

The PCT Shredder Kit™

*Gentle, Rapid, and Safe Enhanced Disruption of Tissues and Organisms for
the Extraction of DNA, RNA, Protein, Lipid, and Small Molecules*

Pressure cycling technology (PCT) destabilizes molecular interactions by rapidly and repeatedly raising and lowering pressure in the Barocycler reaction chamber from ambient to high pressure (up to 45,000 psi [310 MPa]). High hydrostatic pressure acts preferentially on the compressible components of the sample, such as the plasma membrane of cells resulting in efficient cell lysis and the release of intracellular contents. However, certain types of samples cannot be efficiently extracted by PCT or any other sample preparation method alone. For such samples, *The PCT Shredder* was developed to improve sample homogenization and subsequent extraction of tough, fibrous and other difficult-to-disrupt samples. Following gentle mechanical disruption with *The PCT Shredder*, extraction can then be performed by PCT, and in some cases, by other sample preparation methods.



The PCT Shredder Driver & Holder

The PCT Shredder is a mechanical homogenization system for use with tough, fibrous, and other difficult-to-disrupt tissues and organisms. *The PCT Shredder* is used to rapidly homogenize a biological sample directly in the Shredder PULSE Tube. This pre-processing method increases sample surface area and, when followed by PCT extraction, permits better access of high pressure extraction fluid to the sample, resulting in improved sample lysis and extraction of the desired analytes.



The Shredder PULSE Tube

The Shredder PULSE Tubes are used to disrupt tough structures such as fibrous muscle tissue, plant cell walls, insect exoskeletons or the cuticle of nematodes, to rapidly achieve excellent yields of high quality nucleic acids, proteins, lipids, and small molecules. The combination of *The PCT Shredder* and Shredder PULSE Tubes may allow for the use of less aggressive lysis reagents due to the improved efficiency of sample extraction during pre-processing, whether followed by PCT or other sample preparation methods.

Features & Benefits:

- Sturdy, Stainless Steel Construction
- Cordless hand tool spins serrated Ram within the Shredder PULSE Tube
- Uses a similar PULSE Tube design as the PCT Sample Preparation System
- Single-use container – no sample transfer required

Specifications of *The PCT Shredder Kit*

| Kit Components | | Shredder PULSE Tube Components | |
|------------------------------|--------|-----------------------------------|-----|
| Shredder Driver With Charger | 1 | Shredder Rams | 100 |
| Shredder Holder | 1 | PULSE Tube Bodies with Lysis Disk | 100 |
| PULSE Tube Tool | 1 | | |
| Instruction Manual | 1 Each | PULSE Tube Caps | 100 |

Specifications of the Shredder PULSE Tube*

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|---------------|--|--------------------------|--|
| Dimensions | 13 mm diameter x 51 mm long | Compatible solvent | Solvent that is compatible with polypropylene, polyethylene and silicon rubber |
| Material | Sample Chamber: Polypropylene Cap & serrated Ram: Polyethylene O-ring Seal: silicon rubber | Operating Temperature*** | 4 to 60°C |
| Sample Size** | Solid: 50-300 mg Liquid: 1.4 ml | Storage Temperature | - 20 to 35 °C |

* Specifications may be changed without prior notification

** Consult specific applications for sample size and volume requirements

*** Autoclave recommended method: Standard liquid setting

*For Research Use Only

Relevant Literature:

1. Complete Disruption of *Caenorhabditis elegans* Under Non-denaturing Conditions Using Pressure Cycling Technology (PCT), *BioTechniques Protocol Guide 2009* (p.53) doi 10.2144/000113037
2. PCT Shredder PrEP: Improved DNA Recovery from Spinach Leaves Using *The PCT Shredder*[™] and Pressure Cycling Technology (PCT)
3. Schumacher RT et al. (2002). An Automated Sample Preparation Solution for Nucleic Acid and Protein Extraction from Cells and Tissues, *Am. Laboratory* 34, 38-43

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