



SOP-COC-001

Revision: 2

Effective Date: August 1, 2022

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 supplements the Analysis of Drugs Manual (ADM) and outlines procedures for the analysis of cocaine samples, incorporating the targeted analysis protocol (TAP) for all non-purchase exhibits. Reference the ADM for evidence analysis policy.

The analytical scheme requires use of system-wide validated methods, if available, and laboratory-validated methods. Reference the appropriate validation packet for preparations and procedures.

2.0 Scope

NOTE: Analyses performed by SFL1 are exempt from these requirements.

This procedure:

- A. Incorporates TAP for non-purchase exhibits.
- B. Identifies cocaine, including salt form.
 - 1. Determines salt form only when necessary (i.e. cocaine base) in the TAP.
- C. Identifies additional controlled substances, new psychoactive substances (NPS), and non-controlled substances.
- D. Determines the purity of cocaine exhibits that meet the requirements for quantitation.

- E. Applies to solid samples (e.g. powder).

NOTE: Applies to solid samples contained within capsules.

- F. Does not apply to tablets, residues, liquids, oils, or creams.
- G. May apply to individual sub-exhibits.
 - 1. Follow SOP-COC-001 for sub-exhibits that are within the scope; refer to the ADM or other SOPs for sub-exhibits that are not within the scope.

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 the ADM or other SOP if applicable.
 - 1. For the cobalt thiocyanate color test, evaluate negative result following HCl addition if performed.

3.1.1 Targeted Analysis Protocol – Non-purchases

- A. Color Test: Analyze each selected unit using the cobalt (II) thiocyanate color test.
 - 1. If a negative result with cobalt (II) thiocyanate color test is obtained:



- a. Add 1 drop of concentrated HCl to the **same** spot well or test tube containing the reagent and sample.
- B. Gas Chromatography-Mass Spectrometry (GC-MS): Analyze each selected unit using GCHIGH_MS01.
 1. Dissolve each sample in an appropriate solvent(s) at a concentration of approximately 5 – 10 mg/mL.

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.
- C. Immunoassay: Analyze each selected unit containing multiple substances that produce a positive cobalt thiocyanate color test result.
 1. The immunoassay test is not required:
 - a. For the unit tested per 3.1.1.D when acceptable data is obtained for the identification of cocaine.
 - b. When additional controlled substances are present, additional testing is performed per 3.1.1.E, and acceptable data is obtained for the identification of cocaine.
 2. This does not apply to naturally occurring alkaloids, incomplete reactions or sample breakdown, unless they are the predominant substance in the exhibit
- D. Infrared Spectroscopy (IR): Analyze one unit using IR01 for salt form determination when cocaine base is suspected.
- E. Perform additional qualitative testing as needed.

3.1.2 Full Analysis – Single unit exhibits

- A. GC-MS: Analyze composite using GCLOWX_MS01.
 1. If unavailable, analyze composite using a laboratory-validated general-purpose GC-MS method.
 2. Dissolve sample in an appropriate solvent(s) at a concentration of approximately 5 – 10 mg/mL.

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. IR: Analyze composite using IR01 for identification and salt form determination.
- C. Perform additional qualitative testing as needed.

3.1.3 Full Analysis – Multiple unit exhibits

3.1.3.1 Pre-composite Analysis

- A. Color Test: Analyze each selected unit using the cobalt (II) thiocyanate color test.



1. If a negative result with cobalt (II) thiocyanate color test is obtained:
 - a. Add 1 drop of concentrated HCl to the **same** spot well or test tube containing the reagent and sample.
- B. Gas Chromatography-Mass Spectrometry (GC-MS): Analyze each selected unit using GCHIGH_MS01:
 1. Dissolve each sample in an appropriate solvent(s) at an appropriate concentration.
- C. Immunoassay: Analyze each selected unit containing multiple substances that produce a positive cobalt thiocyanate color test result.
 1. The immunoassay test is not required when additional controlled substances are present, additional testing is performed per 3.1.3.1.D., and acceptable data is obtained for the identification of cocaine.
 2. This does not apply to naturally occurring alkaloids, incomplete reactions or sample breakdown, unless they are the predominant substance in the exhibit.
- D. Perform additional qualitative testing as needed.

3.1.3.2 Composite Analysis

- A. GC-MS: Analyze composite using GLOWX_MS01.
 1. If unavailable, analyze composite using a laboratory-validated general-purpose GC-MS method.
 2. For either method, dissolve sample in an appropriate solvent(s) at a concentration of approximately 5 – 10 mg/mL.

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. IR: Analyze composite using IR01 for salt form determination.
- C. Perform additional qualitative testing as needed.

3.2 Quantitative Analysis

- A. Perform a quantitation on the composite using a system-wide validated method.
 1. GC Method: DEA 101L (LTM), DEA 101, or DEA 101S.
 2. LC Method: DEA 201
 3. NMR Method: DEA 440H/450H/460H



Effective Date/Revision History

Revision No.	Effective Date	Summary of Changes
0	02/01/2021	Original document issued.
1	01/03/2022	Re-issued to replace SOP-COC-001 Revision 0. 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• Addition of immunoassay testing• Addition of a full analysis analytical scheme
2	08/01/2022	Major changes include: <ul style="list-style-type: none">• Removal of Appendix A – Reporting Statements• Removal of GC-MS retention time requirement• Removal of requirements that have been incorporated into ADM policy• Clarification of when immunoassay testing is required



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