**Plant Chlorophyll Content Assay Kit - Spectrophotometry**

Product code: 112378

## Product Introduction

Plant chlorophyll is widely present in green plant tissues, and its content is closely related to photosynthesis and nutritional status. It is an important indicator of plant growth status.

Chlorophyll a and chlorophyll b have maximum absorption peaks at 663 nm and 645 nm. The contents of chlorophyll a, chlorophyll b, and total chlorophyll can be calculated using empirical formulas.

### Example Measurement

Sample: clover.

- OD663nm: sample 0.817/0.816
- OD645nm: sample 0.338/0.337

Actual readings may vary under different test conditions due to differences in instruments. The example data are for reference only.

## Product Packaging List

| Size | Code | Item | Quantity |
|---|---|---|---|
| 50T | 112378.1 | Reagent 1 | 3 g |
| 50T | 112378.m | Manual | 1 copy |

## Quality Standards and Safety Instructions

| Name of Raw Material and Package | Quality Standard | Main Toxicity |
|---|---|---|
| Reagent 1 | -- | -- |

## Transport and Storage Conditions

| Condition | Requirement |
|---|---|
| Transport | Shipped with ice packs |
| Storage | Store at 2-8℃; shelf life 180 days |

## Product Instructions

### 1. Extraction Solution Preparation

Mix 120 mL distilled water with 480 mL acetone thoroughly. Set aside for use.

### 2. Operating Steps

1. Weigh fresh plant leaves or other green tissues. Remove the midrib, weigh approximately 0.1 g, cut into pieces, and wash clean

with distilled water.
2. Add 1 mL distilled water and a small amount of Reagent 1, approximately 10 mg. Grind thoroughly under dark or weak light conditions, then transfer to a 10 mL glass test tube.
3. Rinse the mortar with extraction solution. Transfer all rinsing solution to the glass test tube, then use extraction solution to bring the volume to 10 mL.
4. Place the glass test tube under dark conditions or wrap it with aluminum foil. Extract for 3 h.
5. Check whether the tissue residue at the bottom of the test tube has completely turned white. If it has not turned completely white, continue extraction until it does.
6. Transfer 1 mL of the extract into a 1 mL glass cuvette. Zero the instrument with the extraction solution.
7. Measure the absorbance at 663 nm and 645 nm, and record the values as A663 and A645.

### 3. Calculation of Chlorophyll Content

Chlorophyll a content (mg/g, fresh weight) = (12.7 × A663 - 2.69 × A645) × Vext × N ÷ W ÷ 1000 = 0.01 × (12.7 × A663 - 2.69 × A645) × N ÷ W

Chlorophyll b content (mg/g, fresh weight) = (22.9 × A645 - 4.68 × A663) × Vext × N ÷ W ÷ 1000 = 0.01 × (22.9 × A645 - 4.68 × A663) × N ÷ W

Total chlorophyll content (mg/g, fresh weight) = (20.21 × A645 + 8.02 × A663) × Vext × N ÷ W ÷ 1000 = 0.01 × (20.21 × A645 + 8.02 × A663) × N ÷ W

| Symbol | Meaning |
|---|---|
| Vext | Extraction solution volume, 10 mL |
| N | Dilution factor |
| W | Sample mass, g |

## Precautions

1. Before formal measurement, select 2-3 samples with large expected differences for preliminary testing. This 50T kit can test 48 samples.
2. Required instruments and supplies: visible spectrophotometer, 1 mL glass cuvette, adjustable pipette, balance, mortar or homogenizer, aluminum foil, 10 mL test tubes, acetone, and distilled water.
3. Chlorophyll is sensitive to light. Grinding, extraction, and related operations must be performed away from light or under weak light.
4. Extract until the tissue residue turns completely white; otherwise, extraction will be incomplete.
5. When rinsing the mortar with extraction solution, rinse until all green material has been transferred to the glass test tube.
6. If the absorbance value exceeds 1 during measurement, dilute the sample appropriately. If the absorbance value is less than 0.05, the amount of extraction solution can be appropriately reduced to increase the sample concentration. Modify the Vext value in the formula accordingly.