



SOP-METH-001
Revision: 6
Effective Date: May 20, 2024

Drug Enforcement Administration

Office of Forensic Sciences

SOP-METH-001

STANDARD OPERATING PROCEDURE

for the

ANALYSIS OF SUSPECTED METHAMPHETAMINE



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1.0 Introduction

SOP-METH-001 outlines the analytical scheme for analyzing suspected methamphetamine samples. Reference Laboratory Operations Manual (LOM) 7500 for evidence sampling, qualitative analysis, and quantitative analysis policy. Reference the appropriate method validation packet for preparations and procedures.

2.0 Scope

This analytical scheme:

- A. Identifies methamphetamine.
 - 1. Determines salt form and isomer upon request or when directed by the Office of Forensic Sciences.
- B. Identifies additional controlled substances, new psychoactive substances (NPS), and non-controlled substances.
- C. Determines the purity of methamphetamine.
- D. Applies to all gross forms.
- E. May apply to individual sub-exhibits.
 - 1. Follow SOP-METH-001 for sub-exhibits that are within the scope; refer to LOM 7500 or other SOPs for sub-exhibits that are not within the scope.
- F. Does not apply to residues.
- G. Does not apply to special program exemplars analyzed at SFL1.

3.0 Analytical Scheme

3.1 Qualitative Analysis

- A. If a negative result is obtained during qualitative testing, the SOP no longer applies and analysis should proceed via LOM 7500 or other SOP if applicable.
- B. Analyze each selected unit (single-unit non-composite, multi-unit non-composite, or single-unit composite, as applicable) using the Sodium Nitroprusside or Marquis color test.
- C. Analyze each selected unit (single-unit non-composite, multi-unit non-composite, or single-unit composite, as applicable) using one of the following general-purpose methods to obtain confirmatory data:
 - 1. Direct Analysis in Real Time – Mass Spectrometry (DART-MS) using DART-MS and DART-MSMS.
 - 2. Gas Chromatography-Mass Spectrometry (GC-MS) using GCGEN_MS01 or GCLOWX_MS01



- a. Dissolve each sample in an appropriate solvent(s) at an appropriate concentration to ensure methamphetamine peak shape meets LOM 7500 acceptance criteria in order to evaluate for the presence of any closely eluting substances.
- D. Perform additional qualitative testing as needed.
 1. Analyze composite for salt form determination, when requested or when directed by the Office of Forensic Sciences, using IR01.
 2. Analyze composite for isomer determination, when requested or when directed by the Office of Forensic Sciences, using GCGEN or ISOM01.
 - a. Analyze methamphetamine QC solution within the same sequence.
 - b. Report the d-isomer of methamphetamine on the DEA-113 when:
 - i. The purity of total methamphetamine hydrochloride in the sample is $\geq 80\%$.
 - ii. The relative percentage of l-methamphetamine in the sample, if present, is equal to or less than the relative percentage of l-methamphetamine in the QC solution.

NOTE: In all other instances, the isomer of methamphetamine is not reported.

3.2 Quantitative Analysis

- A. Perform a quantitation on the composite using a standardized method or a laboratory-validated method.
 1. UV-Vis Method: DEA 503
- B. If UV-Vis is unavailable or is inappropriate for the sample type:
 1. GC Method: DEA 103, DEA 103S, or DEA 103L (LTM)
 2. LC Method: DEA 273 or laboratory-validated
 3. NMR Method: DEA 440H/450H/460H

**Effective Date/Revision History**

Revision No.	Effective Date	Summary of Changes
0	12/1/2020	Original document issued.
1	4/19/2021	<ul style="list-style-type: none">• Color test reagent preparation updated• Appendix A – Reporting Statements added• Policy references updated
2	10/25/2021	<ul style="list-style-type: none">• Analytical scheme updated to harmonize the GC-MS method for single unit and multi-unit analysis• Formatting update from bullets to letters and numbers
3	08/01/2022	Re-issued to replace SOP-METH-001 Revision 2. Major changes include: <ul style="list-style-type: none">• Reorganization to include only information pertaining to the analytical scheme• Removal of sections pertaining to equipment and solution/sample preparation• Removal of statements referring to policy• Removal of Appendix A – Reporting Statements
3.1	01/25/2023	Added DEA 103 to the list of GC quantitation methods.
4	11/06/2023	<ul style="list-style-type: none">• Removed residues from the scope• Added DART-MS to the analytical scheme• Added DEA 103S to the list of GC quantitation methods• Updated ADM references to LOM 7500
5	03/20/2024	<ul style="list-style-type: none">• Added GCGEN_MS01 as a standardized method
6	05/20/2024	<ul style="list-style-type: none">• Removed the requirement to determine salt form• Removed differences between single and multi-unit exhibits



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