. standard: 5.37 min) and mass spectral data comparisons.