

# Minute™ Chloroplast Isolation Kit

Catalog number: CP-011

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## Description

Invent Biotechnologies Minute™ chloroplast isolation kit is composed of optimized chloroplast isolation buffers and filter cartridges with 2.0 ml collection tubes. The kit is designed to rapidly isolate intact chloroplasts from fresh plant tissues (leaves, seeds and soft stems etc.). Due to the use of filter cartridges with pre-defined pore size and thickness, intact chloroplasts can be isolated from 5-200 mg fresh plant tissues in less than 5 min. Unlike many other methods that require 1-10+ gram tissues for chloroplast isolation, this kit can quickly obtain  $1 \times 10^6$  to  $1 \times 10^7$  intact chloroplasts (>90% intact) from fresh plant leaves.

## Application

Minute™ chloroplast isolation kit is designed to rapidly isolate intact chloroplasts from small samples (5-200 mg) of fresh plant tissues for applications such as biochemical analysis, SDS-PAGE, immunoblottings, enzyme assays etc. Isolated chloroplasts can be used as starting materials for purification of RNA and DNA for molecular biology studies.

## Kit components

1. 25 ml buffer A
2. 25 ml buffer B
3. 50 protein extraction filter cartridges
4. 50 collection tubes with cap
5. Plastic rod (4)

**Storage:** Store buffer A and B at -20°C

## Additional Materials Required

Table-Top Microcentrifuge with a maximum rpm of 14,000-16,000.  
1X PBS or 1X TES buffer

## Chloroplast Isolation Procedures

Following procedures are for isolation of intact chloroplasts from 5-100 mg fresh plant tissue samples (leaves, seeds and soft stems etc.). If smaller or larger amounts of starting materials are used adjust the amount of buffer A proportionately. **Prior to chloroplast isolation Thaw buffer A and buffer B completely and place on ice.**

1. Pre-chill buffers and the filter cartridge in collection tube on ice.
2. Place 5-300 mg fresh plant tissue in the filter. **For plant leaf**, fold or roll the leaf and insert it into the filter. Punch the leaf in the filter repeatedly with a pipette tip for 60 times to reduce the volume (for tissues less than 50 mg punching with the tip is not necessary). **For seeds and soft stems**, cut with a sharp blade into smaller pieces and place in the filter cartridge(s).
3. Add 200 µl cold buffer A to the filter (**Important: shake the bottle vigorously for a few seconds prior to pipetting**). Grind the tissue with a plastic rod (included) for 50-60 times (about 2 min) with twisting force (Note: The plastic rod is reusable. For cleaning, rinse it thoroughly with distilled water and dry it with paper towel).
4. Cap the filter and centrifuge in a microcentrifuge at 5,000 rpm at 4°C for 2-5 min depending on the size of the chloroplast (the smaller, the longer). Remove the supernatant and resuspend the pellet in 500µl cold buffer B by pipetting up and down or vortexing.
5. Centrifuge at 10,000 rpm for 2-3 min at 4°C. Remove the supernatant and resuspend the pellet (this is isolated chloroplasts) in 100 to 200 µl cold TES or PBS.