

## CEB-MKIII Transparent batch reactor

The CEB-MKIII Transparent batch reactor is a double-skinned glass vessel with a one-litre internal working volume, fitted with a variable-speed agitator.

Hot water from the CEXC or cold water from the CW-17 can be circulated through the jacket for temperature control purposes maintaining the reactor contents at constant temperature.

Glands in the clear acrylic lid allow the CEXC conductivity and temperature probes to be fitted to facilitate monitoring of the reactions in progress such as the important saponification reaction.

Isothermal and adiabatic operation reactions may be demonstrated. (Note, the isothermal reaction requires the Armfield CW-17 accessory if experiments at low temperature are to be studied or if the ambient temperature is high).

For adiabatic operation, the use of dyes enables the chemical reaction rates to be monitored visually by the change in colour at different degrees of conversion.

### Experimental content

- ▶ Isothermal Operation -To determine the reaction rate constant in a stirred batch reactor
- ▶ Adiabatic Operation - To determine the rate equation for the hydrolysis of acetic anhydride to acetic acid in an adiabatic reactor.
- ▶ Investigation of the effect of reactant concentration on the reaction rate
- ▶ Investigation of the effect of temperature on conversion
- ▶ Visual monitoring of the chemical reactions
- ▶ Study of the temperature variation of an exothermic reaction on an adiabatic operation

**Note:** CEB-MKIII is designed for use with the CEXC service unit. CEB-MKIII can be used with the CEX service unit, but an additional STS5 temperature sensor will be required for complete functionality.

### Ordering specification

- ▶ A small-scale batch reactor for use with the chemical reactors service unit designed to demonstrate both adiabatic and isothermal operation (CW-17 accessory is recommended for isothermal operation).
- ▶ 1L working volume
- ▶ The vessel includes a jacket through which hot water from the CEXC or chilled water from the CW-17 is passed. A variable-speed agitator aids heat transfer through the vessel
- ▶ The vessel is made of glass to give full visibility of the contents and enables the use of colour tracers to illustrate the reaction process
- ▶ Fitting points for temperature and conductivity sensors (supplied with the CEXC)

### Requirements

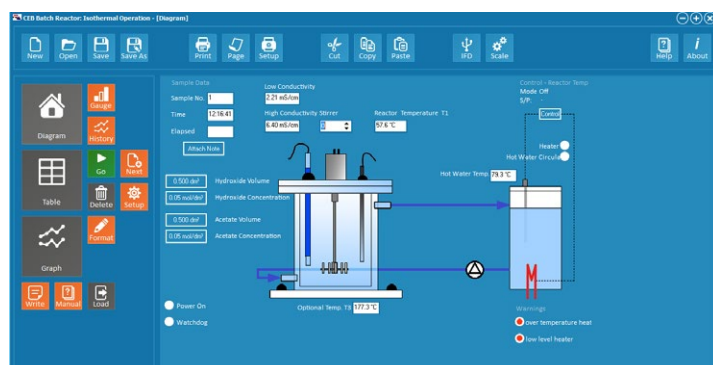
### Scale



Requires CEXC Base unit to operate

#### Consumables:

- ▶ 20g NaOH Sodium Hydroxide
- ▶ 50ml Ethyl Acetate
- ▶ 10mg Crystal Violet
- ▶ 100ml Acetic Anhydride
- ▶ 150ml Acetic Acid
- ▶ 25ml Sulphuric Acid



CEB-MKIII Software screen capture

### Overall dimensions

Length	0.36m
Width	0.33m
Height	0.45m

### Packed and crated shipping specifications

Volume	0.1m <sup>3</sup>
Gross weight	5.6Kg

### Ordering codes

CEB-MKIII