



SOP-COC-001  
**Revision: 4**  
**Effective Date:** May 20, 2024

# **Drug Enforcement Administration**

## **Office of Forensic Sciences**

# **SOP-COC-001**

**STANDARD OPERATING PROCEDURE**

**for the**

**ANALYSIS OF SUSPECTED COCAINE**



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## 1.0 Introduction

SOP-COC-001 outlines the analytical scheme for analyzing suspected cocaine 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 cocaine.
  - 1. Determines salt form 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 cocaine exhibits that meet the requirements for quantitation.
- D. Applies to all gross forms.
- E. May apply to individual sub-exhibits.
  - 1. Follow SOP-COC-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 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 a concentration of 5 – 10 mg/mL when sample size permits.

NOTE: It is not necessary to weigh the samples or measure the volume delivered; the amount of sample and volume may be approximated. Standard sampling tools may be used.



- b. If GCGEN\_MS01 or GCLOWX\_MS01 is unavailable, analyze using a laboratory-validated general-purpose GC-MS method.
  - C. Analyze each selected unit (single-unit non-composite, multi-unit non-composite, or single-unit composite, as applicable) using an orthogonal technique and a standardized method.
    - 1. When a standardized method is unavailable, use a laboratory-validated method.
    - 2. Orthogonal techniques and associated methods include:
      - a. Cobalt (II) thiocyanate Color Test
      - b. DART-MS or ESI-MS
        - i. DART-MS and DART-MSMS
- NOTE:** MSMS fragmentation is not required when confirmatory data has already been obtained.
- c. Gas Chromatography – Flame Ionization Detection (GC-FID)
      - i. GCLOWX
    - d. Gas Chromatography – Infrared Spectroscopy (GC-IR)
    - e. GC-MS
      - i. GCGEN\_MS01
      - ii. GCLOWX\_MS01
    - f. Immunoassay
    - g. Infrared Spectroscopy (IR)
      - i. IR01
    - h. Liquid Chromatography (LC)
    - i. Nuclear Magnetic Resonance Spectroscopy (NMR)
  - 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.

### 3.2 Quantitative Analysis

- A. When required, perform quantitation on the composite using a standardized method.
  - 1. GC Method: DEA 101L (LTM), DEA 101, or DEA 101S.



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2. LC Method: DEA 201
3. NMR Method: DEA 440H/450H/460H

**Effective Date/Revision History**

<b>Revision No.</b>	<b>Effective Date</b>	<b>Summary of Changes</b>
<b>0</b>	02/01/2021	Original document issued.
<b>1</b>	01/03/2022	Re-issued to replace SOP-COC-001 Revision 0. Major changes include: <ul style="list-style-type: none"><li>• Reorganization to include only information pertaining to the analytical scheme</li><li>• Removal of sections pertaining to equipment and solution/sample preparation</li><li>• Removal of statements referring to policy</li><li>• Addition of immunoassay testing</li><li>• Addition of a full analysis analytical scheme</li></ul>
<b>2</b>	08/01/2022	Major changes include: <ul style="list-style-type: none"><li>• Removal of Appendix A – Reporting Statements</li><li>• Removal of GC-MS retention time requirement</li><li>• Removal of requirements that have been incorporated into ADM policy</li><li>• Clarification of when immunoassay testing is required</li></ul>
<b>3</b>	03/20/2024	<ul style="list-style-type: none"><li>• Updated reference to ADM to LOM 7500</li><li>• Added GCGEN_MS01 as a general-purpose GCMS method</li></ul>
<b>4</b>	05/20/2024	Major changes include: <ul style="list-style-type: none"><li>• Removal of the requirement to determine salt form; salt form determination is upon request</li><li>• Removal of TAP</li><li>• Addition of standardized DART-MS and MSMS methods</li><li>• Addition of requirement to use a general-purpose method on all units selected for analysis</li><li>• Additional editorial updates for clarity</li></ul>



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