

CEM-MKII Continuous stirred tank reactor (CSTR)

The CEM-MKII Continuous stirred tank reactor is probably the most common type of reactor found in industry. The CEM-MKII is a small-scale demonstration version for educational use. It is extremely flexible in use and can be used for both continuous and batch reactions.

The volume of the reactor is adjustable to between 0.4 and 1.5 litres using an adjustable standpipe allowing different hold-up volumes and residence times to be investigated. The temperature probe and conductivity probe (supplied with the CEXC) can be positioned in the reactor vessel.

A stainless steel coil is used for temperature control of the reactor from the hot water supply on the CEXC (or cold water from such as the CW-17 Chilled Water Circulating Unit).

A variable-speed mixer/agitator is included (controlled by the CEXC) together with baffles to improve the mixing.

The CEM-MKII uses the saponification reaction and uses conductivity to measure the progress of the reaction. It also uses a step input change experiment to obtain the residence time distribution.

Experimental content

- ▶ To find the reaction rate constant in a Continuous Stirred Tank Reactor
- ▶ Effect of varying the temperature on reaction rate
- ▶ Effect of varying the reactor volume
- ▶ Effect of varying the mixing speed
- ▶ Effect of varying the feed rate
- ▶ Effect of varying the flow rate on conversion
- ▶ Determination of the Residence Time using tracer techniques
- ▶ To determine the effect of inadequate mixing on the reaction rate
- ▶ Evaluation of empirical rate expressions from experimental data

In use the CEM-MKII is wholly contained on the CEXC. When removed from the CEXC, storage dimensions are 350mm high, 250mm wide, 300mm deep.



Requirements



Requires CEXC Base unit to operate

Consumables:

- ▶ 50ml Ethyl Acetate
- ▶ 20g NaOH Sodium Hydroxide
- ▶ 100g Potassium Chloride

Overall dimensions

Length	1.00m
Width	0.50m
Height	0.50m

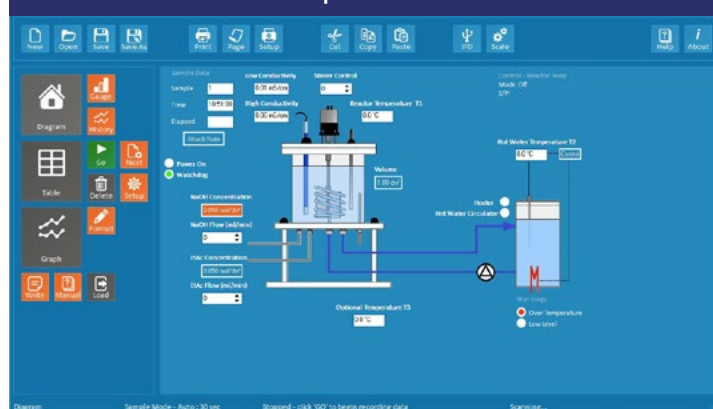
Packed and created shipping specifications

Volume	0.1m ³
Gross weight	10Kg

Scale



CEM-MKII Software screen capture



Ordering specification

- ▶ A small-scale continuous stirred tank reactor for use with the CEXC
- ▶ Adjustable volume of 0.4-1.5L
- ▶ The vessel is equipped with a variable-speed square blade turbine agitator
- ▶ The vessel is constructed from borosilicate glass and PVC with stainless steel heat transfer coil and removable reactor baffle
- ▶ Fitting points for temperature and conductivity sensors (supplied with CEXC)

Ordering codes

CEM-MKII