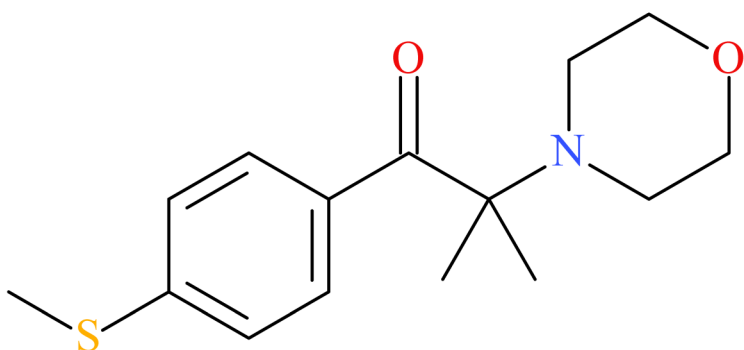




MMMP



NPS SUBCLASS	Miscellaneous
REPORT DATE	December 19, 2024
SAMPLE RECEIVED	August 16, 2024
SAMPLE TYPE	Drug Material

Preferred Name	MMMP
Synonyms	Caccure 907, Irgacure 907, MMTMP, MTMP
Formal Name	2-methyl-1-(4-methylsulfanylphenyl)-2-morpholino-propan-1-one
InChI Key	LWRBVKNFOYUCNP-UHFFFAOYSA-N
CAS Number	71868-10-5
Chemical Formula	C ₁₅ H ₂₁ NO ₂ S
Molecular Weight	279.4
Molecular Ion [M ⁺]	279
Exact Mass [M+H] ⁺	280.1366

Characterization & Intelligence

The following information was compiled in December 2024 and is subject to change as new research is conducted and as new information becomes available:

Description: MMMP (also commonly called Caccure 907 and MTMP) is classified as a substituted cathinone and is structurally similar to other synthetic stimulants derived from cathinone. MMMP is a photoinitiator which induces macromolecular growth via rapid dissociation into primary free-radicals and has been used to produce adhesives, inks, and color coatings.^{1,2} MMMP was first identified in 2017 as an illicit drug product in the United States.³ MMMP was identified in August 2024 by our laboratory and confirmed using standard reference material.

Sample Source: Chicago Recovery Alliance (Chicago, IL)

Sample Appearance: Yellow tablet

Pharmacology: *In vitro* data show that MMMP is cytotoxic to human peripheral blood mononuclear cells and causes apoptosis via the caspase-9 pathway.^{3,4,5} There are limited data available on the psychoactive effects of MMMP.

Toxicology: MMMP has been identified in toxicology cases to date at the CFSRE.

Drug Materials: MMMP has been detected in one drug material at the CFSRE.

Demographics / Geographics: The drug material positive for MMMP originated from Illinois. MMMP was identified alongside the novel synthetic opioid *N*-pyrrolidino protonitazene.

Legal Status: MMMP is not currently a scheduled drug in the United States.

References:

- ▶ Cayman Chemical: [MMMP \(2-methyl-4'-\(methylthio\)-2-Morpholinopropiophenone\)](#)
- ▶ ¹Kawasaki et al. (2021) [Three photoinitiators induce breast tumor growth...](#)
- ▶ ²Buback et al. (2003) [A suitable photoinitiator for pulsed laser-induced...](#)
- ▶ ³Yao-Te Yen et al. (2024) [2-Methyl-4'-\(methylthio\)-2-morpholinopropiophenone...](#)
- ▶ ⁴Kawasaki et al. (2013) [The polymerization agent, 2-methyl-4'-\(methylthio\)-2-morpholinopropiophenone...](#)
- ▶ ⁵Tsuboi et al. (2016) [In vitro quantitative determination of the concentration of the polymerization...](#)



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 in forensic casework and related disciplines, and should not be used for confirmatory purposes alone.

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

Acknowledgements: This report was prepared by Sara E. Walton, David Peress, Taylor Wood, 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.

Funding: CFSRE's NPS Discovery is supported by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice (Award Number 15PNIJ-22-GG-04434-MUMU, "Implementation of NPS Discovery – An Early Warning System for Novel Drug Intelligence, Surveillance, Monitoring, Response, and Forecasting using Drug Materials and Toxicology Populations in the US"). 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.

Suggested Citation: Walton, SE; Peress, D; Wood, T; Denn, MT; Quinter, AD; McDowell, A; DeBord, JS; Logan, BK; Krotulski, AJ. (2024) *MMMP — NPS Discovery New Drug Monograph*, Center for Forensic Science Research and Education, United States.

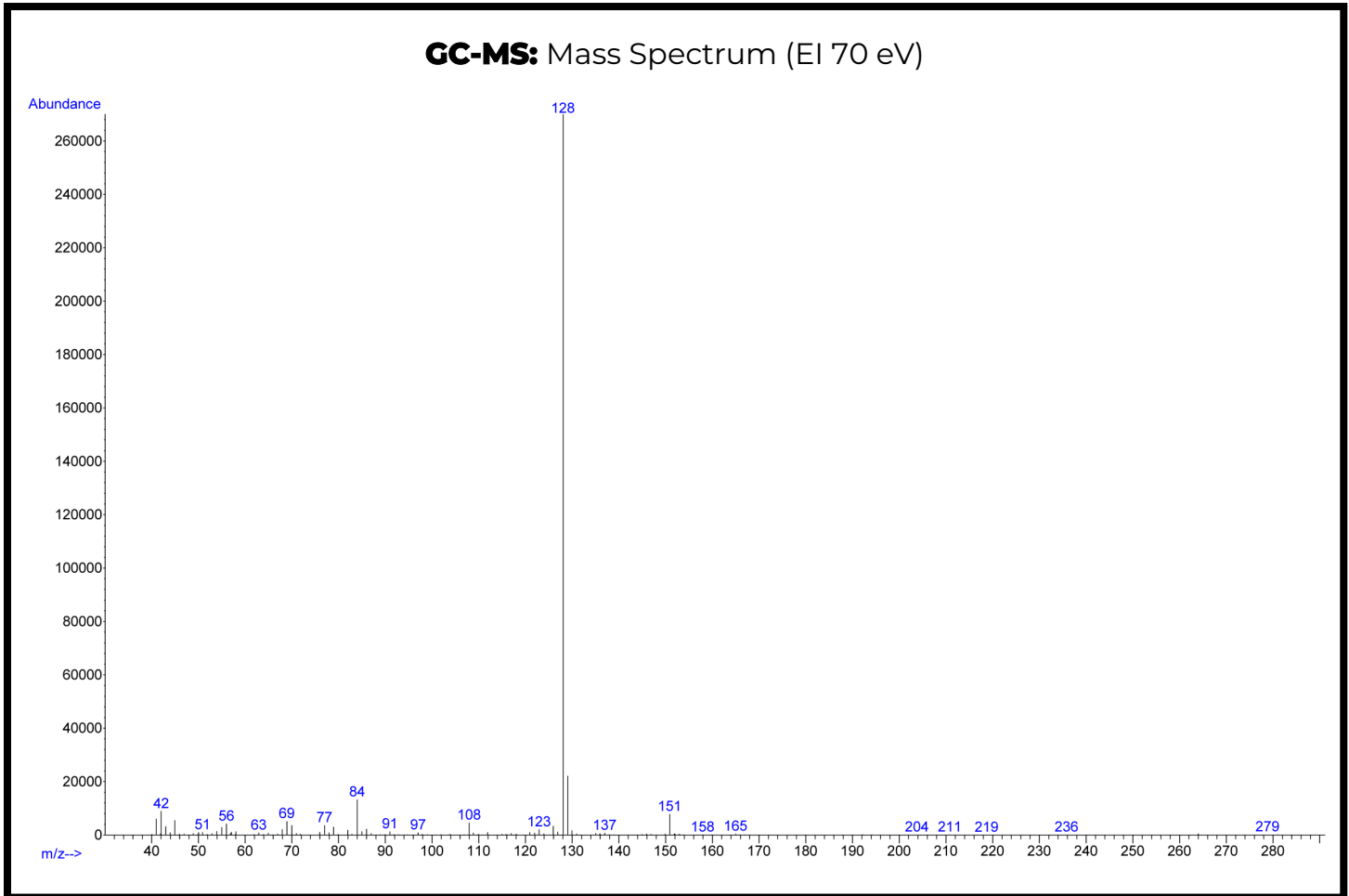
Gas Chromatography Mass Spectrometry (GC-MS)

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 (Batch: 0500950-12) was purchased from Cayman Chemical (Ann Arbor, MI, USA). The analyte was confirmed to be MMMP based on retention time (sample: 6.40 min vs. standard: 6.39 min) and mass spectral data comparisons.

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

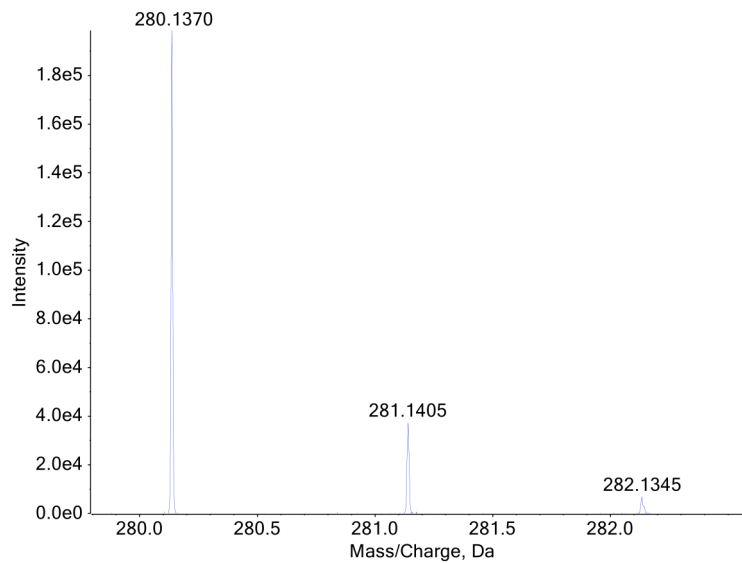
Laboratory: Center for Forensic Science Research and Education (CFSRE, Horsham, PA, USA)

Instrument: Sciex 5600+ LC-QTOF-MS

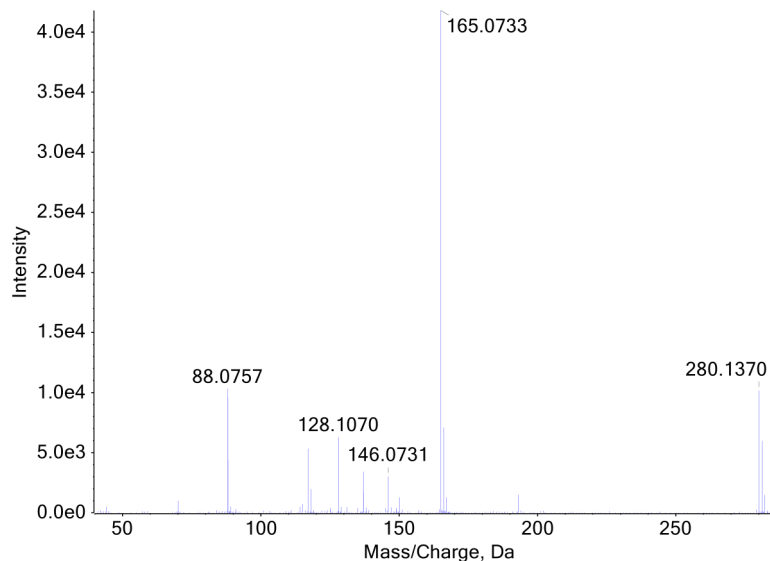
Methods: [LC-QTOF-MS Method Details](#) & [Monographs](#)

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 (Batch: 0500950-12) was purchased from Cayman Chemical (Ann Arbor, MI, USA). The analyte was confirmed to be MMMP based on retention time (sample: 6.58 min vs. standard: 6.47 min) and mass spectral data comparisons.