

**LABORATORY OF FOREST PRODUCTS CHEMISTRY  
AND RENEWABLE ENERGY  
FACULTY OF FORESTRY MULAWARMAN UNIVERSITY**

**PROTOCOL 016**



STANDARD OPERATING PROCEDURE		
Brand: Jinyuanbao	Type:	Date:
Title: How to use Ultrasonic Cleaner		Created by:
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## 1. PURPOSE

To provide instructions for using the ultrasonic cleaner instrument accurately, effectively and efficiently.

## 2. PRINCIPLE

An ultrasonic cleaner is a device designed for cleaning laboratory equipment and specific optical instruments by converting electrical energy into high-frequency vibrations.

## 3. REQUIRED EQUIPMENT

Laboratory coat, safety glasses, clean cloth/tissue, gloves, mask.

## 4. PROCEDURE

### 4.1. EQUIPMENT SETUP

- 4.1.1 Connect the cables from the water bath, aspirator and cool ace water circulator to a power source;
- 4.1.2 Press the on/off switch of the cool ace water circulator to turn it on, adjust the water temperature by pressing the set button and the arrow buttons on the front panel until it reaches 10°C;
- 4.1.3 Open the water flow valve located on top of the cool ace water circulator;
- 4.1.4 Turn on the aspirator by moving the on/off lever on top;
- 4.1.5 Turn on the water bath by pressing the on/off switch and adjust the water heat according to the solvent type (refer to the list of solvents, temperatures, and pressures displayed next to the rotary evaporator);
- 4.1.6 Turn on the rotary evaporator by pressing the on/off switch. Ensure the solvent reservoir tube is properly installed and water from the cool ace water circulator is flowing.

### 4.2. SAMPLE EVAPORATION PROCEDURE

- 4.2.1 Adjust the rotary evaporator arm position so the sample tube is at a sufficient distance above the water heating bath;
- 4.2.2 Connect the sample-containing tube to the rotary evaporator arm and secure it with a clamp; use a bubbling trap flask if necessary;
- 4.2.3 Lower the rotary arm so that the sample tube is halfway submerged in the water bath;
- 4.2.4 Set the rotary speed according to the solvent type and quantity (level 1-10) by turning the rotation speed control knob;
- 4.2.5 Adjust the vacuum opening by turning the valve at the end of the condenser according to the solvent type;
- 4.2.6 When the evaporation process is complete, open the vacuum valve until the pressure is zero, turn off the rotary rotation and lift the rotary arm until the sample tube is above the water surface in the heating bath;
- 4.2.7 Detach the sample tube from the rotary arm.

### 4.3. ENDING ROTARY EVAPORATOR USE

- 4.3.1 When not in use, turn off the aspirator, rotary evaporator, water bath and cool ace water circulator and disconnect the cables from the power source;
- 4.3.2 Clean the work area, aspirator, rotary evaporator, water bath and cool ace from possible solvent and sample residues and other contaminants.

### 4.4. ATTENTION

- 4.4.1 Certain types of samples and solvents can easily bubble (over-pressurize); therefore, ensure the equipment settings match the sample and solvent types;
- 4.4.2 Evaporation with a rotary evaporator must be supervised
- 4.4.3 Before and after use, keep the workspace and rotary evaporator clean at all times.

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Validated by: