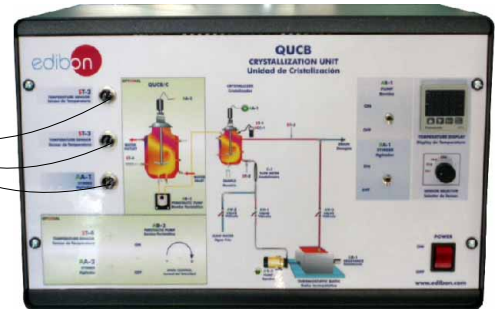


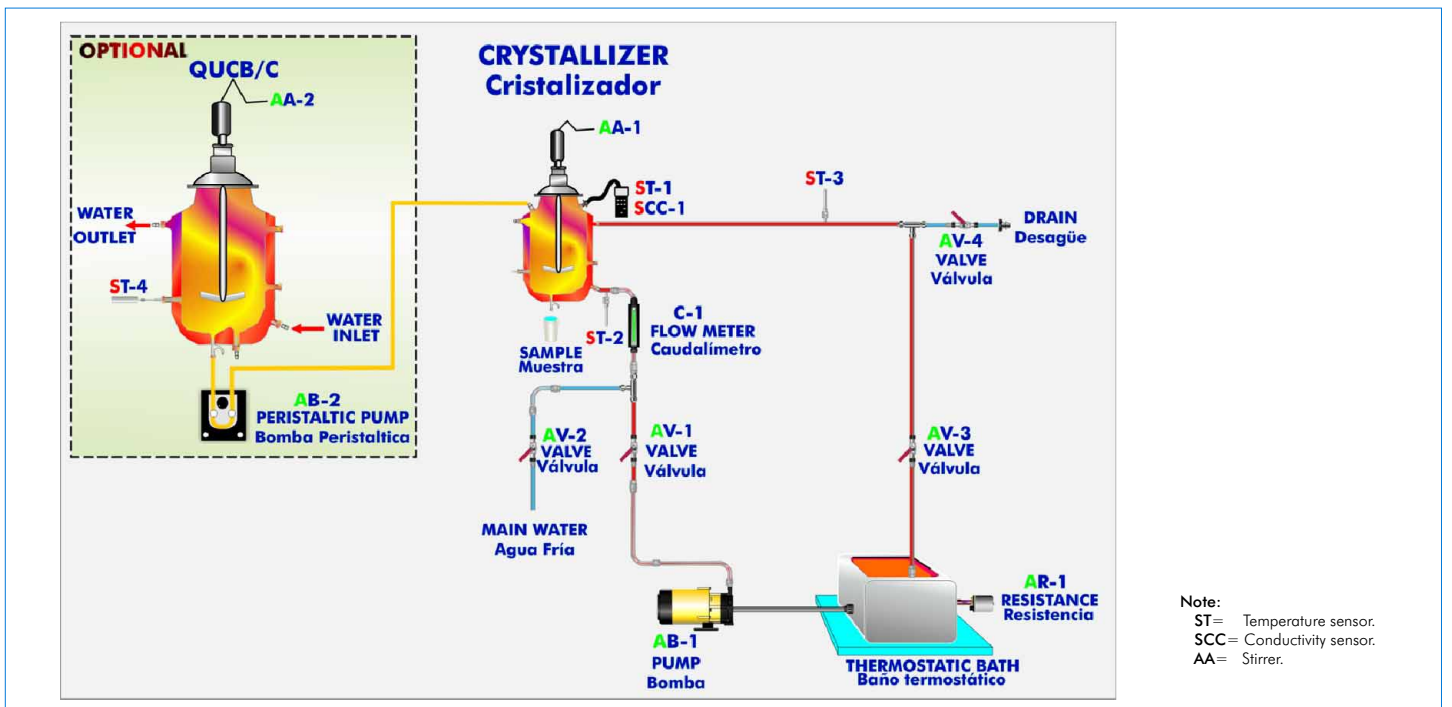


www.edibon.com
 Products
 Products range
 Units
 11.- Chemical Engineering



Electronic Console

PROCESS DIAGRAM AND ELEMENTS ALLOCATION



ISO 9001:2000
 Certificate of Approval



European Union Certificate



Certificates ISO 14001: 2004 and
 ECO-Management and Audit Scheme
 (environmental management)



Worlddidac Quality Charter
 Certificate
 Worlddidac Member

INTRODUCTION

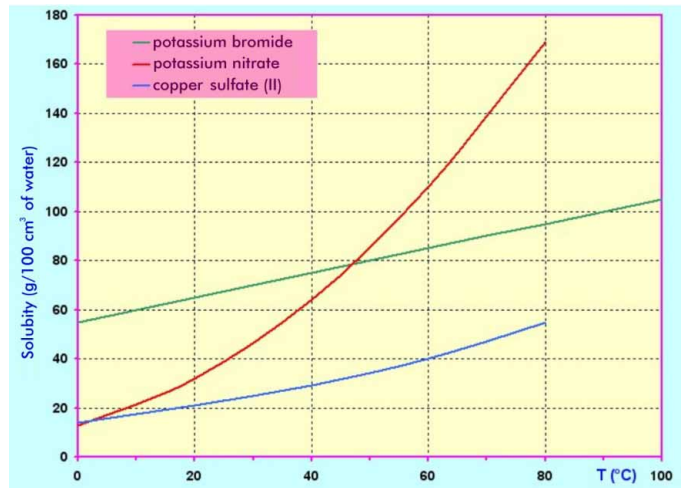
Crystallisation is one of the older methods used by the man to purify substances which obtains the separation of a solution components.

To get the crystallisation of the solute of a solution, it has to get the supersaturated condition. A solution is saturated when a product called solute is dissolved in it to the point that it doesn't accept more quantity because it can't be dissolved.

"QUCB" is a batch type crystallisation unit, very recommended to use in laboratories. It is an unit which works by cooling, so, it is appropriate to carry out crystallisation experiments of those components whose solubility change with the temperature.

The solution cooling crystallisation has several advantages against other methods:

- Low energetic costs.
- Quick answer.
- Quick and simple practices (1 laboratory session).



Solubility variation by effect of the temperature

DESCRIPTION

QUCB is an unit to demonstrate the solution cooling crystallisation. EDIBON has developed this unit to carry out the crystallisation reaction study of those components whose solubility changes with the temperature.

QUCB is made in glass, that provides important teaching characteristics. It is thought to do batch crystallisation, that is filling once the crystallisator with the solute and the solvent to get the supersaturated solution from which crystals began to be obtained. It is a batch process because to carry out a new experiment the crystallisator must be refilled.

This unit consists of a Crystallisator, which is basically a jacketed chemical reactor. By the crystallisator external part hot water circulates and with this the reaction temperature control is done. The salt under study is dissolved with the help of a stirrer installed in the crystallisator upper part. In the crystallisator upper part are installed a temperature sensor and a conductivity sensor to know, at any time, the solution crystallisation state.

To obtain the supersaturated solution it is needed to heat the solution so that it admits bigger solute concentrations at high temperatures. To the water supply to the crystallisator jacket there is a thermostatic bath installed, controlled by a potentiometer.

An obtained product sample is analysed with the supplied set of sieves. The produced crystals size is obtained.

It has an optional accessory: Continuous Feed Unit (QUCB/C), to turn this unit into a continuous crystallisator.

SPECIFICATIONS

Bench-top unit, mounted on 4 legs, with gum protections, height adjustable to equilibrate the unit.

Anodized aluminium structure and panels in painted steel (epoxy paint).

Diagram in the front panel with similar distribution to the elements in the real unit.

Crystallisator composed of jacketed reactor made in glass (1 litre of capacity), which includes temperature sensors and stirrer. Batch operation.

Double blade stirrer.

The crystallisation reactor is thermally controlled by means of heated water circulating in the reactor jacket.

Thermostatic bath of 600W, with feed water impulsion pump.

Water flowmeter, rotameter type, range: 0-2 l./min.

4 two way valves to allow the water circulation, according to the process.

3 Temperature sensors, "J" type.

Pressure regulation valve to protect the installation.

Conductivity meter to measure the solution conductivity:

Conductivity sensor, range: to 1000 mS.

Set of sieves, composed of:

3 Sieves of different light size: 0.5mm/1 mm/2mm

2 litres vessel to collect the crystals.

Electronic Console:

Metallic box.

Temperature sensors connections.

Selector for temperature sensors.

Digital display for supervising the temperature and the conductivity.

Pump switch.

Stirred switch.

Thermostatic bath controller.

Magnetothermal protection switch.

Protection fuses.

Protection devices for the electric circuits.

Cables and Accessories, for normal operation.

Manuals: This unit is **supplied with following manuals:** Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manuals.

OPTIONAL

-QUCB/C. **Continuous Feed Unit.**

The Continuous Feed Unit QUCB/C is complementary to the QUCB unit, which allows to turn the Crystallisator into continuous.

It consists of a jacketed reactor of a bigger size than the Crystallisator, where the supersaturated solution is obtained. This reactor, in the upper part, has a stirrer to dissolve the salt, under study, in the solution.

QUCB/C unit has an external thermostatic bath that allow to control the reaction temperature and then to obtain supersaturated solution at high temperatures.

A peristaltic pump supplies the supersaturated solution in a continuous way to the Crystallisator.

So, the supply of this accessory will allow to compare the batch crystallisation and the continuous crystallisation.

Specifications:

Jacketed reactor, made in glass, 5 litres approx.

Double blade stirrer.

Peristaltic pump of 0-30ml./min., with variable speed.

EXERCISES AND PRACTICAL POSSIBILITIES

Some Practical Possibilities of the Unit:

- 1.-Understanding the principles of solution cooling crystallisation.
- 2.-Study of crystall size distribution.
- 3.-Mass and energy balancing.
- 4.-Batch operation.
- 5.-Evaluation of crystallisation efficiency and crystallisation kinetics.
- 6.-Study of the effect of agitation rate.
- 7.-Study of the effect of cooling rate.
- 8.-Operation in continuous (optional, if the unit "QUCB/C" is acquired).

REQUIRED SERVICES

- Electrical supply: 220V./50Hz or 110V./60Hz.
- Water supply.

DIMENSIONS & WEIGHTS

- Unit: -Dimensions: 1000 x 550 x 700 mm. approx.
-Weight: 50 Kg. approx.
- Electronic Console: -Dimensions: 490 x 330 x 310 mm. approx.
-Weight: 10 Kg. approx.

OPTIONAL ACCESSORY

- QUCB/C. Continuous Feed Unit.

RECOMMENDED ACCESSORIES

- Laboratory oven to dry the crystals sample.
- Laboratory balance.

AVAILABLE VERSIONS

Offered in this catalogue:

- QUCB. **Crystallisation Unit.**

Offered in other catalogue:

- QUCC. **Computer Controlled Crystallisation Unit.**

* Specifications subject to change without previous notice, due to the convenience of improvements of the product.



C/ Del Agua, 14. Polígono Industrial San José de Valderas.
28918 LEGANÉS. (Madrid). SPAIN.
Phone: 34-91-6199363 FAX: 34-91-6198647
E-mail: edibon@edibon.com WEB site: www.edibon.com

REPRESENTATIVE:

Issue: ED01/10
Date: May/2010