



Hemp Processor Sampling and Testing Guidelines April 2020

The Georgia Department of Agriculture (Department) has established these “Hemp Processor Sampling and Testing Guidelines” to ensure compliance with federal and state law. All terms contained in this document will have the same meaning as the definitions established in the Act and the Rules promulgated pursuant to the Act.

I. INSPECTIONS AND SAMPLING GENERALLY

- (a) These “Hemp Processor Sampling and Testing Guidelines” have been incorporated by reference into the Rules promulgated pursuant to the Act, Ga. Comp. R. & Regs. C. 40-32 et. seq.
- (b) Inspections and sampling may be performed by a Department-approved sampling agent.
- (c) Samples may be used to test for delta-9 tetrahydrocannabinol (THC) concentration.

II. POST-HARVEST SAMPLING PROCEDURES

- (a) All samples become the property of the Department and are non-returnable.
- (b) The material selected for Post-Harvest Sampling will be determined by the Department, not the Permittee.
- (c) For intact-plant post-harvest samples:
 - 1. Ensure that all plants are accounted for and on the same form (i.e., all intact plants).
 - 2. Clip the top 20 cm (approximately 8 inches) of the hemp plant’s primary stem, including female floral material.
 - 3. Take cuttings from at least five (5) hemp plants within the storage/drying/processing area(s).
 - 4. Place the complete sample in a paper bag.
 - 5. Seal the bag with a chain of custody sealing label.
 - 6. Label the paper bag with a sample ID. The sample ID must include the last four numerical digits of the License number, Date (MMDDYY), full initials of the Department agent collecting the sample, and a two-digit sequential sample number assigned by the Department agent.

A. Example: License# 123456, Sample Date March 30, 2020, Agent John James Smith, Sample 03 translates to Sample ID: 3456 – 033020 – JJS – 03

(d) For ground plant or ground floral material samples:

1. Ensure that the entire harvest is accounted for and on the same form (i.e., all harvested material whether whole plant or floral material only must be ground with no intact plants or whole flowers remaining from that harvest).
2. Sample material contained in bags or containers. Sample from a minimum of four (4) locations with bags and/or containers containing ground plant or ground floral material.
3. Collect at least one cup of material by volume.
4. Place the complete sample in a plastic sample container.
5. Seal the plastic sample container with a chain of custody sealing label.
6. Label the paper bag with a sample ID. The sample ID must include the last four numerical digits of the License number, Date (MMDDYY), full initials of the Department agent collecting the sample, and a two-digit sequential sample number assigned by the Department agent.

A. Example: License# 123456, Sample Date March 30, 2020, Agent John James Smith, Sample 03 translates to Sample ID: 3456 – 033020 – JJS – 03

(e) For Post-Harvest Samples in other forms (e.g., trimmed floral material, or floral material and stems, etc.):

1. Ensure all materials are accounted for and in the same form (i.e., all harvested material must be uniform).
2. Randomly collect at least one cup of material by volume.
3. A separate sample must be taken for each material to be tested.
4. Place the complete sample in a paper bag or plastic container, as appropriate, and seal the bag or container with a chain of custody sealing label.
5. Label the paper bag with a sample ID. The sample ID must include the last four numerical digits of the License number, Date (MMDDYY), full initials of the Department agent collecting the sample, and a two-digit sequential sample number assigned by the Department agent.

A. Example: License# 123456, Sample Date March 30, 2020, Agent John James Smith, Sample 03 translates to Sample ID: 3456 – 033020 – JJS – 03

III. HANDLING PROCEDURES FOR POST-HARVEST SAMPLES

- (a) When handling procedures are available or provided by the approved laboratory performing THC concentration testing, follow such handling procedures.

- (b) When handling procedures are not available or provided by the approved laboratory performing THC concentration testing:
 - 1. Keep samples out of the sun and as cool as possible during shipping/transport. Samples should be kept in a cooler with frozen ice packs, if necessary.
 - 2. Fill out an inspection and sampling report form for each hemp category (i.e., in-tact plants, ground material, other forms, and hemp products) sampled.
 - 3. Ship or otherwise transport the sample(s) to the approved laboratory performing THC concentration testing within 72 hours of collection.

IV. HEMP AND HEMP PRODUCT SAMPLING PROCEDURES

- (a) All samples become the property of the Department and are non-returnable.
- (b) The hemp products selected for sampling will be determined by the Department, not the Permittee.
- (c) Guidelines for Sampling:
 - 1. Ensure that all hemp products are accounted for and in the same form (i.e., all sampled products must be uniform).
 - 2. Randomly collect at least one hemp product unit or one cup of hemp product by volume.
 - 3. A separate sample must be taken for each product to be tested.
 - 4. Place the complete sample in a paper bag or plastic container, as appropriate, and seal the bag or container with a chain of custody sealing label.
 - 5. Label the paper bag with a sample ID. The sample ID must include the last four numerical digits of the License number, Date (MMDDYY), full initials of the Department agent collecting the sample, and a two-digit sequential sample number assigned by the Department agent.
 - A. Example: License# 123456, Sample Date March 30, 2020, Agent John James Smith, Sample 03 translates to Sample ID: 3456 – 033020 – JJS – 03

V. HANDLING PROCEDURES FOR HEMP PRODUCT SAMPLES

- (a) When handling procedures are available or provided by the approved laboratory performing THC concentration testing, follow such handling procedures.
- (b) When handling procedures are not available or provided by the approved laboratory performing THC concentration testing:
 - 1. Keep samples out of the sun and as cool as possible during shipping/transport. Samples should be kept in a cooler with frozen ice packs, if necessary.

2. Fill out an inspection and sampling report form for each hemp category (i.e., in-tact plants, ground material, other forms, and hemp products) sampled.
3. Ship or otherwise transport the sample(s) to the approved laboratory performing THC concentration testing within 72 hours of collection.

VI. SELECTING SAMPLES FOR TESTING

- (a) The Department reserves the right to sample and test any hemp and hemp products produced in Georgia.
- (b) The Department will not be required to test all samples collected.
- (c) The Department reserves the right to determine which samples will be tested.

VII. THC CONCENTRATION TESTING PROCEDURES

- (a) THC concentration testing must be performed by approved laboratories.
 1. For purposes of this document, approved laboratories are those that are DEA-registered and/or are ISO 17025 accredited for THC testing of hemp/cannabis.
- (b) The results are intended to measure the THC content of composite hemp samples collected. The purpose of the measurements is to determine whether the THC concentration of the tested material is within the acceptable hemp THC level.
- (c) Laboratories conducting testing of hemp must conduct analytical testing for purposes of detecting the concentration levels of delta-9 tetrahydrocannabinol and must meet the following standards:
 1. Laboratory quality assurance must ensure the validity and reliability of test results.
 2. Analytical method selection, validation, and verification must ensure that the testing method used is appropriate (fit for purpose) and that the laboratory can successfully perform the testing.
 3. The demonstration of testing validity must ensure consistent, accurate analytical performance.
 4. Method performance specifications must ensure analytical tests are sufficiently sensitive for the purposes of the detectability requirements of this part.
 5. At a minimum, analytical testing of samples for delta-9 tetrahydrocannabinol concentration levels must use post-decarboxylation or other similarly reliable methods approved by the U.S. Secretary of Agriculture. The testing methodology must consider the potential conversion of delta-9 tetrahydrocannabinolic acid (THCA) in hemp into delta-9 tetrahydrocannabinol (THC) and the test result reflect the total available THC derived from the sum of the THC and THC-A content. Testing methodologies meeting these requirements include, but are not

limited to, gas chromatography and high-performance liquid chromatography.

- A. Testing methodologies meeting these requirements include those using gas chromatography and high-pressure liquid chromatography. High-performance liquid chromatography. High-performance liquid chromatography (HPLC) or (LC) is a scientific method (specifically, a type of chromatography) used in analytical chemistry used to separate, identify, and quantify each component in a mixture. It relies on pumps to pass a pressurized liquid solvent containing the sample mixture through a column filled with a solid adsorbent material to separate and analyze compounds. HPLC is one of the valid methods by which laboratories may test for THC concentration levels. Ultra-Performance Liquid Chromatography (UPLC) is an additional method that may also be used as well as other liquid or gas chromatography with detection.
 - B. The laboratory must perform chemical analysis on samples using post- decarboxylation or other similarly reliable methods where the total THC concentration level considers the potential to convert delta-9-tetrahydrocannabinolic acid (THCA) into THC.
6. The total delta-9 tetrahydrocannabinol concentration level must be determined and reported on a dry weight basis.
 7. Any sample test result showing with at least 95% confidence that the THC content of the sample is higher than the acceptable hemp THC level will be conclusive evidence that the lot represented by the sample is not in compliance with the Georgia Hemp Farming Act or the Rules promulgated pursuant thereto.
 8. Laboratories must use appropriate, validated methods and procedures for all testing activities and evaluate measurement of uncertainty. Laboratories must meet the AOAC International standard method performance requirements (SMPR) for selecting an appropriate method. The range of estimated uncertainty is reported as a \pm value and is the same unit as the hemp THC threshold (0.3% THC), following best practices for significant figures and rounding.
- (d) There are resources available for defining, guiding, and calculating measurement uncertainty. They include the GUM, ISO, and Eurachem. It is necessary for the laboratory to determine the uncertainty of accuracy (u_{bias}), repeatability (u_r), and reproducibility (u_R) for each validated method. Once the expanded measurement uncertainty (U) is determined, then the confidence interval can be calculated around a designated threshold such as the hemp THC threshold (0.3% THC).

Based on the aforementioned resources, the following equation is recommended:

Equation:
$$U = k \times u_c$$

Where:
$$u_c = \sqrt{u_r^2 + u_R^2 + u_{bias}^2}$$

And:

u = standard uncertainty (standard deviation)

u_r = uncertainty due to repeatability

u_R = uncertainty due to reproducibility

u_{bias} = uncertainty due to accuracy (bias)

u_c = combined standard uncertainty

U = Expanded uncertainty = $\frac{u}{Mean} * k_{95\% \text{ confidence level}}$, $k = 2$

k = coverage factor, use 2 for a 95% confidence level

- (e) Test results exceeding 0.3% THC
1. Any sample test result showing with at least 95% confidence that the THC content of the sample is higher than the acceptable hemp THC level will be conclusive evidence that one or more cannabis plants or products from the lot represented by the sample contain a THC concentration in excess of that allowed under the Act and Rules. If the results of a test conclude that the THC levels of a sample are conclusively higher than the acceptable hemp THC level, the laboratory will promptly notify the producer and the Department.
- (f) Retest Procedures
1. Any Georgia permitted hemp processor may request that the laboratory retest samples if it is believed the original THC concentration level test results were in error. If this occurs, the laboratory must follow the same procedures as described above that were followed to conduct the initial test. The permittee requesting the retest of the second sample will pay the cost of the test. The retest results must be issued to the permittee requesting the retest and a copy must be provided to the Department.
- (g) Information Sharing with the Department
1. Laboratories performing THC testing for are required to share test results with the Georgia permitted hemp processor and the Department. Tests must be reported using the form provided by the Department and submitted to the Department via e-mail to hemp@agr.georgia.gov. Laboratories may provide test results to permitted processors in whatever manner best aligns with their business practices, but processors must be able to produce a copy of test results